

REPUBLIC OF TURKEY MINISTRY OF ENVIRONMENT AND URBANISATION
GENERAL DIRECTORATE OF ENVIRONMENTAL IMPACT ASSESSMENT,
PERMIT AND INSPECTION
Environmental Inventory and Information Management Department



**REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT
AND URBANISATION**

**ENVIRONMENTAL INDICATORS
2013**

Release NO:24

FOR YOUR INFORMATION REQUESTS AND QUESTIONS ABOUT RELEASE CONTENT

Environmental Inventory and Information Management Department

Data Evaluation Division

Tel: +90 (312) 410 17 00

Fax:+90 (312) 419 21 92

e-mail: cebyd@csb.gov.tr

Special thanks to all public institutions and organizations for their contribution.

Website

<http://www.csb.gov.tr/gm/ced/>

ISBN

978-605-5294-34-2

T.R. MINISTRY OF ENVIRONMENT AND URBANISATION

GENERAL DIRECTORATE OF ENVIRONMENTAL IMPACT ASSESSMENT, PERMIT, AND INSPECTION

Vekâletler Cad. No:1 Bakanlıklar/Ankara

PRODUCTION

All rights of this publication are reserved to Republic of Turkey Ministry of Environment and Urbanisation due to the Law of Intellectual and Artistic Works number 5846. It shall not be reproduced or distributed without authorization by real or legal entity.



It is of utmost importance to obtain correct data in order to create awareness regarding the environment, to improve environmental policies and to evaluate the results.

Environmental indicators are the basic means used in the evaluation of the pressure on the environment, changes in environmental situations and the success of environmental policies implemented. By the booklet of Environmental Indicators, it is aimed to reflect the relationship between the environment and all other sectors available and produce understandable results enabling to monitor the changes over time.

I wish "Environmental Indicators 2013" booklet, prepared with current data, will serve the purpose of informing the public about environmental issues and be used as a guidance to all institutions and organizations related to environment and while making environmental decisions.

İdris GÜLLÜCE
Minister of Environment and Urbanisation

OTHER PUBLICATIONS

Issue No. 1: Ankara Province Environmental Status Report, 1994

Issue No. 2: Provincial Environmental Problems and Priorities Inventory Assessment Report, 1996

Issue No. 3: Industries Affecting Environment Primarily and Main Sector Activities, 1996

Issue No. 4: Environmental Atlas of Turkey 96, 1997

Issue No. 5: Environmental Status Report of Turkey, 2007

Issue No. 6: Inventory of Environmental Problems and Priorities Assessment Report of Turkey (2005 - 2006), 2008

Issue No. 7: Environmental Indicators Handbook 2008, 2009

Issue No. 8: Environmental Indicators Handbook 2009, 2010

Issue No. 9: Inventory of Environmental Problems Priorities Assessment Report of Turkey 2007-2008, 2010

Issue No. 10: Environmental Indicators Handbook 2010, 2011

Issue No. 11: Environmental Status Report of Turkey, 2011

Issue No. 12: Environmental Indicators Handbook 2011, 2012

Issue No. 13: Environmental Inspection Report of Turkey in 2011, 2012

Issue No. 14: Inventory of Environmental Problems and Priorities Assessment Report of Turkey, 2012

Issue No. 15: Environmental Status Report - 2012 Annual Summary - Provinces

Issue No 16: Environmental Inspection Report 2012, 2013

Issue No 17: Environmental Indicators 2012, 2013

Issue No 18: Environmental Impact Assessment Impacts-precautions, 2013

Issue No 19: Environmental Permits and Licenses, 2013

Issue No 20: Fundamentals of Environmental Inspection & Environmental Inspection in Turkey, 2013

Issue No 21: International Congress of EIA Proceedings 8-10 November 2013

Issue No 22: Environmental Inspection Report 2013, 2014

CLASSIFICATION OF INDICATORS	7	6- WASTE	
INDICATORS SUMMARY CHART	9	6.1- Municipal Wastes and Disposal.....	42
EXECUTIVE SUMMARY	12	6.2- Landfill of Wastes.....	43
1- POPULATION		6.3- Medical Wastes.....	44
1.1-Population Growth Rate.....	18	6.4- Waste Oils.....	46
1.2-Urban Population.....	19	6.5- Vegetable Waste Oils.....	47
2- ECONOMY		6.6- Waste Batteries and Accumulators.....	48
2.1- Total Environmental Expenditures of Public Sector.....	20	6.7- Packaging Wastes.....	49
2.2- Sectorial Distribution of Employment.....	21	6.8- End of Life Tires.....	52
3- AIR - ATMOSPHER - CLIMATE		6.9- End of Life Vehicles.....	53
3.1- Greenhouse Gas Emissions.....	22	6.10- Waste Electrical and Electronic Equipment (WEEE).....	54
3.2- Total Greenhouse Gas Emissions by Sector.....	24	6.11- Mining Wastes.....	55
3.3- Precipitation.....	25	6.12-Hazardous Wastes.....	56
3.4-Temperature.....	26	6.13- Polychlorinated Biphenyls (PCB).....	57
3.5- Sea Water Temperature.....	27	6.14- Management of Ship Wastes.....	58
4- AIR QUALITY		6.15- Risk Assessment and Emergency Response.....	60
4.1- Air Pollutants Emission.....	29	7- LAND USE	
4.2- Air Pollutants.....	31	7.1- General Distribution of Land Cover.....	61
4.3- Number of Exceedance of Short-Term Air Quality Limit Value.....	32	7.2- Misuse of Agricultural Areas.....	62
4.4- The Number of Air Quality Monitoring Stations.....	33	7.3- Zones Under Threat of Erosion.....	63
5- WATER-WASTEWATER		8- BIODIVERSITY	
5.1- Water Usage.....	34	8.1- Total Number of Species, Endangered Species, Endemism Rate (%).....	64
5.2- Oxygen Consuming Substances in Rivers.....	35	8.2- Protected Areas.....	66
5.3- Nutrients in Fresh Water Sources.....	36	8.3- Protected Coastal Length.....	67
5.4- Quality of Swimming Water.....	37	8.4- Wildlife Activities.....	68
5.5- Drinking and Potable Water Resources of Municipalities.....	39	8.5- Forest Areas.....	69
5.6- Municipalities Served by Wastewater Treatment Unit.....	40	8.6- Distribution of Forests by Tree Species.....	72

TABLE OF CONTENTS

8.7- Functional Forestry.....	72	13- TOURISM	
9- INFRASTRUCTURE AND TRANSPORTATION		13.1- The Number of Tourists.....	93
9.1- Highway-Railway Network and Transportation Infrastructure.....	73	13.2- The Number of Environmentally Sensitive Accommodation Facilities.....	94
9.2-Amount of Passengers and Freight Carried by Transportation Types.....	74	13.3- Blue Flag Implementations.....	95
9.3- The Number of Road Motor Vehicles.....	76	14- DISASTERS	
10- ENERGY		14.1- Forest Fires.....	96
10.1- Primary Energy Consumption by Fuel Type.....	77	14.2- Disasters by Types.....	98
10.2- Primary Energy Consumption Per Capita.....	78	14.3- Liability Insurance.....	99
10.3- Total Energy Consumption by Sector.....	79	15- OTHER	101-102-103
10.4- Primary Energy Production.....	80	15.1- The Number of Laboratories Operating Within Environmental Legislation...	101
10.5- Share of Renewable Energy Sources in Consumption.....	81	15.2- Environmental Impact Assessment Decisions.....	102
10.6- Primary and Final Energy Density.....	82	COMPARISON OF WATER, WASTEWATER AND WASTE	
10.7- Energy Efficiency in Buildings.....	84	DATA OF 2008, 2010 AND 2012 BY SECTORS	104
11- AGRICULTURE		DEFINITIONS	105-106-107-108-109-110-111-112-113-114-115
11.1- Agricultural Area Per Capita.....	85	REFERANCES	116-117-118
11.2- Chemical Fertilizer Consumption.....	86		
11.3- Pesticide Use.....	88		
11.4- Organic Agricultural Implementations.....	89		
11.5- Good Agricultural Practices.....	90		
12- FISHERY			
12.1- Aquaculture Production.....	91		
12.2- Fishing Fleet Capacity.....	92		

CLASSIFICATION OF INDICATORS

In the World, various approaches are applied related to developments of environmental indicators; indicator sets are created within different conceptual frameworks or models. One of them is, "Pressure, State, Response" (PSR) framework. In 1994, the OECD (Organization for Economic Cooperation and Development) developed and established a comprehensive indicator system in order to provide a basis for reporting environmental policies. Another model, DPSIR was produced developing the framework of PSR by EEA (European Environment Agency) in 2004 to define the relationship between the society and the environment. This model contains five elements; "driving force, pressure, state, impact, and response". By this approach, it is possible to measure the effectiveness of applied precautions, in other words, it is possible to explain entity relationship between the driving forces and impacts;

- **Driving force indicators:** These indicators are the factors behind various variables. If we need to express in general, all economic activities are classified in this group.
- **Pressure indicators:** They define environmental variables that may cause problems. These indicators directly focus on the sources of the problems. In general, all emissions are classified in this group.
- **State indicators:** These indicators aim to show the current situation of the environment. In general, all concentration measurements are classified in this group.
- **Impact indicators:** These are the most extreme effects caused by environmental changes. In general, indicators related to health problems resulted from environmental changes are classified in this group.
- **Response indicators:** Response indicators include official attempts to prevent, compensate, and enhance reactions given by individuals or the society against any changes in the situation of the environment or to adapt to these changes. In other words, indicators about the solutions to prevent environmental pollution fall into this category.

CLASSIFICATION OF INDICATORS

Indicators of the booklet are classified as follows;

Driving Force Indicators	Pressure Indicators	State Indicators	Impact Indicators	Response Indicators
<ul style="list-style-type: none"> • Population Growth Rate • Urban Population • Amount of Passengers and Freight by Transportation Types • Primary Energy Consumption With Regard to Fuel Type • Primary Energy Consumption Per Capita • Total Energy Consumption by Sectors • Primary Energy Production • Ultimate Energy Intensity 	<ul style="list-style-type: none"> • Air Pollutants Emissions • Water Usage • Municipal Drinking and Potable Water Sources • Waste Production Quantities • Misuse of Agricultural Lands • Highway and Railway Network • The Number of Motor Vehicles • Chemical Fertilizer Usage • Pesticide Use • Aquaculture Production • Fishing Fleet Capacity • Number of Tourists • Technological Accidents by Types 	<ul style="list-style-type: none"> • Sectorial Distribution of The Employment • Greenhouse Gas Emissions • Total Greenhouse Gas Emissions by Sectors • Precipitation • Temperature • Air pollutants • Number of Short-term Air Pollutants above the Limits • Oxygen Consuming Substances in River Waters • Nutrients in Fresh Water Sources • Quality of Swimming Water • General Distribution of Land Cover • Cultivated Area Per Capita • Zones Under Threat of Erosion • Forested Lands • Diversion of Forest Fields by Tree Types • Blue Flag Implementations • Forest Fires • Deaths in Traffic Accidents 	<ul style="list-style-type: none"> • Sea Water Temperature • Misuse of Agricultural Land • The Number of Endangered Species (Biodiversity) • Disasters by Type 	<ul style="list-style-type: none"> • Total Environmental Expenditures of Public Sector • The Number of Air Quality Monitoring Stations • Municipalities Served by Wastewater Treatment Unit • Protected Areas for Biodiversity • Wildlife Activities • Forest Facility Operations • Consumption Share of Renewable Energy Sources • Primary Energy Density • Energy Efficiency in Buildings • Organic Agriculture • Good Agricultural Practices • Municipal Wastes and Disposal • Waste Disposal and Recycling • The Number of Environmentally Sensitive Accommodation Facilities • Liability Insurance • The Number of Laboratories Operating within Environmental Legislation • Environmental Assessment Impact Decisions

(Trend over the Previous Year in terms of Environment)

Keys

↑	ADVERSE GROWING TREND	↑	POSITIVE GROWING TREND	→	NEUTRAL DEVELOPMENTS
↓	ADVERSE DECREASING TREND	↓	POSITIVE DECREASING TREND	X	COMPARATIVE DATA NOT FOUND.

POPULATION	
Population	↑
Population Growth Rate	↑
Urban Population	↑
ECONOMY	
Total Environmental Expenditures of Public Sector	↑
Total Environmental Expenditures in the Public Sector Share in GDP (%)	↓
AIR – ATMOSPHERE - CLIMATE	
Greenhouse Gas Emissions	↑
Total Greenhouse Gas Emissions by Sector	↑
Precipitation	↓
Temperature	↓
Sea Water Temperature	→

AIR QUALITY	
Air Pollutants Emissions	↑
Number of Air Quality Monitoring Stations	↑
WATER – WASTEWATER	
Water Usage	↑
Oxygen Consuming Substances in Rivers	X
Nutrients in the Fresh Water	X
Swimming Water Quality	↑
Municipal Drinking and Potable Water Sources	↑
Municipalities Served by Wastewater Treatment Unit	↑
WASTE	
Number of Landfills	→
Population Served With Landfills	→
Medical Waste Disposal (Sterilization)	↑
Amount of Waste Oil Re-collecting	↑
Amount of Waste Battery Re-collecting	↑

INDICATORS SUMMARY TABLE

Amount of Waste Accumulator Re-collecting	↑
Amount of Waste Packaging Recycling	↑
Amount of End of Life Tires Recovery	↑
Percentage of the number of End of Life Vehicles to Total number of Motor Vehicles in Traffic.	↑
Amount of re-Collected Waste Electrical and Electronic Equipment	↑
The number of Landfill of Mining Waste	↑
Recovery Rate of the Hazardous Waste	→
Number of Harbours Collecting Waste from Ships	↑
Land Use	
Artificial Areas	↑
Agricultural Areas	↓
Forest and Semi-Natural Areas	↓
Wetlands	→
Misuse of Agricultural Areas	↓
Zones Under Threat of Erosion	X
Biological Diversity	
Total Number of Species, Endangered Species, Endemism Rate (%)	X
Protected Areas	↑
Protected Coastal Zones	↑
Wildlife Activities	↑

Forested Areas	↑
Forest Plant Activities	↓
Functional Forestry	X
INFRASTRUCTURE AND TRANSPORTATION	
Highway Network	↑
Railway Network	↑
Transportation of Passenger on Road	↑
Transportation of Freight on Road	↑
Transportation of Passenger on Railway	↓
Transportation of Freight on Railway	↓
Number Of Motor Vehicles	↑
ENERGY	
Primary Energy Consumption by Fuel Type	↑
Primary Energy Consumption per person	↑
Total Energy Consumption by Sector	↑
The Rate of the Renewable Energy Sources in Terms of Consumption	→
Primary Energy Density	↑
Final Energy Density	↓
Energy Efficiency in Buildings	↑

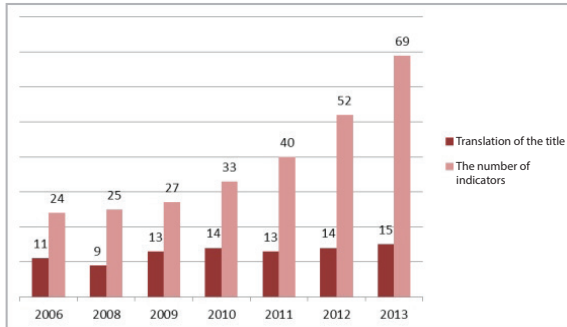
INDICATORS SUMMARY TABLE

AGRICULTURE	
Agriculture Areas Per Person	↓
Chemical Fertilizer Consumption	↑
Use Of Pesticide	↓
The Ratio of The Organic Agricultural Areas to the Total Agricultural Areas (%)	↓
Good Agricultural Practices	↑
FISHERY	
Sea Fishery	↓
Aquaculture	↑
Total Engine Power of the Fishery Fleet	↓

TOURISM	
Number Of Tourists	↑
Environment-Friendly Accommodation Facilities	↑
Blue Flag Implementations	↑
DISASTERS	
Forest Fires	↑
Damaged Area per Forest Fire	↓
Liability Insurance	↑
OTHER	
The Number of Laboratories Operating within Environmental Legislation	↑

EXECUTIVE SUMMARY

The main purpose of the Environmental Indicators Booklet is to represent the relationship between the environment and the sectors and to monitor the activities that have environmental impacts in a sequence and to monitor the results of the applied environmental policies. Moreover, it also aims to provide assist in determining plans, programmes and policies, preparing legislations and provide information. Booklets have been developed and become more detailed since the very first booklet “Environmental Indicators 2006” consisting of 11 headings and 24 Indications was published. “Environmental Indicators 2014” is prepared to contain 15 headings and 69 indications,



According to the booklet “Environmental Indicators 2013”:

The total population of Turkey was 76.667.864 in 2013. The population growth rate of Turkey, which was 1,20% in 2012, went up reaching 1,37% in 2013.

Total environmental expenditure of the public sector, which was 12,8 billion TL in 2012, increased 25,44% when compared to that in 2010. However, the share of the total environmental expenditure of the public sector in the budget of GNS (Gross National Product) was 0,93% in 2010 and it decreased in 2013 reaching 0,91%.

The share of the agricultural industry in our country is higher compared to developed countries. The portion of employment is rising up in manufacturing sector and service industry. Nevertheless, service industry in more developed countries occupies a portion of employment around 70-80% while our country has not still reached this level.

Overall greenhouse gas emission in Turkey went up from 188, 4 million tonnes to 439, 9 million tonnes, CO₂ equivalent between 1990 and 2012. With respect to the level of development and industrialization, Turkey falls behind several OECD (Organization for Economic Co-operation and Development) countries, a lot of UNFCCC (United Nations Framework Convention on Climate

Change) Annex I countries and some of the non-Annex I countries at the moment. In a similar way, the quantity of emission caused by Turkey while generating a unit GDP is below OECD and world averages. On the other hand, the historical contribution of Turkey to the greenhouse gas emissions piling up in the atmosphere has been only 4 per thousand since the industrial revolution. As CO₂ equivalent, considering greenhouse gas emissions in 2012, energy-originated emissions take the lion's share with 70.2%, followed by industrial processes with 14.3%, waste with 8.2%, and agricultural operations with 7.3% respectively.

An average of 564.1mm precipitation was recorded in 2013 in Turkey; in 2013. 13% decrease was observed in precipitation compared to the normal rate, and 24% compared to 2012. Average temperature in 2013 was 14.1°C, which was 0.6°C higher than the 1981-2010 average, which was 13.5°C.

A general increase can be seen when the condition of emissions is examined in the years between 1990 and 2012. Compared to data in 1990, the highest increase was seen in NO_x (93%) emissions, followed by CO (64%), SO₂ (57%), NMVOC (25%), PM₁₀ (15%) and NH₃ (%10) emissions respectively. In comparison with the year 2011, one can observe the highest increase in PM₁₀ (11%) and NH₃ (11%) by the same rate, followed by CO and NMVOC emissions, and a decrease in NO_x emissions.

70% of the water drawn in Turkey as of the year 2012 was used for

agricultural irrigation, 17.2% for industry, and 12.4% for potable and utility water based on the data gathered from the General Directorate of State Hydraulic Works (DSI), and the Presidency of Turkish Statistical Institute (TURKSTAT). According to the data published by Food and Agriculture Organization of the United Nations (FAO) in 2012, 69% of the water resources in the world was utilized for irrigation, 19% for industry, 12% urban consumption in 2006; while 22% of water resources in Europe for irrigation, 57% for industry and 22% for urban consumption.

According to the data collected by surface water monitoring points located in Ergene, Akarca, Gediz, Susurluk and Sakarya basins taking account of the limit data specified in "Regulation for Surface Water Quality Management", it is noticed that water quality falls within the IV quality (highly polluted water) classification in a lot of points located in above-mentioned basins due to pollution caused by non-point sources in 2013. Within the scope of the study conducted, when the river water quality is considered, the pollution in the Ergene Basin was catching attention and the Sariyer Dam (Ankara), Lake Eber (Afyonkarahisar) and Akgol (Sakarya) were remarkably polluted.

A continuous improvement was noticed in swimming water quality in our country as compared to the results obtained over the years. 82% of 1208 swimming areas ranked class A (very good/perfect), 16% class B (high quality), and 2% class 2 (poor quality) according to the evaluation carried out in 2013.

The share of the municipal population served with potable water network in Turkey's population was 83%, and the proportion in overall municipal network was 98% in 2012.

The share of the municipal population served with wastewater treatment facilities in overall municipal population reached 73% as of the end of 2013.

Based on TURKSTAT data of 2012, advanced treatment methods were applied to 38.3% of the wastewater in Turkey. And 32.9% was treated biologically, 28.5% physically, and 0.3% naturally.

According to the data by TURKSTAT, the rate of population linked with an at least secondary (biological) wastewater treatment facility was 37, 58% in Turkey in 2010. According to the data by EUROSTAT (the Statistical Office of the European Union), this rate was 99.5% in the Great Britain, 99.4% in Netherlands, 97.3% in Switzerland, 95.3% in Germany, 93% in Spain, 83% in Finland and 64.5% in Poland in 2010.

The share of the municipal population served with sanitary landfill facilities was 69% in total municipal population in Turkey as of 2013. The quantity of medical waste generated by all medical institutions in Turkey was calculated approximately 84,000 ton/year in 2012.

The amount of waste oil collected was 39,645 tones in 2013.

The amount of waste batteries collected was 560 tones in 2013.

A total of 61,000 accumulators were collected in 2013, and 36,600 tons of lead was recycled thereby.

2,224,977 tons of packaging waste was recycled in 2011

In 2013, 89,000 tons of end-of-life tires was sent to recycling facilities, and 29,600 tons of that was utilized as additional fuel in cement factories.

Based on 2013 data, 14% of 223,429 vehicles deregistered by the General Directorate of Turkish National Police was determined as end of life vehicles under M1 and N1 categories.

The quantity of WEEE (Waste Electrical and Electronic Equipment) collection was 9,000 tones as of 2013.

In 2012 according to the survey results obtained by TURKSTAT, 952 million tons of waste was generated by mining activities. 3, 2 million tons of the overall waste generated was found to be in hazardous waste status.

The quantity of hazardous waste caused by the industry was investigated by Hazardous Waste Declaration System, and the amount of hazardous waste processed countrywide was 938,498 tones in 2011 based on the system results. Waste quantities from

the mining industry were not included in these wastes. 714,466 tons of this waste was sent to recovery plants.

While agricultural areas and forests-semi-natural areas were diminished, an increase was observed in artificial areas and bodies of water between 1990 and 2006 in Turkey.

A total of 974,282ha agricultural land was approved for non-agricultural use during the 2001-2003 period in Turkey.

In our country there are 15,061 identified species/subspecies, 3,930 of which are endemic species. The number of rare or endangered species is 1,284, and the number of extinct species is 11.

While the number of alien species in Turkish seas was 263 in 2005, this figure went up to 422 in total in 2011 and still keeps on escalating.

7, 75% of the surface area of Turkey was protected in 2012 and; this rate went up to 10, 11% in 2013. According to the data presented in 2013, approximately 13% of the world's surface area was protected zone.

A total of 623 species, of which, 120 are mammals, 374 of which are birds, and 129 are reptiles is under protection in our country.

Turkey's overall forest land was 21,678,134ha in 2012. However, the

half of the woods in our country is of degraded quality, and therefore infertile. It is of great importance to rehabilitate those infertile forest lands and turn them into fertile ones. Regarding forestation works in 2013, 46,656ha area was reforested, 106,182ha was rehabilitated, 83,864ha was protected against erosion, pasture was improved on 9,920ha, private forestation was enabled on 1975ha, and artificial regeneration was established on 8,921ha.

The term old growth forest can be described as the area in which survival abilities of many critical forest bush species should be protected. The rate of old growth forest area is expected to be at least 10%. This rate is 4.6% in our country.

According to 2011 data, roads per 100,000 capita was 90km while that of railroads was 13km in Turkey. Whereas, these numbers in EU 27 member countries was respectively 360km and 45km. In respect to the surface area, roads per 1000 km² were 83km while railroads were 12km in Turkey. On the other hand, these numbers in EU member countries were respectively 422km and 52km.

Based on 2012 data, roads had the lion's share in rendering transportation services by 91% for domestic passengers (in passenger-km) and 88.1% for domestic load (in tones-km).

In 1979 there were 1,566,405 total motor land vehicles and this reached to 17,939,447 in 2013, especially escalating rapidly after 2004.

In Turkey, the total rate of primary energy consumption originated from hard coal (11.6%), lignite (18.43%), asphaltite (0.23%), coke (0.13%) and petroleum coke (0.5%) fuels in overall consumption was 30.89% as of the year 1990. the total rate of primary energy consumption originated from hard coal (16.91%), lignite (12.85%), asphaltite (0.39%), coke (0.23%) and petroleum coke (2.33%) fuels in overall consumption was 32.71% as of the year 2012.

A slight increase was observed in solid fuel consumption as primary energy use per capita through the years whereas petrol consumption did not change much. However, it can be seen that the quantity of gas consumption per capita increased prominently over the years. Gas consumption per capita was 0.05 TOE (Tone of Oil Equivalent) in 1990, while it was 0.49 TOE in 2012.

The contribution of renewable energy to overall energy consumption was about 18% in Turkey in 1990 and according to the data presented by TURKSTAT, this rate went down to 10% parallel with the increasing need for energy in 2012.

Based on the data by TURKSTAT, to satisfy the energy needs a rate of 67.6% was imported in 2000 while this rate increase to 74,3% in 2012.

40% of overall energy consumed in Turkey is used in the construction industry. A total of 139,507 Energy Identity Certificates to be used in buildings were issued till the end of 2013.

Arable land per capita was 0.31ha considering the total arable land (23,811,000ha) in 2013.

Total consumption of chemical fertilizers based on plant nutrient, which was 1,613,692 tones in 1988, went up to 2,312,724 tones in 2013. According to the data by TURKSTAT, considering the fact that there is 23,8 million ha available arable land, fertilizer use per hectare (on plant nutrient basis) was about 97kg in 2013. Based on 2009 data, fertilizer use per hectare (on plant nutrient basis) was 82.5 kg/ha on average for EU-27 countries and 95 kg/ha on average for AB-15 countries. There is excessive fertilizer consumption in several regions and areas which are used for cultivation for the second or third time.

Overall use of pesticides in Turkey was 46,428,641 kg/liters (kg or liters) in 2000, and fell down to 39,438,647 kg/liters in 2013.

The proportion of overall organic cultivation area to overall agricultural area was 1.95% in Turkey, in 2013. This proportion was 1% worldwide and in European Union countries it was 7, 8% in 2012. Based on the data by TURKSTAT, aquatic plant production decreased to 5, 8% in 2013 compared to the previous year and was calculated as 607,515 tones.

The capacity of fishing fleet was three times larger than the capacity required for the amount of fish to be caught in our resources. Due to overfishing, the stocks were decreased and as a result, the amount

of products obtained in kW type by vessels also decreased over the years.

The number of tourists visiting Turkey that was 15,774,505 in 2003 reached to 37,794,908 in 2013.

According to the data obtained for the last 10 years (2004-2013), it is understood that an average of 2230 forest fires broke out and about 9039ha forest area was damaged every year in our country. Average area per fire was 4.1ha in the last 10 years (2004-2013).

When the number of disasters, (matching the criteria of The National Disaster Archive System of Turkey), occurring between 1894 and 2013 considered, it is seen that forest fires ranks the first with a number of 2082 (33%). It is followed by 979 landslips (15%), 691 storms (11%), and 397 hail (6%). The largest number of deaths was experienced in earthquakes with 95% (94,081 people) during the same period. Deaths resulted from traffic accidents was 1% (1251 people), mining accidents was 1% (1033 people), and other accidents was 3% (2908 people)

Environmental problems are not only resulted from production processes, but they are also related with our life styles and our consumption habits. These habits which form our life style have a significant importance on environmental impacts. Accordingly, the increase in consuming environmentally-friendly products and improving the awareness about the effects of our consumption

habits on environment will decrease the pressure in this subject. Besides applying the policies legislated by law, environmental problems can also be reduced by using technological approaches in production, changing our consumption habits, and focusing on more environmentally friendly means and methods especially in transportation, energy and agriculture sectors.

To be able to create a healthy development infrastructure, long term and consistent but also flexible policies which are supported by citizens should be applied. This means that it is inevitable to inform the public and to raise awareness about the environmental problems to produce effective policies.

1-POPULATION

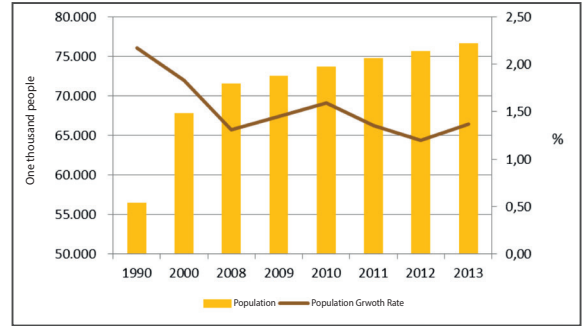
1.1-Population Growth Rate

Population growth rate is the most significant driving force among human activities that create impact on the environment.

Although the population growth rate in Turkey had a declining trend between the years 1990-2008 and 2010-2012, it continued to increase constantly. While the population growth rate was 1.2% in 2012, it increased to 1.37% in 2013. According to the 2013 data the total population in Turkey was 76.667.864, and population per km² was 100, increasing 2 people when compared to 2012. Median age of Turkish population, which was 30.1 in 2012, increased to 30.4 in 2013^[1].

According to United Nation projections, the world population was approximately 7 billion 52 million in 2012. In 2012, constituting 1.1 percent of the world's population, Turkey is the world's 18th largest country in terms of population^[2].

POPULATION AND POPULATION GROWTH RATE CHANGES OVER THE YEARS



Source: TURKSTAT (General Population Census Results for 1985, 2000 and 2007-2013 Address-Based Population Registration System Results).

Note: While calculating yearly population growth rate, the previous census is taken into consideration.

YEARS	1990	2000	2008	2009	2010	2011	2012	2013
Population (1000 people)	56.473	67.804	71.517	72.561	73.723	74.724	75.627	76.668
Population Growth Rate (%)	2,17	1,83	1,31	1,45	1,59	1,35	1,20	1,37

1.2-Urban Population

Urban population appears to be a driving force on environmental values. Rapid growth of urban population, correspondingly brings about an increase in urban expansion, infrastructure, transportation, housing, industrial area, and energy needs, which in the end leads to environmental problems such as air pollution, wastewater and noise.

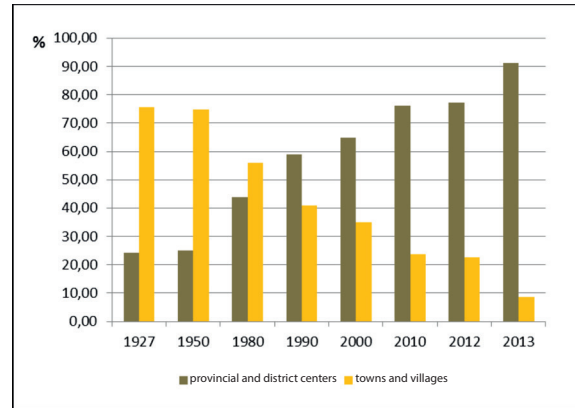
Urbanisation is one of the most important processes which is experienced parallel to industrialization and economic development. In general, in industrialized countries 75% of the population lives in urban areas.

According to the first census conducted in 1927 In Turkey, population was 13.648.270, and 75,8% of the people lived in towns and villages and 24.2% in cities; however, after 1950 population started to be gathered in urban areas.

According to the data collected by address-based population registration system in 2013, urban population in Turkey was recorded as 70.034.413 and rural population was recorded as 6.633.451. In 2012 the ratio of the residents in provinces and district centers was 77,3%. The fact that metropolitan municipality were established in 14 provinces and towns and villages got involved to these municipalities as districts in 30 cities with metropolitan status, had a significant influence on the increase of this rate

which amounted to 91,3% in 2013. As a result, the ratio of the total population living in towns and villages declined to 8.7% ^[1].

URBAN AND RURAL POPULATION RATES THROUGH THE YEARS



Source: TURKSTAT

Note: General Population Census Results, 1927-2000 and Address-Based Population Registration System Results, 2010-2013 have been used.

2- ECONOMY

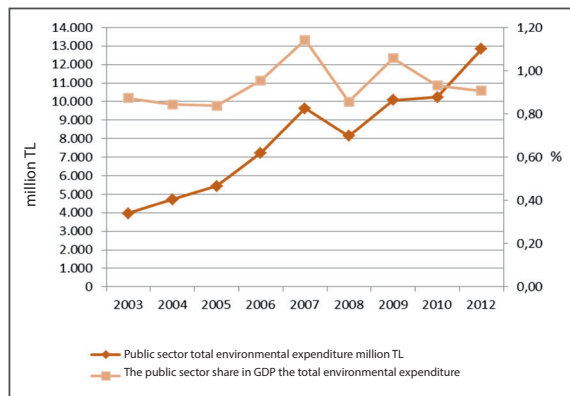
2.1- Total Environmental Expenditures of Public Sector

The environmental performances of the countries are directly related with the economic power of the countries. Environmental expenditures appear as a reaction to the protection of environmental values.

Total environmental expenditure of the public sector was 12.85 billion TL in 2012. An increase of 25, 44% is observed in this expenditure as compared to that in 2010. However, while the share of the environmental expenditures for the public sector provided by GDP (National Domestic Product) was 0, 93% in 2010, it decreased to 0, 91% in 2012.

Of the total environmental expenditure, current expenditure constituted 7,97 billion TL and investment 4,88 billion TL. 79, 7% of total the environmental expenditure belongs to the municipalities, 3,3% to provincial administrations, 2,2% to special provincial administrations and 14,8% to other public institutions.

Environmental Expenditure of The Public Sector



Source: TURKSTAT

Of the total environmental expenditure of state institutions; 37,5% constituted water services, 29,9% waste management services, 16,5% wastewater management services and 16,5% other environmental services [3].

YEARS	2003	2004	2005	2006	2007	2008	2009	2010	2012
Environmental Expenditure of the Public Sector (Million TL)	3.970	4.716	5.437	7.234	9.628	8.136	10.078	10.241	12.848
Current Environmental Expenditure of Public Sector (Million TL)	2.431	2.925	3.400	3.913	4.734	5.632	6.589	6.518	7.973
Environmental Investment Expenditure of the Public Sector (Million TL)	1.539	1.791	2.037	3.321	4.894	2.862	3.490	3.723	4.875
The public sector's share of total environmental expenditure in GDP (%)	0,87	0,84	0,84	0,95	1,14	0,86	1,06	0,93	0,91

Source: TURKSTAT. Note: Public sector values are collected from Municipalities, Special Provincial I Administrations, Local Administrative Unions and other public establishments. The values shown in the table related to the Municipalities and other public establishments until 2005. Special Provincial I Administrations after 2005 and the Local Administrative Unions after 2006.

2.2- Sectoral Distribution of Employment

Distribution of the working population of a country among sectors has an enormous effect on the quality and size of the pressure of the population on the environment.

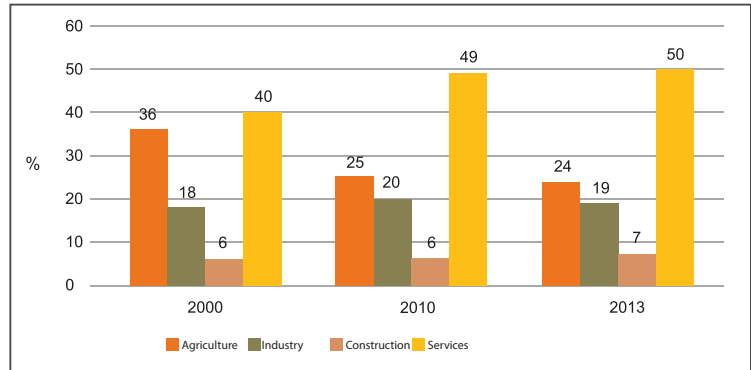
Due to the inevitable result of development, there is a decrease in employment in agriculture, where as an increase in industry and mostly in service sectors.

The proportion of agricultural sector is still high currently, compared to developed countries. The share of employment in industry and service sectors is increasing. However, while the rate of employment in the service sector is 70-80% in developed economies, which in our country has not reached that level yet. ^[4].

Since 2000, there has been a decrease in the number of people employed in agriculture while employment in service sector has been increasing.

SECTORAL DISTRIBUTION OF EMPLOYMENT

YEARS	2000		2010		2013	
	Thousand (+15 age)	%	Thousand (+15 age)	%	Thousand (+15 age)	%
TOTAL	21.580	100	22.594	100	25.524	100
Agriculture	7.769	36,00	5.683	25,15	6.015	23,57
Industry	3.810	17,66	4.496	19,90	4.956	19,42
Construction	1.364	6,32	1.431	6,33	1.782	6,98
Services	8.637	40,02	10.986	48,62	12.771	50,04



Source: TURKSTAT, Households Workforce Survey Results (<http://www.tuik.gov.tr/UstMenu.do?metod=temelist>)

PS: 1) If the survey attendants are less than 2000 the size of the study is not adequate to be credible.

While housekeepers took place in "administrative and support service operations" until 2001, they are in the scope of "real property" after 2011 according to the law in process.

2) NACE Rev-1 was utilized in the classification of financial activity until 2009 and it was replaced with NACE Rev-2 after 2009.

3.1- Greenhouse Gas Emissions

Greenhouse gas emissions are important with respect to their contribution to climate changes, their distribution according to sources and monitoring and controlling activities.

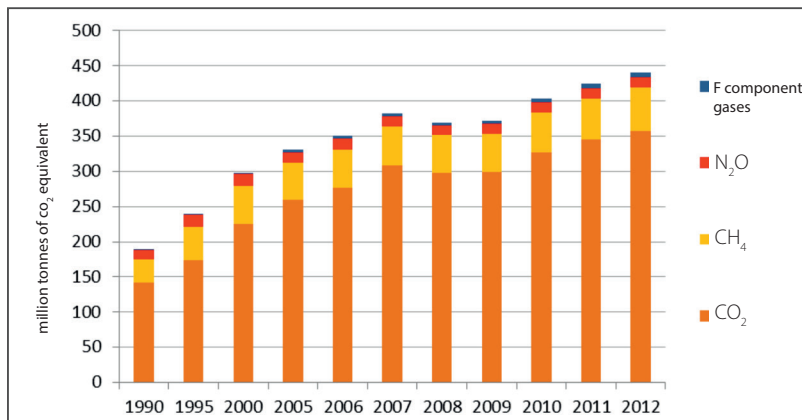
In 2012, in Turkey total greenhouse gas emission, which was 188,4 millions of tons in 1990's, rose up to 439,9 million tons of CO₂, 81,27% CO₂, 14% CH₄, 3,36% N₂O and 1,36% is F component gases constituted the total CO₂ emission values in 2012.

Total greenhouse gas emissions (Equivalent to CO₂) increased in 2012 by 133, 4% compared to 1990. Total CO₂ emissions in 2012 caused by 70,2% energy, 14,3% by industrial processes, 8,2% by waste and 7,3% by agricultural activities. CO₂ equivalent emission was calculated 3,42 tons per person in 1990's but in 2012, this value went up to 5,9 tons per person.

GREENHOUSE GAS EMISSIONS

CO₂ rate equivalent (million ton)

YEARS	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
CO ₂	141,56	174,09	225,61	259,79	277,26	308,65	297,85	299,67	326,85	345,73	357,50
CH ₄	34,05	47,39	53,68	52,55	53,53	55,59	54,03	53,75	57,30	58,05	61,62
N ₂ O	12,22	16,82	17,14	14,67	16,05	13,65	13,00	13,91	14,15	13,73	14,79
F Component Gases	0,60	0,52	1,66	3,73	4,05	4,49	3,86	3,81	5,19	6,58	5,97



Source: TURKSTAT

Not: Land usage, land usage changes and forestry sources emissions and sinks are not included.

In 2012 of the total CO₂ emissions, 84, 4% was caused by energy, and 15,6% by industrial processes. Of the CH₄ emissions, 55,7% was resulted from waste , 34,8% from agricultural activities and 9,5% from the energy. Of the N₂O emissions, 73,4% was originated from farming activities, 12,8% from waste, 7,1% from industrial processes and 6,7% from energy ^[5].

In the second and third sections of the 2nd National Statement, it is stated that greenhouse gas emission per capita, historical responsibility and primary energy consumption per capita, Turkey has the lowest values when compared with the countries in the Annex-1 list of UNFCCC (United Nations Framework Convention on Climate Change) and OECD (Organization for Economic Cooperation and Development). Additionally, Turkey is behind the other OECD countries and many of the countries in the Annex-1 list of UNFCCC and some of the countries not stated in the list with respect to development and industrialization level. Similarly, the amount of emission created by one unit GDP is far below the OECD and world average. On the other hand, since the industrial revolution in Turkey, the historical contribution of the country to greenhouse gas released to the atmosphere has been only 0.04% ^[6].

Beginning with 2011, EU-27 emissions decreased by 18.4% as compared to the levels in 1990 in Europe. In 2011, total greenhouse gas emissions (excluding, land use, changes in land use, emissions caused by forestation and sinks) was 4.550 million tons equivalent to CO₂ in EU-27. 82,2 % of this rate was CO₂, 8,5% was CH₄, 7,4%

was N₂O, and 1,9% was F component gasses. EU-27 greenhouse gas emissions were mostly created by Germany (20,1%), England (12,1%), France (10,7%), Italy (10,7%), Poland (8,8%) ^[7].

3.2- Total Greenhouse Gas Emissions by Sectors

Looking at the sectoral distribution of greenhouse gas emissions, it is observed that the increase in total emissions is mainly due to energy production and consumption. It is followed by emissions resulted from industrial processes. It is seen that emissions caused by agricultural activities and wastes have not shown much differences since 2005.

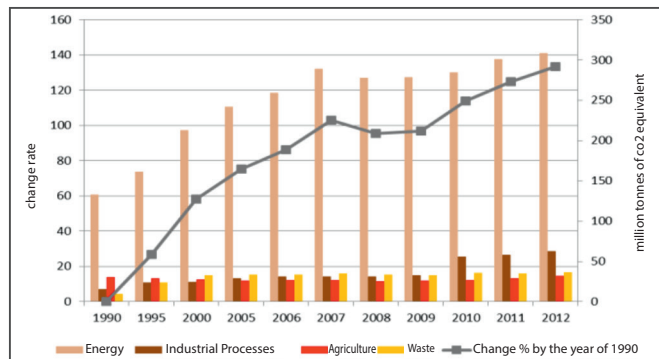
While greenhouse gas emissions created by energy sector were 133 million tons equivalent to CO₂ in 1990, it increased to 309 million tons equivalent to CO₂ in 2012. In 2012, when greenhouse gas emissions was taken into consideration as CO₂ amount, energy-based emissions constitutes the biggest share with (70,2%), and it was followed by industrial operations (14,3%), waste (8,2%) and agricultural activities (7,3%) respectively ^[5].

The Climate Change Action Plan (CCAP) was implemented in 2011 in order to limit the greenhouse gas emission and adapt to climate changes. The internet based CCAP monitoring system which enables to follow the accrual situations of 541 movements in CCAP has been used actively since 2013.

TOTAL GREENHOUSE GAS EMISSIONS BY SECTORS

CO₂ rate equivalent (million ton)

YEARS	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
Energy	133	162	213	242	259	289	278	279	285	301	309
Industrial Process	15	24	24	29	31	31	32	33	56	59	63
Agriculture	30	29	28	26	27	27	25	26	27	29	32
Waste	10	24	33	33	34	35	33	33	36	35	36
Comparison with 1990(%)	-	27	58	76	86	103	96	97	114	125	133



Source: TURKSTAT

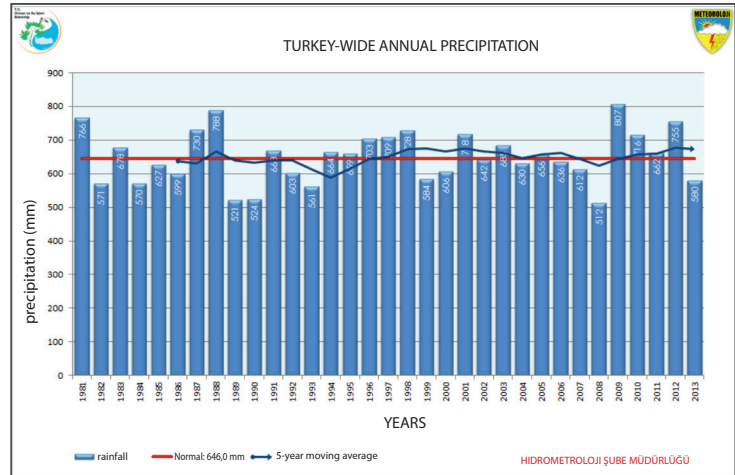
3.3- Precipitation

Average annual rainfall in Turkey is calculated as 646 mm. In 2013, 564, 1 mm rainfall was recorded between 01 January and 31 December.

When annual amount of rainfall is observed, 2006 and 2007 was the dry years and 2008 was the driest one. Since 2009 it is seen that Turkey has experienced a much rainier period but in 2013 there was a decrease of 13% in the normal rainfall and the decrease was 24% in 2012.

According to regional average, an 11% increase was seen only in Aegean Region with around 70 mm. Central Anatolia Region had the least rain with 27% (about 100 mm).

When the global rainfall is considered, the average global rainfall in 2013 was almost the same as the amount observed between 1961 and 1990 (1033 mm). Besides this, rainfall in some regions has shown significant differences^[8].



Source: Ministry of Forestry and Water Affairs, General Directorate of Meteorology

3.4- Temperature

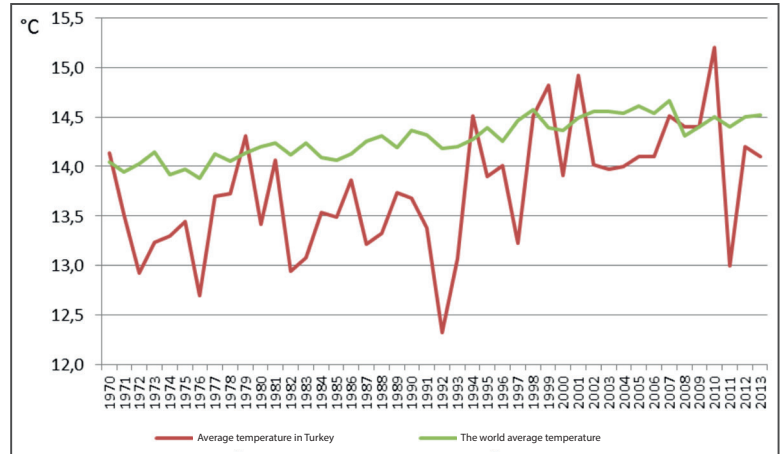
In 2013, the global average temperature of the oceans and the land was 14.52°C, which is higher than the average temperature of 20th century, 13.9°C. The mean temperature of Turkey in 2013 was 14.1°C, which is 0.6°C higher than the average temperature between 1981 and 2010 (13.5°C).

In 2013, the lowest temperature was recorded as -31,5 in Erzurum in January, the highest temperature was recorded as 44,6°C in Cizre in July ^[9].

When the period 1940 and 2013 was taken into consideration, the highest annual mean temperature was 15.2°C in 2010, and the lowest mean annual temperature was 12.3°C in 1992 ^[10].

There have been positive temperature anomalies in the average temperature in Turkey since 1994 (except for 1997 and 2011) ^[9].

ANNUAL AVERAGE TEMPERATURE CHANGE IN THE WORLD AND TURKEY



Source: Ministry of Forestry and Water Affairs, General Directorate of Meteorology

3.5- Sea Water Temperature

The real cause of atmospheric happenings and air masses are oceans and seas. The best indicator of climate change is the warming and cooling of the sea water. These temperature changes in sea water affect not only many species by altering their ecological environments, but also the lives of a large proportion of the population that benefit from the seas economically.

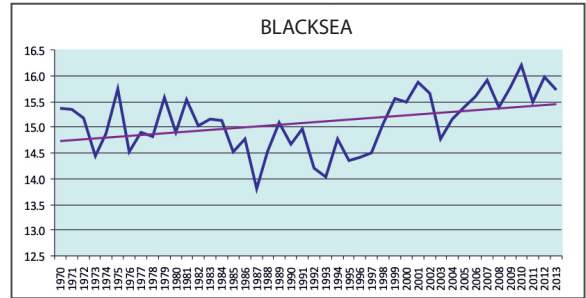
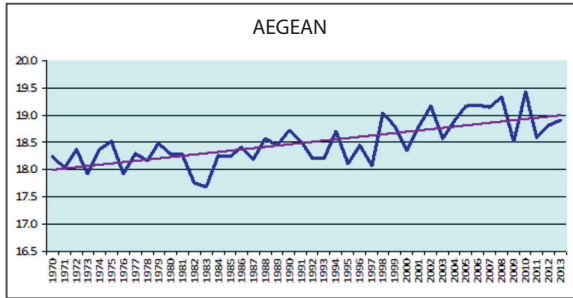
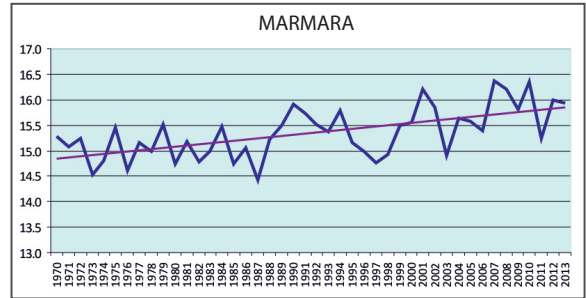
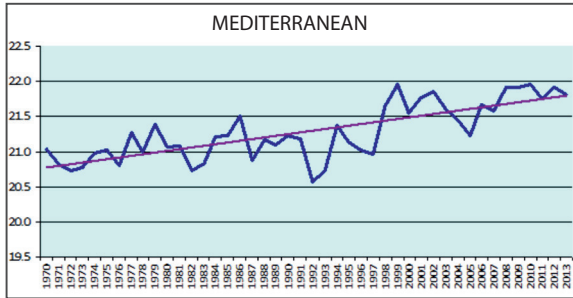
According to the data obtained by Turkish Meteorological General Directorate, although there has been a slight increase in average sea water temperature, it is not true to mention about a global increase in sea water temperature at this stage. In order to evaluate this course, Turkish Meteorological General Directorate completed their study to measure sea water temperatures representing all our coasts by the end of 2013. As a result a high resolution data source can be obtained about our seas.

In 2013, average sea water temperature was 21,8°C in the Middeterrian sea, 18,9°C in the Aegean sea, 15,9°C in Marmara sea and 15,7°C in the Black sea.

The graph below shows the average sea water temperatures measured in (°C) between 1970 and 2013.

3- AIR - ATMOSPHERE- CLIMATE

SEA WATER TEMPERATURES THROUGH THE YEARS 1970-2013 (°C)



Source: Ministry of Forestry and Water Affairs, General Directorate of Meteorology

4.1- Air Pollutants Emission

EMEP (Long-Term Financing of Collaboration Program for Monitoring and Evaluation Programme for Long-Range Transportation of Air Pollutants) protocol established after the Convention on Long-Range Transboundary Air Pollution (CLRTAP) run by United Nations Economic Commission for Europe (UNECE) is carried out in our country by the General Directorate of Environmental Management.

The first report was performed in 2010, and annual improvements were put into practice. Emission calculations were done according to the emission factors obtained from internationally accepted guidance documents.

Pollutants based on reporting; are worked on as NO_x (nitrogen oxides), SO₂ (sulphur dioxide), NMVOC (non-methane volatile organic compounds), NH₃ (ammonia), PM₁₀ (particulate matter), CO (carbon monoxide).

A general increase was seen when the state of emissions between 1990 and 2012 was evaluated. According to 1990 data, the highest increase was observed in NO_x emissions with (93%). Other increases in emissions are stated as follows: CO (64%), SO₂ (57%), NMVOC (25%), PM₁₀ (15%) and NH₃ (10%). When compared to the emission rates in 2011, the highest increases were seen in NH₃ (11%) and PM₁₀ (11%) emissions and it was followed by CO and NMVOC emissions, whereas there was a decrease in NO_x.

In 2012, SO₂ emissions were caused by the following; 50% power plants, 24% house heating and 18% industrial facilities. In 2012, NO_x emissions were resulted from, 34% heavy vehicles and 25% power plants. In 2012, NMVOC emission rate were caused by the house heating with 21%. Main reasons of the NH₃ emissions are stockbreeding and synthetic fertilizers.

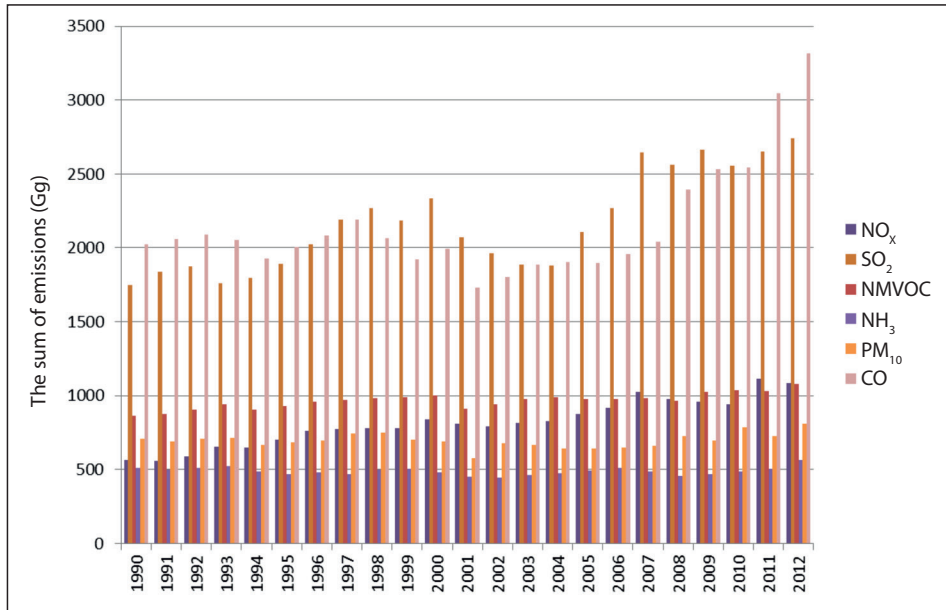
2012 Air Pollutant Emission Rates (%) Between 1990 and 2011

(%);	SO ₂	NO _x	NMVOC	NH ₃	CO	PM ₁₀
Tendency (1990-2012)	57	93	25	10	64	15
Tendency (2011-2012)	3	-3	4	11	9	11

Source: Ministry of Environment and Urbanisation, General Directorate for Environmental Management

4- AIR QUALITY

1990-2012 NATIONAL EMISSION TOTALS OF AIR POLLUTANTS



Source: Ministry of Environment and the Urbanisation, General Directorate of Environmental Management

4.2- Air Pollutants

The data, obtained from Air Quality Measurement Stations established in 81 provinces within the scope of "National Air Quality Monitoring Network" are continuously monitored. The data collected from these stations are permanently uploaded to www.havaizleme.gov.tr for the public access.

In 2013, the air quality monitoring stations with the highest PM_{10} averages were: Ankara (Sihhiye), Batman, Afyonkarahisar, Siirt, Bolu, Kahramanmaraş (Elbistan), Manisa, Sakarya, Ankara (Demetevler) and Denizli 1. The stations with the highest SO_2 averages were: Afyonkarahisar, İzmir (Şirinyer), Muğla 1, İzmir (Çiğli), Kahramanmaraş (Elbistan), Karabük, Edirne, Batman, Yozgat and Karaman.

90% or above of the validated hourly average data obtained from Air Quality Measurement Stations was taken as a base and according to this the average of 2013 was evaluated. According to the information gathered and 'By-law on Air Quality Investigation and Management', it is observed that the Long-Term Limit Values (UVS) for PM_{10} , which is $60 \mu\text{g}/\text{m}^3$ for the year 2013, exceeded in 43 stations. In the SO_2 parameters, there were no station exceeding the Long-Term Limit Values (UVS) of $150 \mu\text{g}/\text{m}^3$ [11].

AIR QUALITY MONITORING STATIONS WITH THE HIGHEST PM_{10} and SO_2 AVERAGES IN 2013

Station	PM_{10} ($\mu\text{g}/\text{m}^3$)**
ANKARA (SİHİHYE)	103
BATMAN	97
AFYONKARAHİSAR	94
SIİRT	93
BOLU	88
KAHRAMANMARAŞ (ELBİSTAN)	84
MANİSA	83
SAKARYA	83
ANKARA (DEMETEVLER)	82
DENİZLİ 1	82

Station	SO_2 ($\mu\text{g}/\text{m}^3$)**
AFYONKARAHİSAR	68
İZMİR (ŞİRİNYER)	57
MUĞLA 1	46
İZMİR (ÇİĞLİ)	41
KAHRAMANMARAŞ (ELBİSTAN)	38
KARABÜK	34
EDİRNE	34
BATMAN	30
YOZGAT	26
KARAMAN	25

*Averages of PM_{10} and SO_2 are calculated based on the data from stations operating under the National Air Quality Monitoring Network.

**It has been evaluated by hourly average validated data above 90% was obtained from the stations.

Source: Ministry of Environment and the Urbanisation, General Directorate of Environmental Management, 2013, Air Quality Newsletter

4- AIR QUALITY

4.3-Number of Exceedance of Short – Term Air Quality Limit Value

In 2013, when daily (24 hr) measurements obtained from the air quality monitoring stations were analysed according to the short-term limit (STL) values, the first ten stations that exceeded the STL (100 µg/m³) of PM₁₀ averages are as follows: ; Ankara (Sihhiye), Batman, Afyonkarahisar, Ankara (Cebeci), Iğdır, Karaman, Kocaeli (Dilovası), Kahramanmaraş (Elbistan), Ankara (Kayaş) and Ankara (Demetevler) respectively.

During the same period, if SO₂ averages STL value was (250 µg/m³) it was exceeded in the stations in Şirnak, Hakkâri, Tekirdağ, Muğla 2 (Yatağan), Afyonkarahisar, Muğla 1, Trabzon 1, Denizli 1, İzmir (Güzelyalı) ve Yozgat stations [11].

In By-Law on Air Quality Assessment and Management, limits for 13 pollutants (SO₂, NO₂, PM₁₀, NO_x, Pb, Benzene, CO, Ozone, Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons) have been determined in order to protect human health and the environment.

As short-term limiting values specified in By-law on Air Quality Evaluation and Management have been gradually decreased until they reach the targeted levels, it is predicted that the number of level exceeding values will continue to increase.

AIR QUALITY MONITORING STATIONS WHERE DAILY PM₁₀ and SO₂ AVERAGES WERE OVER THE SHORT TERM LIMIT IN 2013

Stations	PM ₁₀ STLV Exceeding Value *
ANKARA (SIHHIYE)	167
BATMAN	127
AFYONKARAHISAR	115
ANKARA (CEBECI)	103
IĞDIR	102
KARAMAN	101
KOCAELI (DİLOVASI)	100
KAHRAMANMARAŞ (ELBİSTAN)	97
ANKARA (KAYAŞ)	93
ANKARA (DEMETEVLER)	92

Stations	SO ₂ STLV Exceeding Value *
ŞIRNAK	68
HAKKARI	38
TEKİRDAĞ	14
MUĞLA 2 (YATAĞAN)	13
AFYONKARAHISAR	10
MUĞLA 1	8
TRABZON 1	5
DENİZLİ 1	4
İZMİR (GÜZELYALI)	3
YOZGAT	3

*:Short Time Limit exceeding values are considered on 24 hours interval measurement that is stated on BAQAM in 2013. The data interpreted based on the limit of 100 µg/m³ of the PM₁₀ parameter and 250 µg/m³ of the SO₂ parameter.

STLV: Short Time Limit Values.

BAQEM: By-law on Air Quality Evaluation and Management published on the Official Gazette 06.06.2008 with the issued 26898

Source: Ministry of Environment and the Urbanisation, General Directorate of Environmental Management, 2013, Air Quality Newsletter

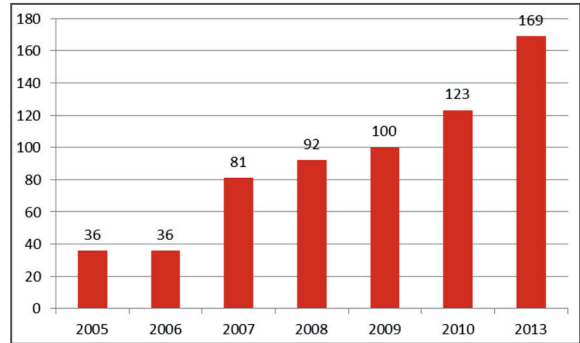
Air quality limiting values are declining every year to protect the environment and human health, thus it becomes more important to take steps to improve the air quality in the coming years.

4.4- The Number of Air Quality Monitoring Stations

In Turkey there are 169 air quality monitoring stations most of which are located in urban areas and have a feature of representing heating sources. These limited number of stations also represent the type of traffic and industrial sources. However, according to European Union norms, such stations should be established in respect to the area they represent; urban, urban environment and rural; and with respect to source types like traffic, heating and industry. Therefore, to determine the locations of the station to be founded, preliminary evaluation work has been carried out since 2011.

To determine the number of the stations to be established in EU norms, population data should be taken into consideration, which means that there should be at least 330 stations. Within this scope, the Ministry have been carrying out projects to reach the proposed number of stations by the end of 2017.

NUMBER OF AIR QUALITY MONITORING STATIONS THROUGH THE YEARS



Source: Ministry of Environment and the Urbanisation, General Directorate of EIA, Permit and Inspection, Department of Laboratory, Monitoring, and Measuring

5- WATER- WASTEWATER

5.1- Water Usage

Total water consumption indicates the use of water sources (surface and underground) to meet the requirements for drinking water, and industry and agriculture sectors. Water consumption is the indicator of the pressure on the fresh water bodies.

According to TURKSTAT data of 2012, the amount of water drawn from water sources by sectors is stated below: 4,93 billion m³ by municipalities, 1,04 billion m³ by villages, 6,40 billion m³ by thermal power stations, 1,67 billion m³ by manufacturing industry, 0,11 billion m³ by mining and 0,12 billion m³ by organized industrial zone. (Water transfers between different sectors are not included).

According to the 2012 data of 'General Directorate of State Hydraulic Works', 34 billion m³ water is used for irrigation purposes.

Based on the data of General Directorate of State Hydraulic Works about irrigation and the data of TURKSTAT about other types of water consumption, 70,4% of the water drawn was used for agricultural irrigation, 17,2% for industry, and 12,4% for domestic use.

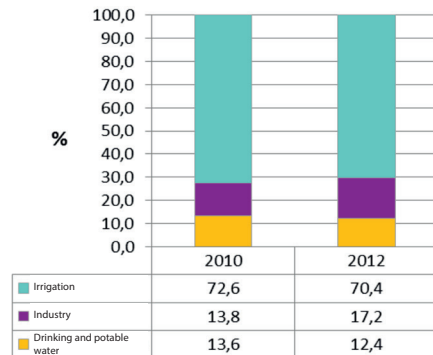
The total area which can economically irrigated is 8,5 million hectares and 5,9 million ha (69%) of this area can be irrigated by the end of 2013^[12].

Based on the 2006 data presented by United Nations Food and Agriculture Organization (FAO) and published in 2012, 69% of the water source is used for irrigation, 19% for industry and 12% for domestic use in the world. However, In Europe, 22% is used for irrigation, 57% for industry and 22% for municipal use^[13].

AMOUNT OF WATER DRAWN FROM WATER BODIES WITH REGARD TO SECTORS

(Billion m³/year)

	2008	2010	2012
Municipalities	4,56	4,79	4,93
Villages	1,22	1,01	1,04
Manufacturing Industry Activities	1,20	1,42	1,67
Thermal Power Plants	4,54	4,27	6,40
Industrial Estate	0,11	0,11	0,12
Mining Facilities	...	0,05	0,11
Irrigation	27,00	30,95	34,00
Total		42,61	48,26



Source For 'Irrigation' Values: Ministry of Forestry and Water Affairs General Directorate of State Hydraulic Works, <http://www.dsi.gov.tr/dsi-resmi-istatistikler>
Source for Values other than 'Irrigation': TURKSTAT

Note: Water transfer between sectors is not included
Since 2008, data collection has been made once in 2 years
...No Information.

5.2- Oxygen Consuming Substances in Rivers

The primary indicator of the oxygenation state in water bodies is biochemical oxygen demand (BOD) which expresses the demand of oxygen consuming oxidized organic materials for living creatures in a body of water. It is an attitude indicator which shows the level of ammonium concentrations (NH_4) and the present situation and the tendency related with BOD in rivers.

The main purpose of the "Basin Monitoring and Determining Reference Points Project" conducted by 'Ministry of Forestry and Water Affairs' is to observe 25 basin within Water Frame Directive including physico-chemical, chemical, biological and hydromorphological quality elements. In this context, as a first step of the Project, in the monitoring points established, the rivers, groundwaters, lakes and coastal transition water in Ergene, Akarçay, Gediz, Susurluk and Sakarya reservoirs were monitored within Water Frame Directive and the studies were completed in December 2013. Surface water quality measurements were done within the scope of Water Frame Directive in surface water monitoring points determined by the Ministry of Forestry and Water Affairs. When these results of the monitorings were evaluated with respect to the limit values mentioned in "Surface Water Quality Management Regulations" published in the Official Gazette N.28483 dated 30.11.2012, it is noticed that the quality of water was classified as IV quality (very polluted water) in many parts of the basin due to non-point and point source pollution.

It is considered that, high water quality which is one of the necessities of Water Frame Directive can be achieved when water sources in the basin are regularly monitored and necessary precautions are taken by bodies/institutions. The results of the project are given in the table ^[14].

WATER QUALITY CLASSES STATION NUMBERS OF AVERAGE BOD ANALYSIS DATA AT MEASUREMENT STATION POINTS IN RIVERS ACCORDING TO BY-LAW OF SURFACE WATER QUALITY MANAGEMENT

BASIN	Total Number of Stations	Number of Stations By Quality Classes			
		I	II	III	IV
ERGENE BASIN	18		4	5	9
AKARÇAY BASIN	20	6	4	7	3
GEDİZ BASIN	17	6	5	3	3
SAKARYA BASIN	29	13	10	4	2
SUSURLUK BASIN	32	15	8	5	4

Source: Ministry of Forestry and Water Affairs, General Directorate of Water Management
 NOTE: By-law of Surface Water Quality Management Annex-5 Table 5
 Class I – High Quality Water, Class II – Slightly Polluted Water, Class III – Polluted Water, Class IV – Very Polluted Water

According to the table, Ergene Basin stands out as the most polluted reservoir.

5- WATER- WASTEWATER

5.3-Nutrients in Fresh Water Sources

The indicator is used to show the current nutrient intensity and the time wise trends in geographic alteration.

Widespread nitrogen and phosphorus entry from the urban areas, the industrial and agricultural areas to the water sources can cause eutrophication, which can lead to ecological changes resulting in extinction of plant and animal species. Consequently, it affects the consumption of water by people and for other purposes negatively. The results gathered within the scope of 'Basin Monitoring and the Determination of Reference Points Project' are shown in the table below.

AVERAGE NITROGEN AMMONIUM MEASURING DATA OF THE RIVER STATION POINTS CLASSIFICATION ACCORDING TO BY-LAW OF SURFACE WATER QUALITY MANAGEMENT ANNEX-5 TABLE-5

Basin	Total Number Of Stations	Stations According to Quality Classes			
		I	II	III	IV
ERGENE BASIN	18	4	4	2	8
AKARÇAY BASIN	20	9	6	2	3
GEDİZ BASIN	17	6	3	4	4
SAKARYA BASIN	29	14	7	3	5
SUSURLUK BASIN	32	22	4	2	4

Source: Ministry of Forestry and Water Affairs, General Directorate of Water Management
 NOTE: By-Law of Surface Water Quality Management Appendix-5 Table 5
 Class I – High Quality Water, Class II – Slightly Polluted Water, Class III – Polluted Water,
 Class IV – Very Polluted Water

TOTAL PHOSPHORE ANALYSIS DATA OF THE LAKES ACCORDING TO BY-LAW OF SURFACE WATER QUALITY MANAGEMENT ANNEX-5 TABLE-5

Basin	Lake	Class	
AKARÇAY BASIN	Eber Lake/ Afyonkarahisar	III	
	Ilgın Lake/Konya	II	
	Porsuk Dam Lake/Kütahya	II	
	Musaözü Dam/Kütahya	I	
	Sarıyer Dam/Ankara	IV	
	Mogan Dam/ Ankara	II	
	Eymir Dam/ Ankara	II	
	2nd Çubuk Dam /Ankara	I	
	Kurtbağazı Dam/ Ankara	II	
	Akyar Dam/ Ankara	II	
	SAKARYA BASIN	Eyrekaya Dam/ Ankara	II
		Çamlidere Dam/ Ankara	I
		Aşağı Kuzfındık Dam/Eskişehir	I
		Kızıldamalar Dam/Bilecik	II
Boğazköy Dam/Bursa		II	
Sapanca Lake/Sakarya		I	
Taşkısı Lake/ Sakarya		II	
Poyrazlı / Sakarya		II	
Akgöl/ Sakarya		III	
SUSURLUK BASIN		Uluabat/Bursa	II
	Manyas/Balıkesir	II	
	Çaygören Lake/Balıkesir	II	

Source: Ministry of Forestry and Water Affairs, General Directorate of Water Management
 NOTE: By-law of Surface Water Quality Management Annex-5 Table 5
 Class I – High Quality Water, Class II – Slightly Polluted Water, Class III – Polluted Water,
 Class IV – Very Polluted Water

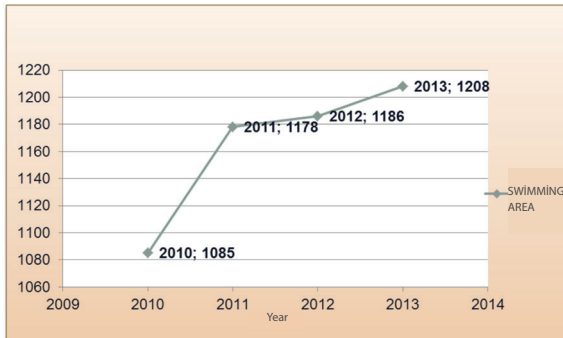
In terms of river water quality, Ergene Basin stands out as the most polluted basin. The pollution in Sarıyer Dam (Ankara), Eber Lake (Afyon Karahisar) and Akgöl Lake (Sakarya) is remarkable.

5.4- Quality of Swimming Water

Every year in swimming season, bacteriologic monitoring activities are performed in sea and lake water in 34 cities with a coast to sea or lake by Ministry of Health Public Health Institution of Turkey to protect individual and social health.

Considering the last four years it can be seen that the number of monitored swimming areas has been increasing.

NUMBER OF SWIMMING AREAS THROUGH THE YEARS



Source: Ministry of Health, Turkish Public Health Institution

According to the calendar determined by the Public Health directorates, bacteriologic samples are taken and analyzed from swimming areas once every fortnight. The swimming areas which do not meet the mandatory requirements are straightforward informed to Environmental Urbanisation Provincial Directorates so that the source of pollution is identified and pollution is prevented. Moreover, the related municipality is warned and the swimming area is closed to public use.

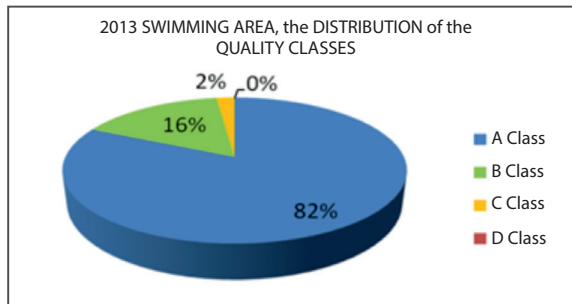
Water quality monitoring activities were carried out in a total of 1208 swimming area in 34 provinces in 2013.

Class A and Class B swimming areas are considered as the areas that meet the mandatory requirements and are suitable for swimming. Class C and Class D swimming areas are the ones which do not meet the necessary requirements.

5- WATER- WASTEWATER

2013 QUALITY ANALYSIS RESULTS OF SWIMMING WATER

YEAR	THE NUMBER OF MONITORED PROVINCES	TOTAL NUMBER OF SWIMMING AREAS	MONITORED PARAMETERS AND TOTAL ANALYSIS VALUES			SWIMMING AREAS THAT MEETS THE MANDATORY REQUIREMENTS		SWIMMING AREAS THAT DOES NOT MEET THE MANDATORY REQUIREMENTS	
			TOTAL COLIFORM	FECAL COLIFORM	FECAL STREPTOCOCCUS	CLASS A	CLASS B	CLASS C	CLASS D
2013	34	1.208	12.790	12.790	12.790	963	189	24	0

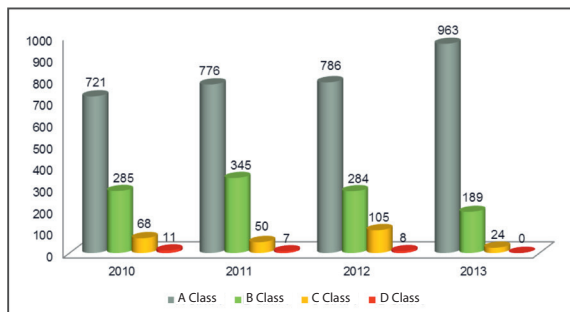


Source: Ministry Of Health, Public Health Institution of Turkey

Note: According to By-law on Swimming Water Quality following qualities represents Class A Very Good/Excellent, Class B good Quality, Class C Bad Quality and Class D Very Bad Quality/Needs to be Banned.

As a result of the evaluations, 82% of the 1208 of swimming areas is categorized as Class A, 16% Class B and 2% Class C.

COMPARING SWIMMING AREAS WITH REGARDS TO QUALITY CLASSES 2010-2013



Source: Ministry Of Health, Public Health Institution of Turkey

Comparing the results obtained throughout years, it is seen that water quality is getting better.

Analysis results about swimming water analyzes are automatically controlled and evaluated on the geographic information system by the Ministry of Health^[5]

5.5- Drinking and Potable Water Resources of Municipalities

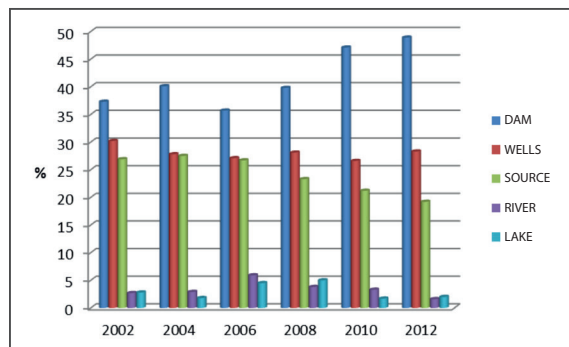
In 2012, the ratio of the population of municipalities served drinking water to Turkey's total population was 83% while its ratio to the total municipality population was 98%.

While 4.78 billion m³ of water was drawn for municipal drinking and potable water in order to be distributed in 2010, this number was increased to 4.94 billion m³ in 2012. In 2012, 48,9% percent of the water came from dams, 28,3% from wells, 19,2% from springs, 2% from lakes, ponds, and seas and 1,6% from rivers.

According to 2012 data, the ratio of the population of the municipalities served by drinking water treatment plants was calculated as 47% in the population of Turkey and 56% in the population of municipalities. 2, 73 billion m³ of the 4, 94 billion m³ of drinking and potable water, was treated in the water treatment plants. 95, 3% of the purified water was treated by conventional, 3, 1% by advanced and 1, 6% by psychical treatment methods. Through the drinkable and potable water networks 2,80 billion m³ drinkable and potable water was distributed to 22, 7 million subscribers ^[16].

Distribution by sources of water drawn for drinking and potable water network of municipality

YEARS	DAM	WELL	SOURCE	STREAM	POND
2002	37,3	30,2	26,9	2,7	2,8
2004	40,1	27,8	27,5	2,9	1,8
2006	35,7	27,1	26,7	5,9	4,5
2008	39,8	28,1	23,3	3,8	5,0
2010	47,1	26,6	21,2	3,3	1,7(*)
2012	48,9	28,3	19,2	1,6	2,0(*)



Source: TURKSTAT

Note: Since 2004 data has been collected once in two years.

(*) 2010 and 2012 Sea Water is included in the value of "Lake-Pond".

5- WATER- WASTEWATER

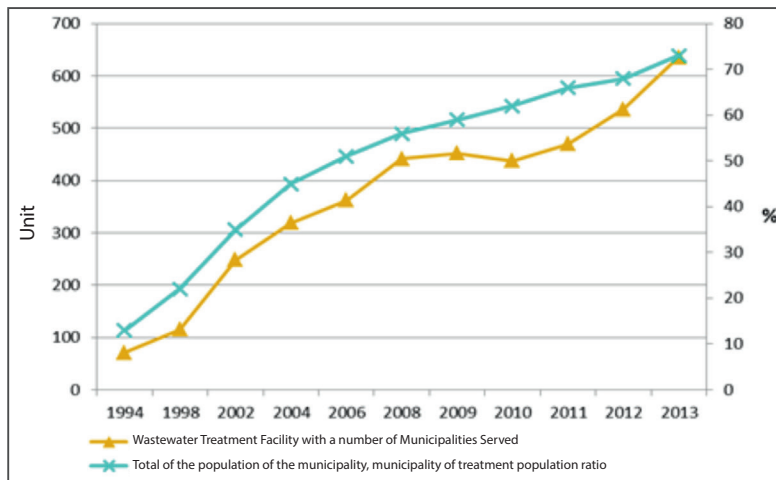
5.6- Municipalities Served by Wastewater Treatment Unit

Indicator is crucial to monitor the success of the policies that have been applied to control and reduce the pollution caused by the domestic wastewaters.

While In 1994, the total number of the municipalities served with wastewater treatment plants was 71, in 2013 this number increased more than eight times and reached to 636. The ratio of municipality population served by wastewater treatment facilities to the total population of city councils has reached 73% and is planned to reach at least 85% by the end of 2017.

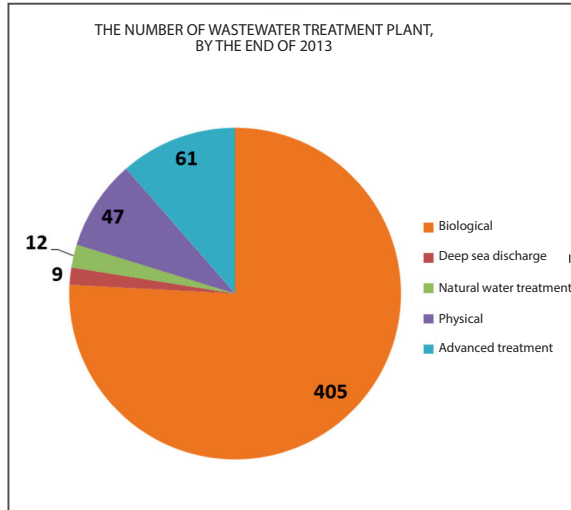
The cities that have a population of 100.000 and more are given priority to install wastewater treatment plants. Based on the 2012 census, cities that have more than 100.000 population and are very likely to create a waste amount of wastewater release benefited from the wastewater treatment plants by 90,88% ^[6].

YEARS	1994	1998	2002	2004	2006	2008	2009	2010	2011	2012	2013
Number of Municipalities Served by Wastewater Treatment Facilities	71	115	248	319	362	442	452	438	470	536	636
Ratio of municipalities served by wastewater treatment plants to the total number of municipalities (%)	13	22	35	45	51	56	59	62	66	68	73



Source: 2009, 2011, 2012 data, General Directorate for Environmental Management, data about other years TURKSTAT. Note: In 2010, due to administrative district changes, the number of municipalities served with wastewater Treatment plants decreased.

The number of the wastewater treatment plants which was 145 in 2002, reached to 534 in 2013.



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

Considering the situation in Europe; in accordance with the 2009 data, approximately 80% of the North and South European population were connected to wastewater treatment plants. In the middle European countries, this amount was much higher that is it exceeded 90%.^[17].

According to TURKSTAT data, improved treatment methods were applied to 38.3% of the wastewater, biological methods to 32, 9%, physical methods to 28.5% and natural treatment methods to 0.3% of the wastewater in 2012. ^[18].

With reference to the data presented by TURKSTAT, the population rate connected to the least secondary (biological) wastewater treatment facility was 37.58% in 2010. [19]. With regard to the sustainable development data of EUROSTAT, this rate was 99.5% in Great Britain, 99.4% in Netherlands, 97.3% in Switzerland, 95.3% in Germany, 93% in Spain, 83% in Finland and 64.5% in Poland in 2010. ^[20].

6- WASTE

6.1- Municipal Wastes and Disposal

In Turkey in the municipalities which were given waste collection service, a total of 25.85 million tons of waste was collected in 2012. Of this amount 14.62 million tons were collected in summer and 11.23 million tons in winter.

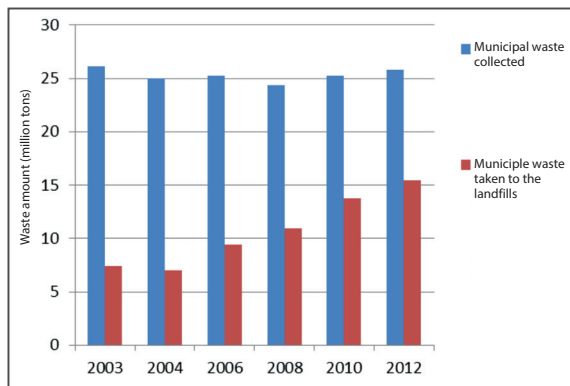
Regarding the amount of waste collected by municipalities by means of disposal methods, the percentage of the waste sent to landfill was 28,5% in the municipalities employed to collect and transport waste in 2003. Whereas in 2012 this rate climbed up and reached to 59,9%. 59,9% of 25.85 millions tons of waste collected by these municipalities were taken to landfills, 37,8% to dumpsites, 0,6% to compost plants and 1,7% was disposed by different techniques.

According to TURKSTAT survey results, the amount of the municipal waste produced daily by capita was calculated 1,14 kg in summer, 1,09kg in winter and an average of 1,12 kg annually.

According to EUROSTAT 2012 data, the average of annual urban waste produced per capita by EU-27 countries was 492 kg while that produced in Turkey was 407kg based on TURKSTAT data.

MUNICIPAL WASTE DISPOSAL THROUGHOUT THE YEARS

YEARS	2003	2004	2006	2008	2010	2012
Amount of Collected household waste (Million Tons)	26,11	25,01	25,28	24,36	25,28	25,85
Amount of household waste sent to the landfills (Million tons)	7,43	7,00	9,43	10,95	13,75	15,48
Rate of collected household waste sent to the Landfills (%)	28,5	28,0	37,3	45,0	54,4	59,9



Source: TURKSTAT

6.2- Landfills of Wastes

There were 15 landfills in urban areas in 2003 and this number rose to 38 in 2008, 59 in 2011, and 69 in 2012.

Moreover there are 29 landfills in phase of construction and construction tender, and 21 in the stage of planning- project.

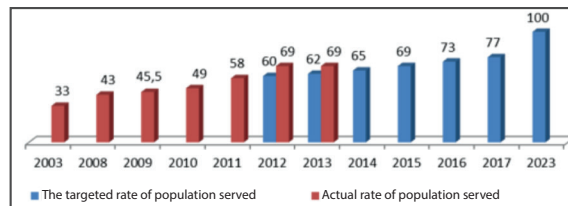
LANDFILL FACILITIES, MUNICIPALITIES AND THE POPULATION THROUGH THE YEARS

YEARS	2003	2008	2009	2010	2011	2012	2013
Number of Landfills	15	38	41	46	59	69	69
Number of Municipalities that are providing Landfill Service	150	450	581	616	756	903	903
Population getting benefited from Landfill Service (million)	23	29	32	36,5	41	44,5	44,5

Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

As of 2013, the ratio of the population benefiting from the landfill facilities to the total population of municipalities was 69%. It is aimed to increase this rate to 77% by 2017. In addition, it is also planned to renovate all the current landfill facilities and to increase the rate of the population benefiting from those services to 100% by the end of 2023.

THE RATE OF POPULATION SERVED BY LANDFILL PLANTS (%)



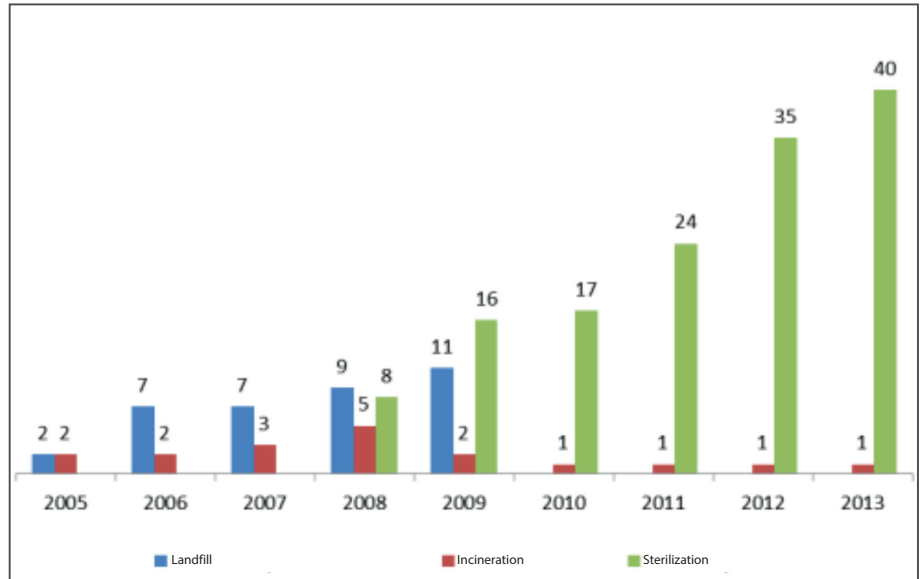
Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

6- WASTE

6.3-Medical Wastes

Since the establishment of sterilization facilities in 2008, medical wastes have been successfully made non-hazardous. By the end of 2013, 40 sterilization facilities were served to 79 provinces. In addition, there is only 1 incineration plant where medical waste are also disposed.

THE DIVERSITY OF MEDICAL WASTE DISPOSAL FACILITIES THROUGHOUT THE YEARS



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

Until 2011 the data of “Hospital Waste Composition Survey (TURKSTAT, 1995)” and the Ministry of Health data were used to determine the amount of medical waste in our country. As the result of the study, done taking bed occupancy rates in provinces into account, approximately 100 thousand tons of medical waste arising from institutions and health care organizations providing inpatient treatment and outpatient care were calculated in 2010.

Since 2011, sterilization facilities have actively been operating in the country in accordance with Circular No.2010/17. Therefore, the amount of medical waste has been obtained from Provincial Directorates of Environment and Urbanisation and sterilization facilities. Through these data, the amount of medical waste originated from all health institutions was approximately 84,000 tons according to data in 2012.

MEDICAL WASTE THROUGH THE YEARS

Years	2006	2007	2008	2009	2010	2011	2012
Medical Waste (Thousand tons)	83	87	92	97	100	83	84

Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

According to “Waste Statistics of the Medical Institutions prepared by the TURKSTAT”, it comprises hospitals producing a huge amount of medical waste; such as university hospitals, general purpose hospitals, military hospitals and maternity hospitals and their Clinics mentioned only in the framework of the appendix-1 of the By-Law of Medical Waste Control. Therefore, till the end of 2012, 68,929 tons waste was produced per year by 1449 Healthcare Organizations.

MEDICAL WASTE AMOUNTS PRODUCED BY THE HEALTH INSTITUTIONS THAT ARE ONLY LISTED IN THE APPENDIX-1 OF THE BY-LAW.

Years	2008	2009	2010	2012
Amount of Medical Waste (Thousand Tons)	50	57	60	69

Source: TURKSTAT

6- WASTE

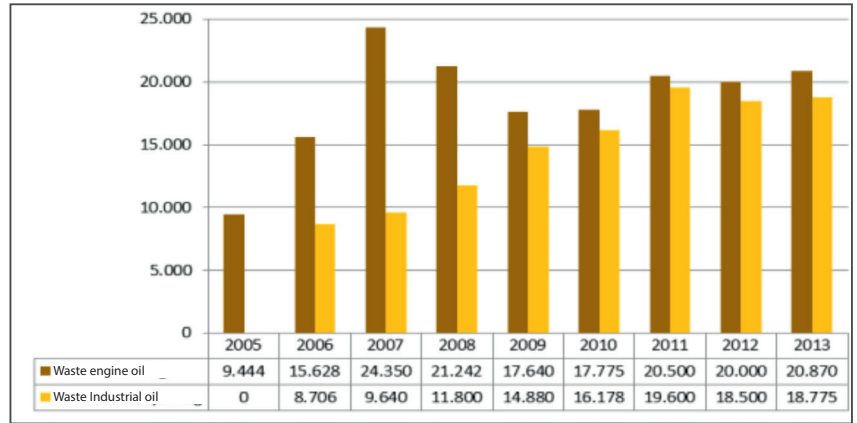
6.4- Waste Oils

The amount of waste oil collected in 2013 was approximately 39,645 ton including 20,870 tons engine oil and 18,775 tons industrial oil.

37 facilities have Temporary Operation Document and Environmental License about waste oil recovery. [In these facilities is produced mineral oil which have TSI (Turkish Standard Institution) license. Additionally, license from EMRA (Energy Market Regulatory Authority) is required to sell these products.]

The foundation of refinery facilities that have high technology on recovery of waste oil and can produce base oil from waste oils has been speeded up.

WASTE OIL RE-COLLECTING AMOUNTS THROUGH THE YEARS (ton)



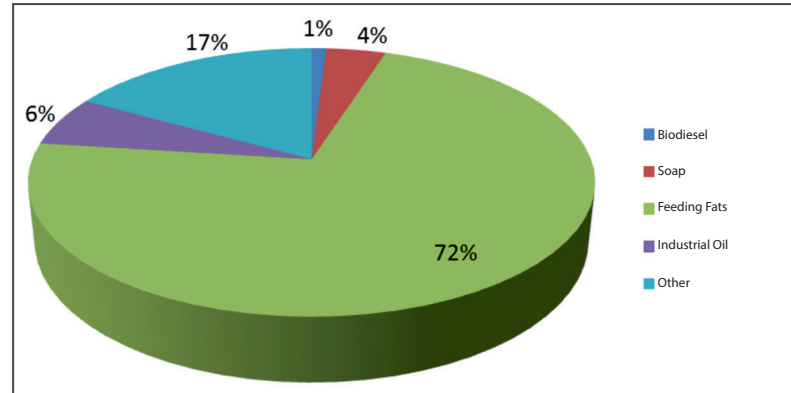
Source: General Directorate of Environmental Management, 2013

6.5- Vegetable Waste Oils

Due to their ecotoxicity properties, vegetable waste oils are the wastes to be managed in harmony with the environment. Recovering of vegetable waste oils are carried out by the recovery facilities with environmental license given by the Ministry of Environment and Urbanisation. Apart from used frying oil, vegetable waste oils are mainly used to manufacture soap and magner oil. As seen from the graph, 4% of the recovered vegetable waste oils was used to manufacture soap while 72% was used to manufacture magner.

Used frying oils is prohibited in the production of soap in accordance with the legislation of the Ministry of Health, and in the same way, this oil is not allowed to be used in the production of manger oil related to the law of Ministry of Food, Agriculture and Livestock. However, used frying oils are more suitable for the production of industrial oil and acid oils.

DIVERSITY OF RECOVERING GOODS (%)



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

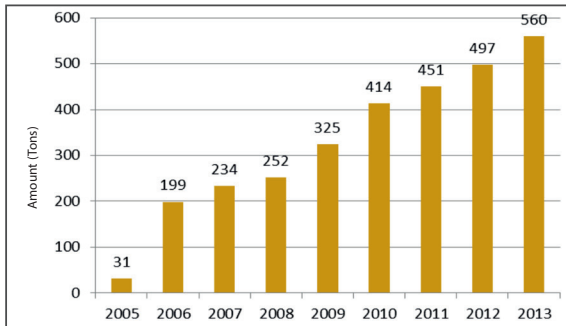
6- WASTE

6.6- Waste Batteries and Accumulators

Owing to their high economic return and the risks they have on the human and environmental health, waste batteries and the accumulators should be collected apart from other wastes.

Waste batteries are sorted according to their types in two battery sorting facilities throughout Turkey. The batteries that are not possible to recycle are destroyed in the final storage plant. The amount of collected waste battery rapidly increased throughout the years. In 2013, 560 tons of wasted battery was collected, whereas this amount was 31 tons in 2005.

COLLECTED WASTE BATTERY (tons)

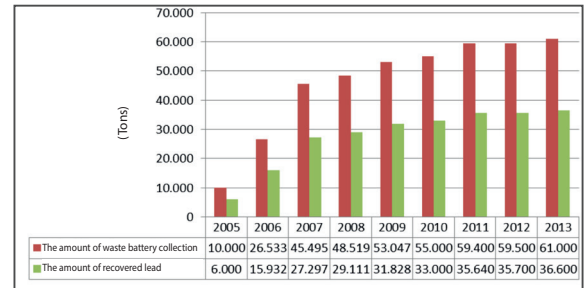


Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

Due to the refundable responsibility; waste accumulators are regularly collected by accumulator producers, temporary waste accumulator storage facilities and waste accumulator recovery facilities. At the end of 2013, the number of environmental licensed waste accumulator recovery facilities reached up to 15.

Every year the amount of the collected waste accumulator is increasing continuously. In 2013, 36.600 tons of lead were recovered from 61,000 tons of waste accumulator collected.

AMOUNT OF WASTE ACCUMULATORS COLLECTED AND LEAD RECOVERED (ton)



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

6.7- Packaging Wastes

30% by weight, and 50% by volume of all waste constitutes packaging waste.

In accordance with the polluter-pays principle of By-Law on Packaging Waste Control; the responsibility of meeting the costs of collection of packaging waste is given to the businesses that release their products with packaging.

Keep a record of economic enterprises to meet the costs of separate collection of packaging waste at source is of great importance

While the number of companies was 350 in 2003, this figure reached to 23,000 at the end of 2013.

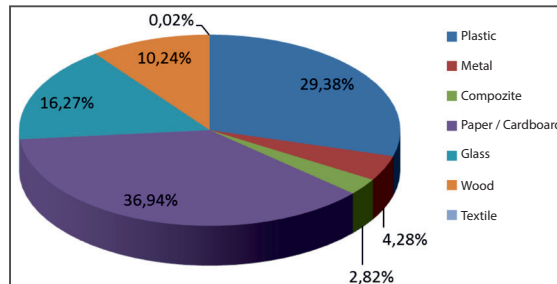
From 2006 to 2011, regarding recovering rates of packaging waste types, especially paper and carton recycling rates were quite high.

STATISTICAL RESULTS OF THE PACKAGING WASTE IN 2011

Type Of Package	Produced Packaging Amount (ton)	(ton)	Aimed Recycling Rate (%)	Amount that Supposed to be Recycled (ton)	Recycled Amount (ton)	Achieved Recycling Amount (%)
PLASTIC	1.223.783	706.082	38	268.311	307.549	44
METAL	246.861	137.764	38	52.350	74.669	54
COMPOSITE	91.001	68.756	38	26.127	70.715	103
CARDBOARD	2.389.201	996.076	38	378.508	1.573.511	158
GLASS	477.559	601.962	38	228.745	198.532	33
TOTAL	4.428.408	2.510.642	38	954.043	2.224.977	88

Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

THE AMOUNT OF PACKAGING MATERIALS INTRODUCED TO THE MARKET IN 2012

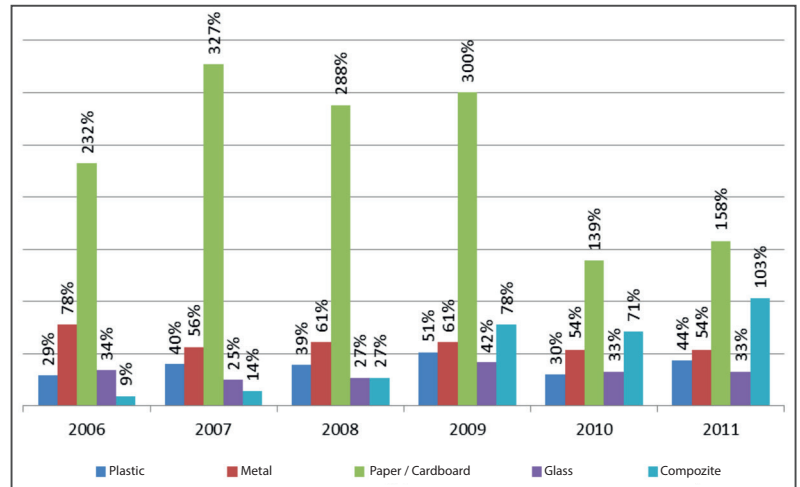


Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

6- WASTE

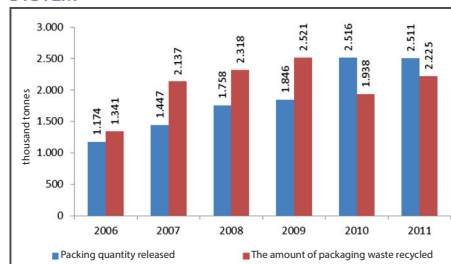
The data used on the rates of the recovered packaging waste on the market was obtained from facilities registered in the packaging electronic software databases. Since the number of recycling companies registered in the system is very low, the recycling rate appears to be higher than it is supposed to be. There is still an ongoing work to complete the registrations of the unregistered institutions to the database. Considering the 2011 packaging and packaging waste statistical results, it is seen that the rate of recycling was much higher than the targeted amount except for glass

Recycling rates of the packaging product introduced to the market



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

RECOVERED AMOUNT OF PACKAGING WASTE THROUGH THE PACKAGING WASTE DECLARATION SYSTEM

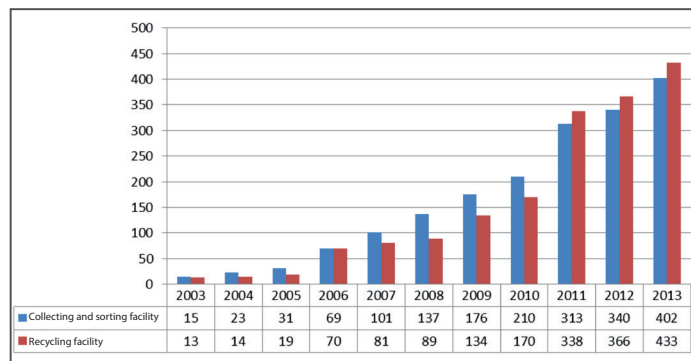


Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

As of 2013, packaging waste management plan belonging to 455 Municipalities in total, were analyzed and approved by the Ministry.

At the end of the 2013, number of licenced facilities reached 835 while it was only 28 in 2003. There were 402 licensed collecting and sorting facilities and 433 licensed recycling facilities serving In 2013.

NUMBER OF AUTHORIZED FACILITIES BETWEEN 2003 AND 2014



Source: Ministry of Environment and the Urbanisation, General Directorate for Environmental Management

6- WASTE

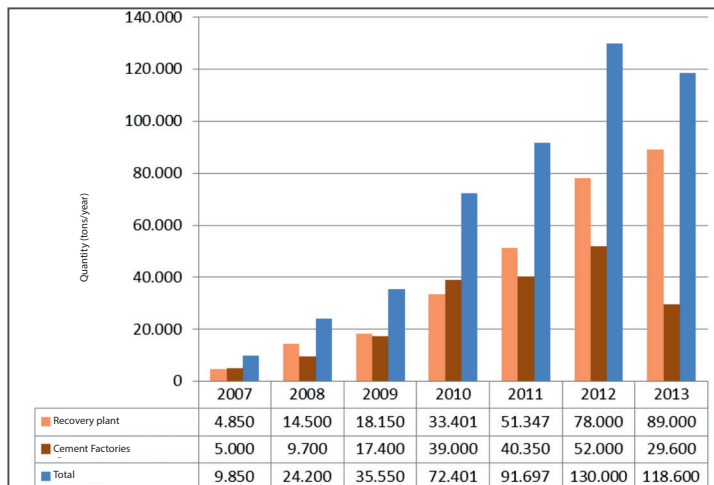
6.8- End of Life Tires

The old tires removed from the vehicles as they have completed their life spans are defined as end of life tires. These tires are granulated by recovery process and used as filling material, pavement stones, roofing and in playground zones or similar areas. Moreover, they are also used as additional fuel in cement plants for the purpose of energy recovery.

Establishment a collecting and transportation system, preparation of management plan, import, export and transit pass of tires applications were carried out for the recovery or final disposal of end of life tires.

In 2013, 89,000 tons of end of life tires were utilized in recovery facilities.. In addition to this, 29,600 tons of end of life tires were used as additional fuel in the cement plants.

AMOUNT OF END OF LIFE TIRES USED IN BOTH RECOVERING FACILITIES AND THE CEMENT PLANTS



Source: Ministry of Environment and the Urbanisation, General Directorate for Environmental Management

6.9- End of Life Vehicles

In 2013, 17.939.447 vehicles were in the traffic. However, some of them are not permitted to be in the traffic due to various reasons, and some of them were scraps.

M1 (motor vehicles with maximum Capacity of 8 persons excluding the driver, and for passenger transportation only) and N1 (with a maximum weight of 3500kg and designed to carry load) categorized under By-Law on Controlling End of Life Vehicles are scrapped.

According to 2013 data, the records of approximately 14% of 223,429 vehicles (30,254 vehicles) within the M1 and N1 categories were deleted by the Turkish National Police and considered as scraps.

YEARS	2006	2007	2008	2009	2010	2011	2012	2013
a. Total number of Motor Vehicles in Traffic	12.227.393	13.022.945	13.765.395	14.316.700	15.095.603	16.089.528	17.033.413	17.939.447
b. Number of Motor Vehicles whose Registration was Cancelled	68.177	66.840	87.230	163.785	151.700	198.801	125.407	223.429
c. Rate of Registration-Cancelled Motor Vehicle to Total number of Motor Vehicle (%) (bx100/a)	0,56%	0,51%	0,63%	1,14%	1,00%	1,24%	0,74%	1,25%
d. Total number of Vehicle Amount Junked by Security General Directorate	29.817	39.515	50.231	78.487	65.502	113.913	73.567	158.879
e. Rate of Scrap Vehicles to Registration-Cancelled Vehicles (%) (dx100/b)	44%	59%	58%	48%	43%	57%	59%	71,11%
f. Number of End of Life Vehicles which are scrapped by Turkish National Police (vehicles in M1 and N1 category)	11.826	13.564	20.170	30.672	27.687	41.848	19.919	30.254
g. Rate of End of Life Vehicles which are scrapped by Turkish National Police (vehicles in M1 and N1 category) to Vehicles whose Registration was Canceled (%) (fx100/b)	17%	20%	23%	19%	18%	21%	16%	14%

Source: The Ministry of Interior, Security General Directorate

6.10- Waste Electrical and Electronic Equipment (WEEE)

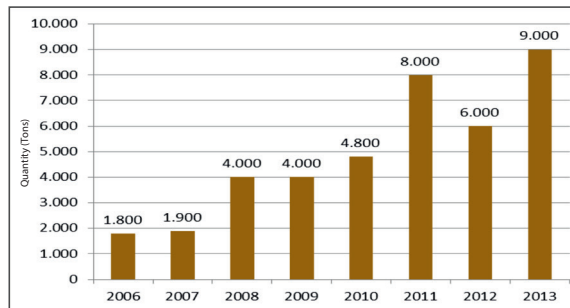
Just like the whole world, in Turkey the consumption patterns are changing rapidly due to advancing technology. Therefore, new waste types have been ensued. One of them is the waste of electrical and electronic equipment.

By the Ministry of Environment and Urbanisation, principles were determined for recovery of electrical and electronic equipment such as computers, monitors, televisions, refrigerators, washing machines and mobile phones consisting harmful substances for human health and environment; to institutions with an environmental license in accordance with certain standards and also the equipment that cannot be recovered should be disposed in an appropriate way.

The collection, processing, recovery and disposal of waste electrical and electronic equipment is carried out in the responsibility of the producers.

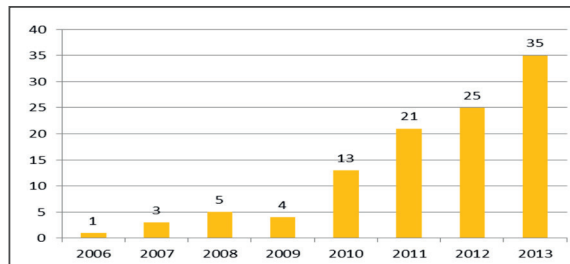
In 2013, 9,000 tons of WEEE (Waste Electrical and Electronic Equipment) was collected. In 2013, the number of the WEEE treatment bodies reached to 35.

Amount of Waste Electrical and Electronic Equipment Collected



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

Number of WEEE Treatment Facilities



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

6.11- Mining Wastes

Statistical survey about water, wastewater and waste related to mining institutions in 2012, carried out by TURKSTAT gave information to General Directorate of Mining Affairs about the production in 2011 and about the mining institutions demanding new license for 2012. Only the facilities which made enrichment were excluded.

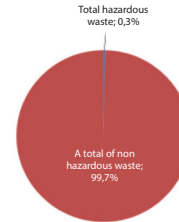
According to the survey results in 2012, 951, 78 million tons of mining waste was produced. 947, 18 tons of all the produced waste consisted of mineral wastes. It is determined that 3, 2 million tons of this waste was hazardous wastes. 0,02% of the total mining waste was recovered and reused within the facilities, 0,1% was recovered and reused out of the facilities, 5,68% was used to regain mining facilities to the nature and 94,21% was disposed. 72,3% of the disposed waste was stored in landfills, 26,8% was dumped to the pits and 0,9% had been disposed by other methods that include municipality dump sites, incineration, temporarily stored, dumped wastes and those dumped in water sources.^[22]

NUMBER OF MINING WASTE LANDFILLS

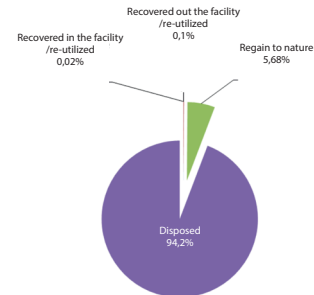
YEARS	2010	2011	2012	2013
MINING WASTE LANDFILLS	2	6	14	21

Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

THE DISTRIBUTION OF MINE DUMPS ACCORDING TO THEIR HAZARD STATE RELATED TO DATA IN 2012



The recovery and the disposal of the mining wastes according to the data in 2012

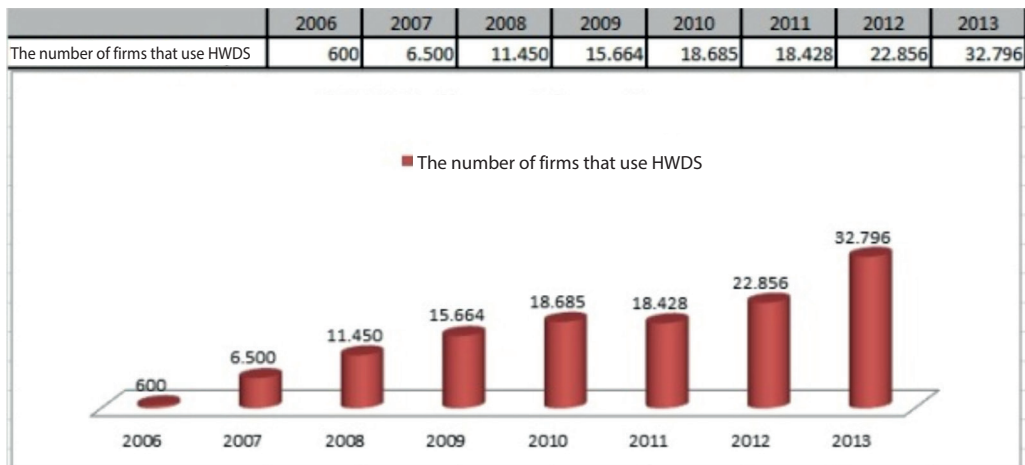


Source: TURKSTAT

6- WASTE

6.12-Hazardous Wastes

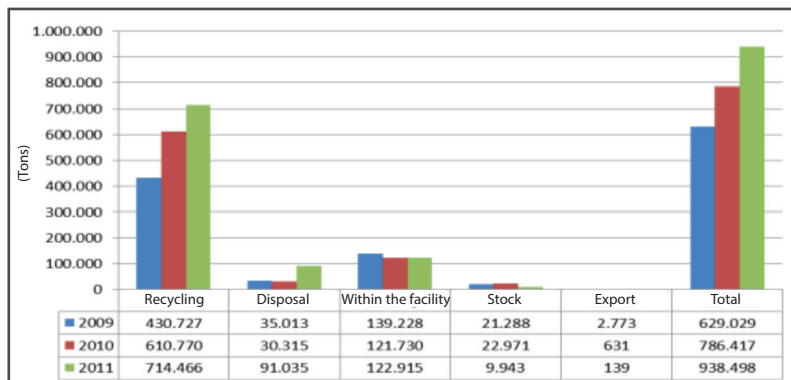
Hazardous wastes, especially originating from the industrial plants, are serious elements of stress for the environment. A nation-wide proportion of hazardous waste generation can be identified with the Hazardous Waste Declaration System (HWDS) used by the industrial plants generating waste during the operational processes. By 2013, 32.796 plants used the HWDS.



Source: Ministry of Environment and Urbanisation, General Directorate of EIA, Permit and Inspection

The amount of the processed hazardous waste for 2011 was calculated as 938,498 tons, and wastes produced by the mining industry was not included in this amount. 714,466 tons of the waste was directed to recovery.

DATA OF HAZARDOUS WASTE DECLARATION SYSTEM FOR 2009,2010 AND 2011 (Ton)



Source: <http://www.csb.gov.tr/db/cygm/editorosya/tehlantikstat2011.pdf>

Note: Mining Industry hazardous waste amount is not included.

6.13-Polychlorinated Biphenyls(PCB)

The majority of the amount of the equipment containing PCB (polychlorinated biphenyls) that is specified by the inventory works, was disposed between 1997 and 2007. 3655 tons of equipment containing PCB was disposed by the İZAYDAS (İzmit Waste and Residue Treatment, Incineration and Utilization I.C.) and 15531 tons of waste were exported for disposal.

Considering the years, it is seen that while there was an increase in the amount of waste notified, the large part of this amount was recovered. Regarding the waste management principles; the wastes should be treated firstly in the source, then recovery, energy recovery and finally disposal methods should be applied. According to the data provided by the HWDS, the rate of hazardous waste generation is higher in industrial zones.

In 2009, 2010 and 2011, 129 tons, 555 tons and 450 tons of waste containing PCB was registered to the system respectively.

In 2012 and 2013, in accordance with the survey and field work performed within the scope of Environment-Friendly Management of PCBs in Turkey Project supported by UNEP/MAP, there was a total of 1050 tons of equipment and material containing pure PCB.

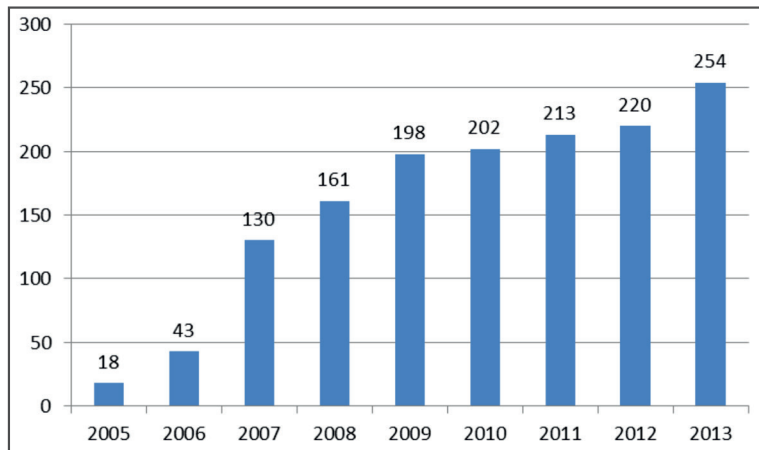
6.14- Management of Ship Wastes

Turkey became a party to the International Agreement for the Prevention of Pollution from Ships (MARPOL 73/78) in 1990 and fulfils the obligations of the agreement due to the By-Law on Waste Reception from Ships and Control of Waste" Official Gazette No: 27061 issued 26 December 2004.

As a requirement of this By-Law; waste receiving facilities have been founded and operated by the institutions in order to prevent the ships to dump their wastes and residues into the oceans and territorial waters of Turkey and to protect the marine areas.

While the number of the licensed waste receiving facilities that serve for receiving wastes from the vessels in the ports was 18 in 2005, this figure reached to 254 in the end of 2013.

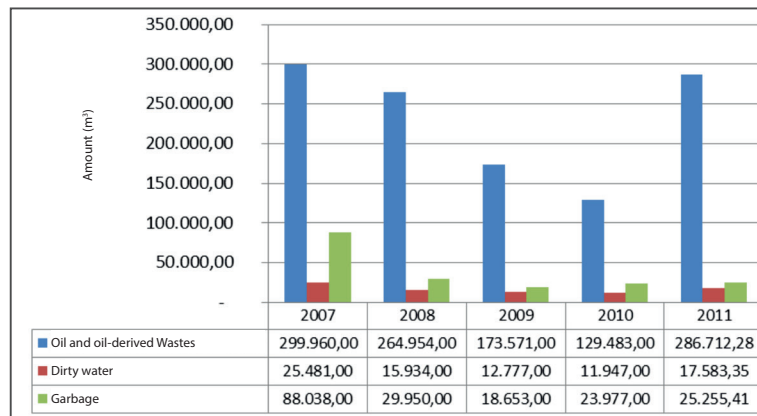
NUMBER OF HARBOURS THAT PROVIDES WASTE RECEPTION SERVICE



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

The obligators operating the waste receiving facilities; dispose the wastes collected, in accordance with the Environment Law no. 2872 and relevant legislation provisions. The obligators; receive the wastes of the ships in the ports or the ones waiting offshore to approach the port without causing any delay, as defined in the By-Law. The oily wastes collected in these institutions in the port are used as additional fuel in the licensed bodies providing the required criteria as in the EU countries. In this way, the ship sourced pollution caused by the increasing sea traffic is decreased.

DISTRIBUTION OF WASTES ORIGINATED FROM SHIPS (m³)



Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

6.15- Risk Assessment and Emergency Response

Coastal facilities, performing activities near the seashores which contaminate the sea by producing oil or other harmful substances, should prepare risk assessment and emergency plans with regard to "Law on the Emergency Response and Compensation of the Damage in Pollution of the Marine Environment by Oil and Other Harmful Substances" number 5312 and "By-Law Implementing the Law", in order to be prepared against any accidents related to ships or coastal bodies and should submit these plans to the Ministry of Urbanisation and Environment to be confirmed. Coastal facilities under high risk were determined and risk assessment and emergency plans of 227 coastal facilities were confirmed by the Ministry of Urbanisation and Environment. This number constituted the 68% of all the coastal facilities in Turkey. In some of the coastal provinces, the rate of confirmed facilities is considerably high and it is aimed to increase this rate in other coastal provinces.

By means of these plans, the risks of coastal facilities were determined and precautions necessary to prevent the pollution resulted from oil and other hazardous materials were taken in a short time. That is; to fight with pollution effecting the zones and marine life effectively, the necessary equipment and personnel are determined. Besides the assessment of damage which occurs in accidents, the rehabilitation processes to compensate the damage given to the areas and living things were described in detail.

Table Below shows the ratio of coastal facilities whose plans were confirmed by the Ministry of Environment and Urbanisation

PROVİNÇES	YEARS				
	2009	2010	2011	2012	2013
ADANA	75%	75%	83%	83%	83%
ANTALYA	7%	36%	36%	43%	43%
ARTVİN	0%	50%	50%	50%	100%
AYDIN	0%	0%	0%	0%	0%
BALIKESİR	10%	20%	20%	30%	30%
BARTIN	0%	0%	0%	0%	0%
BURSA	20%	60%	60%	60%	60%
ÇANAKKALE	13%	25%	25%	38%	50%
DÜZCE	100%	100%	100%	100%	100%
EDİRNE	0%	0%	0%	0%	0%
GİRESUN	0%	40%	40%	40%	40%
HATAY	14%	81%	86%	86%	90%
İSTANBUL	4%	81%	82%	84%	85%
İZMİR	65%	79%	79%	79%	83%
KASTAMONU	0%	0%	0%	0%	0%
KIRKLARELİ	0%	0%	0%	0%	0%
KOCAELİ	25%	63%	78%	85%	85%
MERSİN	44%	68%	76%	80%	80%
MUĞLA	0%	4%	4%	12%	12%
ORDU	0%	14%	14%	14%	14%
RİZE	7%	7%	7%	7%	7%
SAKARYA	0%	0%	0%	0%	0%
SAMSUN	11%	67%	78%	89%	89%
SİNOP	0%	0%	0%	0%	0%
TEKİRDAĞ	25%	42%	50%	67%	75%
TRABZON	0%	8%	15%	23%	23%
YALOVA	7%	7%	7%	21%	21%
ZONGULDAK	40%	60%	80%	80%	100%
Total	21%	52%	56%	60%	68%

Source: Ministry of Environment and Urbanisation, General Directorate of Environmental Management

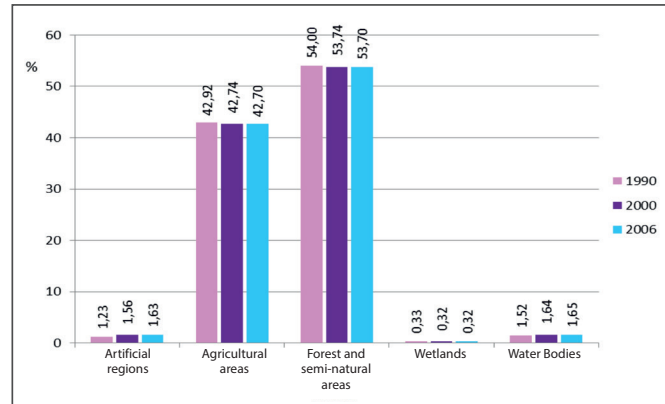
7.1- General Distribution of Land Cover

It is very important for land use planning purposes to know the diversity of plantation areas clearly to observe the current and possible improvements in the area and to plan how the area is going to be used.

Under the CORINE (Coordination of Information on the Environment) Land Cover Program,, one of European Union's land management projects, projects have been run in years 1990, 2000, and 2006 in Turkey.

When CORINE 1990 and 2006 data are compared, it is seen that artificial areas in Turkey increased from 1.23% to 1.63% between 1990 and 2006. The rate of water bodies was 152% in 1990, while it increased to 1.65% in 2006 due to the dams constructed. The ratio of agricultural land which was 42, 92%, in 1990, went down to 42, 70% in 2006. Similarly, the ratio of forests and semi-natural land was 54% in 1990, and it lastly decreased to 53.7% in 2006. The ratio of wetlands which was 0.33 % in 1990, decreased to 0.32% in 2006.

Land Use in 1990, 2000 and 2006 (%)



Source: Ministry of Forestry and Water Affairs, IT Department Directorate

Consequently, between 1990 and 2006 there was a decline in agricultural areas and forests and semi-natural zones and an increase in artificial areas and water bodies. Increasing population, urbanization and industrialization posed a threat to agricultural areas

When the rate of land use in Europe is considered, according to CORINE 2006 data (including Turkey), ratios of forests account for 35%, arable lands for 25%, pastures for 17%, semi-natural flora for 8%, water bodies for 3%, wetlands for 2%, and artificial areas (urbanized) for 4%. [24].

7- LAND USE

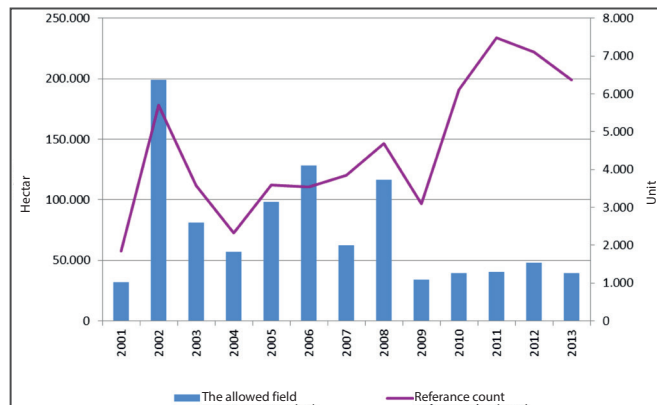
7.2-Misuse of Agricultural Areas

In the 2001-2003 period, a total of 97. 282 hectares of agricultural land was allowed to be used for non-agricultural activity in Turkey.

In 2013, 39.181 ha agriculture land was permitted to be used as non-agricultural area. In 2013, Sivas ranked the first with 3627 ha of all the provinces when we look at the distribution by provinces of agricultural land destroyed due to non-agricultural use and it was respectively followed by, Ankara with 3129 ha, Afyonkarahisar with 2628 ha, Iğdır with 2085 ha, İzmir with 1912 ha, Muş with 1754 ha and Kütahya with 1726 ha.

According to the Soil Protection and Land Use Law number 5403, irrigated farming and fertile agricultural lands should be conserved and unless absolutely necessary, apart from marginal ones these lands cannot be used for construction.

MISUSE OF AGRICULTURAL AREAS WITHIN THE SCOPE OF SOIL CONSERVATION AND LAND USE LAW NO 5403



Source: Ministry of Food, Agriculture and Livestock, General Directorate of Agricultural Reform

7.3-Zones Under Threat of Erosion

Turkey's geographical position, climate, topography and soil conditions, are the main factors which affect the deterioration of the land and increase the sensitivity of drought. There are various erosion types observed all over the country; while water erosion is the most widespread one.

Given below is the erosion information from the Digital Soil Maps (scale 1/25,000) that have been prepared by GIS systems and classified according to the American Taxonomy, relying on field surveys of Repealed General Directorate of Rural Services(soil survey and mapping data 1982-1984),

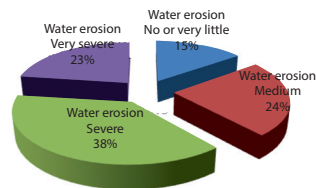
Of the land subject to water erosion, very little or no erosion is experienced in 15% and intermediate in 24%, severe in 38%, and very severe degree of erosion is seen in 23%.

Light wind erosion is noticed in 49% of the land subjected to wind erosion, intermediate wind erosion in 42% and severe in 9%.

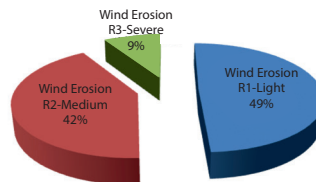
Areas that Wind and Water Erosion Occur and their degrees

	MAGNITUDE OF EROSION	AREA (ha)
Water Erosion	1-None to slight	10.930.800
	2-Intermediate	17.754.275
	3-Severe	28.410.874
	4-Splitting (Very severe)	16.856.271
Wind Erosion	R1-Light	233.730
	R2-Medium	198.720
	R3-Severe	42.020

Water Erosion



Wind Erosion



Source: Ministry of Food, Agriculture and Livestock, General Directorate of Agricultural Reform

8-BIODIVERSITY

8.1- Total Number of Species, Endangered Species, Endemism Rate (%)

Turkey is an interception zone of Mediterranean and Near East botanic diversity and origin centers; also an origin source for the genetic diversity centers of several cultivated plants.

In Turkey, there are 15.061 identified species/subspecies 3.930 of which are endemic types. The number of rare and endangered species are 1.284, and that of extinct species are 11.

The number of bostfern in species and subspecies in Turkey are 101 and only 3 of them are endemic. Gymnosperm, a primitive group, which belongs to flowering plants has a low rate of endemism. In this group there are 5 endemic taxon only in the level of variety and subspecies.

The rate of endemism is very high in Angiosperm which belongs to flowering plant groups. Of the level of species and subspecies, there are nearly 11.000 flowering plant types, 3.925 of which are endemic, and the endemism rate is nearly 34%.^[26]

NUMBER OF TAXONS BELONGING TO DIFFERENT TYPES OF SPECIES AND SUBSPECIES, STATE OF ENDEMISM, RARE AND ENDANGERED SPECIES AND EXTINCT SPECIES,

Plant Groups	Identified Species/ Subspecies	Endemic Species	Endangered and Rare Species	Extinct Species
Algae	2.150	-	unknown	unknown
Lichen	1.000	-	unknown	unknown
Bryophytes	910	2	2	unknown
Sword ferns	101	3	1	unknown
Gymnosperms	35	5	1	unknown
Monocotyledons	1.765	420	180	-
Cotyledons	9.100	3.500	1.100	11
TOTAL	15.061	3.930	1.284	11

Source: *National Biological Diversity Strategy and Action Plan 2007*

Turkey is very rich country in terms of endemic plants; however, these endemic species are under serious threats. According to the criteria of IUCN, 2001, approximately 600 of our endemic species are in the category of "seriously endangered CR" and 700 of them are categorised as "endangered EN".

Turkey is considerably rich when compared to other countries in the region. However, almost all of these species have become extinct in many places and this continues on and density of population in general is known to be very low. ^[27]

NUMBER OF TAXONS BELONGING TO DIFFERENT TYPES OF ANIMAL SPECIES AND SUBSPECIES, STATE OF ENDEMISM, NUMBER OF RARE AND ENDANGERED SPECIES, AND EXTINCT SPECIES

Animal Groups	Defined Species	Endemic Species/ Subspecies Variety	Rare/ Endangered Species	Extinct Species
VERTEBRATES				
Reptiles/Amphibian	141	16	10	-
Birds	460		17	-
Mammals	161	37	23	4
Freshwater Fishes	236	70	-	4
Marine Fishes	480	-	-	-
INVERTEBRATES				
Molluscs	522	203	unknown	unknown
Butterflies	6.500	89	89	unknown
Locusts	600	270	-	-
Damselfliers	114	-	-	-
Coleopteras	~10.000	~3.000	-	-
Hemipteras	~1.400	~200	-	-
Homopteras	~1.500	~200	-	-

Source: National biodiversity strategy and action plan 2007

There are 10 sea mammal species spotted in Turkey maritime zones. While 21 sea mammal species either live in or periodically visit the Mediterranean sea, only 3 species live in the Black Sea. It has been reported that the Mediterranean seal (*monachus monachus*) has not been seen in the Black Sea since 1994.

While the number of non-indigenous species in Turkish waters was 263 in 2005, this number increased to 422 in 2011, and it continues to rise as an invading non-indigenous specie enters our waters every 8 days through the Suez Canal. While most of the invasive species in the Mediterranean come through the Suez Canal, most of those in Black Sea are transported to the Black Sea via the ballast waters of vessels ^[28].

The number of cases in combat against bio smuggling was 47 in 2012 and 49 in 2013^[29].

8-BIODIVERSITY

8.2- Protected Areas

The proportion of the protected areas that, the Directorate of Nature Conservation and National Parks under the Ministry of Forestry and Waterworks is responsible for comprise 6,89% of the total surface area of the country. When the protected areas in seas and land which are under the control of the General Directorate for Protection of Natural Assets under the Ministry of Environment and Urbanisation and the ones under control of other institutions are included, this figure increases to 10,11%. Of this, only 19, 89% comprises coastal and marine ecosystems while 80,11 % is inland areas. The grasslands, drinking water basins and forest areas (total forest, forest soil, pasture, stone) which are allocated as areas of nature conservation as a function were not included in this calculation. ^[29]

Protected areas brought into Single Surface was	2012		2013	
	Area (ha)	Ratio to terrestrial surface area, of Turkey (*) (%)	Area (ha)	Ratio to terrestrial surface area, of Turkey (*) (%)
Sea level	397.446,63	0,51	1.568.318,054	2,01
Topography	5.647.568,45	7,24	6.315.233,018	8,10
Total	6.045.015,08	7,75	7.883.551,072	10,11

(*) Percentages, have been calculated as the ratio of protected area to terrestrial surface area of Turkey (Turkey total provincial areas 77.998.600; 81 ha).

Source: Nature protection status report (2002-2013)

STATUSES AND SPACE DISTRIBUTION OF AREAS UNDER PROTECTION IN TURKEY, (AS of 31.12.2013)

The Ministry of Forestry and Water Affairs, Areas under Protection	Number (Quantity)	Area (ha)
National Park	40	848.202,57
Nature Park	192	90.218,30
Nature Protection Area	31	64.242,95
Nature Monument	112	6.683,72
Wildlife Protection Area	80	1.191.340,22
Wetlands (with International Importance)	135	3.215.500,10
Protection Forest	55	320.450,54
Baboo Forest	200	24.861,11
Urban Forest	128	11.721,93
Gene Conservation Forest (in-situ)	257	47.977,77
Seed Stand (in-situ)	351	47.062,81
Seed Orchard (ex-situ)	179	1.413,75
THE TOTAL SURFACE IS OPTIMIZED INTO SINGLE	1760	5.373.162,20
Ministry of Environment and Urbanisation, Protected Areas	Number (Quantity)	Area (ha)
Special Environmental Protection Areas	16	2.459.116,06
Natural Site	1273	1.322.748,90
THE TOTAL SURFACE IS OPTIMIZED INTO SINGLE	3049	7.883.511,072

Note:

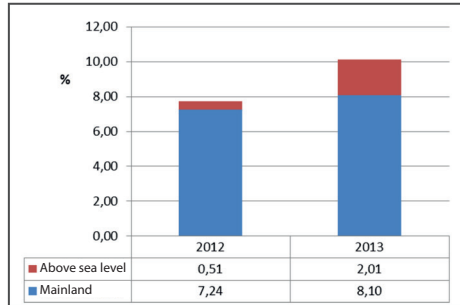
-Finike Undersea mountains (1.124.173 ha) have been announced as SEPA Zone.
 -the size of the protected area calculated by Ministry of Forestry and Water Affairs in 2013 was gross 9.651.540, 73 ha and it was 7.883.551.072 ha when calculated as single surface area..

-The size of the protected areas represent those on land and sea.

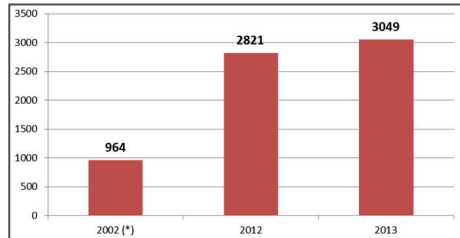
-Information on the number and size of the areas under protection were provided by the IT Department of the Ministry of Forestry and Water Affairs.

Source: nature protection status report (2002-2013)

THE PROPORTION OF THE PROTECTED AREAS ON SEA AND LAND TO THE SURFACE AREA OF THE COUNTRY (%)



NUMBER OF THE PROTECTED AREAS THROUGHOUT THE COUNTRY



(*) 2002 value 964 does not include the number of natural sites.
Source: Nature Protection Status Report (2002-2013),

In the world there were 30.000 areas under protection in 2000, this number increased to 100.000 in 2004, and 113.707 in 2005. While the surface area under protection was 13.250.000 km² in 2000, it increased to 18.800.000 km² in 2004, and 19.600.000 km² in 2005. This is 12% of Earth's total surface area. As of October 2010, the number of protected areas reached to 161.000, constituting 13% of the Earth's entire surface.^[30]

8.3- Protected Coastal Length

The total coastal length of Turkey is 8592 km and 1853, 3 km (22%) of it is under protection. The percentage of marine areas under protection is 19.89^[29].

PROTECTED COASTAL LENGTH OF TURKEY

2002	2012	2013
1775 km	1853 km	1855,3 km
%20	%22	%22 (*)

Phoenician Undersea Mountains declared as specially protected Area by decision of the Council of Ministers through identification by the Ministry of Forestry and Water Affairs in 2013 is not included in the statistics as it is an open sea area Source: nature protection status report (2002-2013),

8-BIODIVERSITY

8.4- Wildlife Activities

A total of 623 species including 120 mammals, 374 birds and 129 reptiles, are taken under protection by The Ministry of Forestry and Water Affairs General Directorate of Nature Protection and Natural Parks.

80 protected wildlife reserves have been established with the council of ministers' decision to protect wild animals that are under the danger of extinction, and regular inventories of these species are prepared every year. In these areas, rupicapra rupicapra ornate, the Anatolian wild sheep, wild goat, gazelle, red deer, fallow deer, roe deer, great bustard, grouse, and bald Ibis, hyena and waterfowl species are protected. In order to breed endangered wild animal species, stations where these animals are raised are established and the raised animals are released back to nature in appropriate living spaces. These animals placed in nature are monitored by GPS_GSM collars and photo traps.

Feeding studies are done to prevent the wild animals from starving in heavy winter conditions. The wildlife is supported in the suitable zones where wild animals live by planting suitable plants. The wild animals found wounded and in need of care are treated medically, rehabilitated and released to the nature.

"The monitoring, protecting and nest detection" activities on the 13 of 21 nesting beaches of the sea turtles are regularly carried out in the responsibility of the Ministry of Forestry and Water Affairs. Within the scope of CITES Convention, studies are performed for the prevention of illegal trade of wild animals.^[31]

YEARS	2012	2013
The Number of Wild Mammals, Placed in the nature	63	84
Winged Wild Animal Placement Numbers (Partridge – Pheasant)	64.895	88.400
Number of trout stocked in waters within forest zones.	2.042.000	3.172.000
Total Number of Wildlife Production facilities (Partridge, Pheasant, Mammals, Bald Ibis, Trout, Mountain Gazelle)	20	21*
The number of wild animals rehabilitated and Released back to nature	921	1.643

**Hatay province Mountain Gazelle production site. is added
Source: Nature Protection Status Report (2002-2013.)*

8.5- Forest Areas

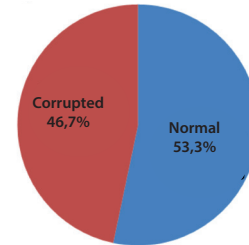
In 2012, total size of forests in Turkey was 21.678.134 hectares which constitutes 27.6% of the country's total surface area.

Out of Turkey's forested lands, 11.6 million hectares are normal (11-100% is closed), and 10.1 million hectares are distorted (0-10% is closed) areas. Thus, 53.3% of forest land is normal while 46.7% is distorted.^[32]

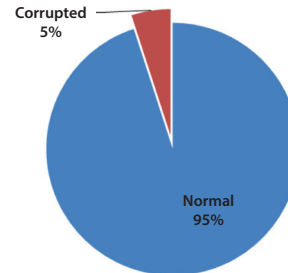
Between 1973 and 2012, the forest land in Turkey increased by approximately 1.5 million hectares. While the tree wealth was 0,9 billion m³ in 1973, this reached to 1, 5 billion m³ in 2012.

According to The Global Forest Resources Assessment 2010 Report by FAO (United Nations Food and Agriculture Organization) total forest land on Earth was 4 billion hectares. According to this, forest lands made up 31% of Earth's total surface area. In addition to this, there was 1,1 billion hectares of degraded forest area. When the period from 1990 to 2010 is analyzed, it can be seen that forest areas have decreased within time.

The distribution of the woodland Area (as a result of the inventory of 2012)



The tree wealth distribution (inventory of the year 2012, result)



Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry.



In The Strategic plan (2013-2017) of General Directorate of Forestry under the Ministry of Forestry and Water Affairs, it is aimed to increase the forest areas to 30% of the country's total surface area.

The term " old growth forest," refers to the areas where most of the forest bush species which are in critical situation are in need of conservation so that they can survive. Old growth forests are expected to be at least 10% of total areas. Total "old growth forest" in Turkey is 1.002.418 ha, and it constitutes 4,6% of the total forest lands.^[33]

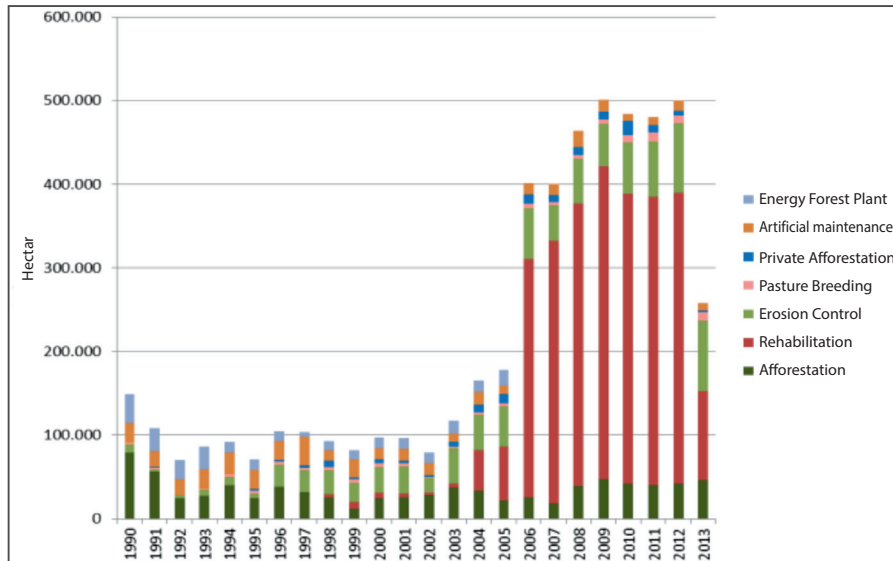
YEARS	1973	1999	2004	2008	2010	2012
Forest Area (ha)	20.199.296	20.763.247	21.188.747	21.363.215	21.537.091	21.678.134

Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry.

Note: these areas which are considered as forests do not include the wooded areas (private Kemp, orchards, hazelnut groves, etc.) but cover natural, seeded or planted forest areas

Half of the forests in Turkey is degraded and inefficient. It is crucial to rehabilitate inefficient forest lands and convert these areas into productive areas. In 2013, 46.656 ha area was planted, 106.182 ha area was rehabilitated, in 83.964 ha area erosion was controlled, in 9.920 ha area the pasture was improved, in 1975 ha area particular planting works were done and in 8,921 ha area artificial tensile work was done as forest facility works.

(1990-2013) FOREST FACILITY WORKS (ha)



Not: Forestry facility Works are the works performed by Ministry of Forestry and Water Affairs and the other institutions. Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry

8-BIODIVERSITY

8.6- Distribution of Forests by Tree Species

Diversity of tree species is a positive indicator of biodiversity. By 2012, a total of 27 percent of our forest areas consists of red pine (ponderosa), 23.8% oak and 21.6% larch.

TYPE of TREES	FORESTED AREA		
	Normal	Derelict Land	TOTAL
	ha	ha	ha
Red Pine	3.207.914	2.646.759	5.854.673
Oak	2.105.937	3.046.624	5.152.562
Black Pine	2.580.193	2.112.867	4.693.060
Beech	1.621.257	340.403	1.961.660
Scotch Pine	751.060	728.588	1.479.648
Fir	406.989	263.400	670.390
Juniper	91.234	484.081	575.315
Cedar	220.328	243.193	463.521
Spruce	230.212	104.260	334.472
Alder	99.984	41.134	141.119
Chestnut	75.249	35.795	111.044
Stone pine	60.889	28.139	89.028
Hornbeam	15.235	4.727	19.962
Linden	9.577	1.946	11.523
Ash	8.495	948	9.444
Poplar	1.871	4.676	6.547
Eucalyptus	2.398	130	2.528
Other Types	69.846	31.796	101.641
TOTAL	11.558.668	10.119.466	21.678.134

Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry.

8.7- Functional Forestry

Today, forests are planned with ecosystem-based functional planning approach on multi-beneficial basis. According to the data of this plan, 62, 8% the forests has economical, 31, 9% has ecological and 5, 3% has social and cultural functions.

THE DISTRIBUTION OF THE PRIMARY FUNCTIONS OF THE FORESTS

MAIN FUNCTIONS	FORESTED AREA		
	Normal	Derelict Land	TOTAL
	ha	ha	ha
1- Economic Function	7.941.865	5.679.694	13.621.559
2- Ecologic Function	2.911.614	4.000.810	6.912.424
3- Social and Cultural Function	705.189	438.962	1.144.151
TOTAL	11.558.668	10.119.466	21.678.134

Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry

9.1- Highway - Railway Network and Transportation Infrastructure

There were 69 airports in our country in 2013. 52 airports were used for active passenger transportation. There were 216 harbors/ dockages/ marinas / pipeline facilities with processing permit

and 179 of them were opened to international traffic. The length of highways was 65.740 km (the length of road network under the responsibility of General Directorate of Highways), the railway network was 12.097 km in length (the length of network under the responsibility of Turkish State Railways) in 2013.

HIGHWAY and RAILWAY NETWORKS BY YEARS

Years	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highway Network Length (km)	63.244	63.476	63.606	63.672	63.820	63.945	64.255	64.865	65.166	65.491	65.740
Railway Network Length (km)	10.959	10.968	10.973	10.984	10.991	11.005	11.405	11.940	12.000	12.008	12.097

Source: Ministry of Transport, Maritime Affairs and Communications, Strategy Development Department

Compared to roads, railways release less greenhouse gas to the atmosphere as they consume energy more efficiently. In addition, less land is used for the construction of railways, thus this plays a significant role in the preservation of the natural environment. Besides, railways help to reduce respiratory disorders and other illnesses caused by air pollution. According to the TURKSTAT 2012 greenhouse gas emission inventory data, 90, 6% of CO₂ emission was originated from highways, 6, 1% from airline transportation, 2, 6% from maritime transportation and 0, 7% from railway.

Considering the surface area, there was 83 km highway and 12 km railway per square 1000 km in Turkey. In the EU 27 countries, these figures were 422 km and 52 km respectively. ^[35]

It is estimated that highway network will have reached to 70,000 km and railway network to 30,000 km in length by 2023 ^[36].

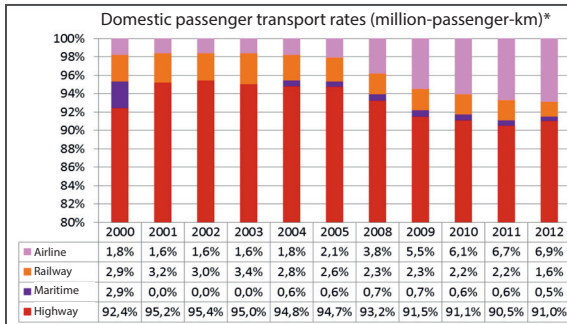
According to the 2011 data, there was 90 km highway and the 13 km railway per a population of 100,000. In the EU 27 countries, these figures are respectively, 360 km and 45 km in average. ^[34]

9- INFRASTRUCTURE and TRANSPORTATION

9.2- Amount of Passengers and Freight Carried by Transportation Types

In 1950, 49.9% of the passenger travelled by road, 42.2 % by railway, 7.5% by maritime transportation and by 0.6% airline transportation. For domestic freight transportation, the rates were 55.1% by railway, 27.8% by maritime transportation and 17.1% by road.

In 2000 domestic passenger transportation, the share of the airlines was 1,8% which rose to 6,9% in 2012, whereas in the same period, the proportion of the railway transportation was reduced from 2,9% to 1,6%, maritime transportation from 2,9% to 0,5% and the proportion of highway transportation was reduced from 92,4% to 91%.



Sources: Statistics of Highway Transportation (2012). <http://www.kgm.gov.tr/SiteCollectionDocuments/KGMdocuments/Yayinlar/YayinPdf/KarayoluUlasimistatistikleri2012.pdf>

Note: the source of the data related to passenger and freight by airline transportation in 2008, 2009 and 2010 and freight by airline transportation in 2011 and 2012 by ICAO (International Civil Aviation Organization)

* Passenger/Km: Unit of traffic measurement obtained from the transportation of one passenger over one kilometer.

**Ton/Km: Unit of traffic measurement obtained from the transportation of one ton of goods over a distance of one kilometer.

Considering the domestic freight transportation it seems that the highways are the primary option. In 2012, railway and road transportation shares were slightly reduced, whereas the airlines and maritime transportation were slightly increased in comparison to 2000.

It is targeted for domestic passenger transportation share (as a passenger /km) to be 72% by road, 10% by railway, 14 % by airline and 4% by maritime at the end of 2023. Moreover, it is targeted for domestic freight transport share (as ton/km) 60% by road, 15% by railway, 1% by airline, 10 % by maritime and 14% by pipeline ^[35].



DOMESTIC TRANSPORTATION OF FREIGHT AND PASSENGER ACCORDING TO TRANSPORT PATHS



Sources: 2013 DATA Ministry of Transportation, Maritime Affairs and Communication, Strategy Development Department
 DATA for other years; Highway Transportation Statistics (2012). <http://www.kgm.gov.tr/SiteCollectionDocuments/KGMdocuments/Yayinlar/YayinPdf/KarayoluUlasimIstatistikleri2012.pdf>
 Note: The source of the data related to passenger and freight by airline transportation in 2008, 2009 and 2010 and freight by airline transportation in 2011 and 2012 is ICAO (International Civil Aviation Organization). 2013 Airway Freight transportation values are not included.

* Passenger/Km: Unit of traffic measurement obtained from transportation of one passenger over one kilometer.

** Ton/Km: Unit of traffic measurement obtained from the transportation of one ton of goods over a distance of one kilometer.

9- INFRASTRUCTURE and TRANSPORTATION

9.3- The Number of Road Motor Vehicles

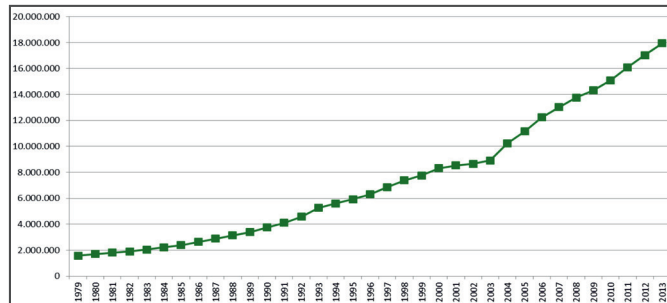
The number of total Road Motor Vehicles, which was 1.566.405 in 1979, increased especially after 2004 and reached 17.939.447 in 2013.

When types of Road Motor Vehicles share between 1979 and 2013 are compared, the increase in the rates of automobiles, vans and motorcycles is remarkable. Automobiles constitute 51.8% of the total Road Motor Vehicles in 2013, vans 16.3%, motorcycles 15.2%, tractors 8.7%, trucks 4.2%, minibuses 2.4%, buses 1.2% and special purposed vehicles 0.2%.

When some members of the European Union and Turkey are compared to 2011 data; the number of automobile per 1.000 people was 658 in Luxembourg, 610 in Italy, 551 in Finland, 535 in Australia, 525 in Germany, 502 in France; however, it was 109 in Turkey [37].

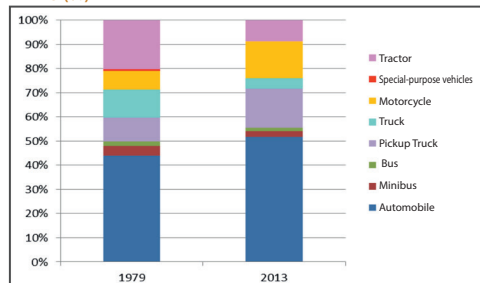
Emission resulted from Road Motor Vehicles is one of the major causes of air pollution especially in metropolitan cities. Exhaust gas measurement and inspection play a significant role in reducing emission originated from Motor Vehicles. The developments in hybrid and electrical vehicle manufacturing technologies also play a significant role in solving the problem.

NUMBER OF THE ROAD MOTOR VEHICLES BY YEARS (1979-2013)



Source: TURKSTAT.

1979 and 2013 DISTRIBUTION OF ROAD MOTOR VEHICLES IN TERMS OF THEIR TYPES (%)



Source: TURKSTAT. Note: Construction equipment's and special purpose vehicles are stated as heavy construction equipment, are presented under the title of Trucks since 2004

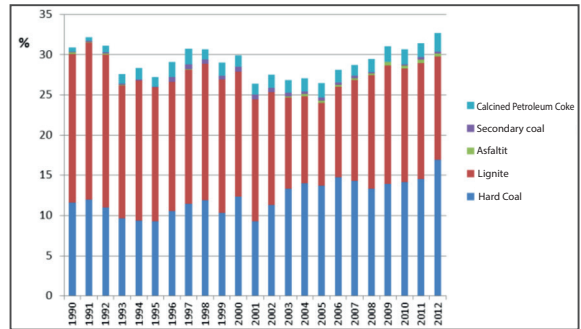
10.1- Primary Energy Consumption by Fuel Type

Total primary energy consumption reserved according to type of fuel is an indicator of a driving force which describes the improvement in energy resources and the level of consumption.

Each fuel has its own specific impact on environment. The consumption of the combustible fossil fuel (crude oil, petroleum products, mineral coal, lignite, natural and derivative gases) are the primary indicators of the source consumption, level of air pollution, the CO₂ and other greenhouse gas emissions (SO₂ ve NO_x). The level of the environmental impact depends on the relative portions of the fossil fuels used and the applied magnitude of the precautions taken to reduce pollution.

In 1990, a total amount of primary energy consumption rate reached up to 30,89% that includes 11,6% of mineral coal, 18,43% of lignite, 0,23% of asphaltite, 0,13% of coke and 0,5% of petroleum coke. In 2012, a total amount of the primary energy consumption rate increased to 32,71% with the following rates; 16,91% of mineral coal, 12,85% of lignite, 0,39% of asphaltite, 0,23% of coke and 2,33% of petroleum coke.

Primer Energy Consumption According to Type of Fuel (%)



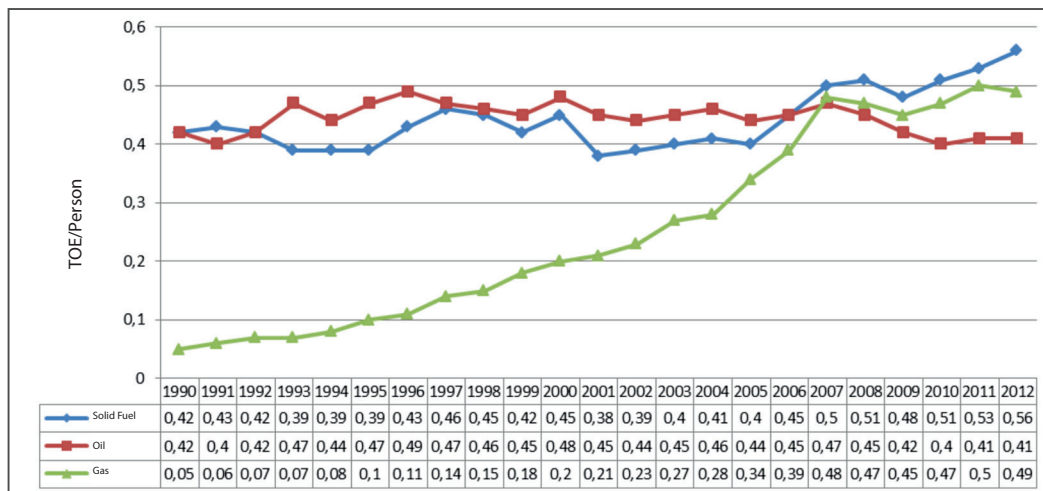
Source: Ministry of Energy and Natural Resources, General Directorate of Energy Affairs
 Note: Total petrol goods, natural gas and renewable energy sources are not included. It is the ratio of the total domestic energy consumption to the domestic solid fuel sourced energy consumption.

10- ENERGY

10.2- Primary Energy Consumption per Capita

Through the years it is observed that the demand for solid-fuel consumption has increased slightly while the demand for petroleum consumption has not changed much. However, the amount of the gas consumption per capita has significantly increased. In 1990, gas consumption per capita per year was 0,05 TOE (Equivalent Tonnes of Petrol) which became 0,49 TOE in 2012.

PRIMARY ENERGY CONSUMPTION PER CAPITA THROUGH THE YEARS (TOE/PERSON)



Source: Ministry of Energy and Natural Resources, General Directorate of Energy Affairs

10.3- Total Energy Consumption by Sectors

Looking at the amount of energy consumption in 2012, it reveals that conversion and residential sector had the highest consumption rate. With the increasing demand for electricity, industry sector was the 3rd and the transportation sector was the 4th in the energy consumption. As road transportation is a dominant preference for both passenger and freight transportation in Turkey, most of the energy used in transportation sector was consumed in road transportation.

According to the data of TurkStat, import dependence was 67.6% in 200 and it became 72.7% in 2012.

It can be concluded that climate conditions in Turkey are the main factor for excessive energy demand in residential sector.

Depending on the weather conditions energy consumption is necessary for cooling in summer and for heating in winter.

It is important to prevent wastage and to reduce the intensive use of energy and to increase the efficiency in the process of generating and consuming energy. Within this context, the precaution has been implemented without affecting social and economic development targets. The studies for boosting energy efficiency in electrical power generation facilities, transmission and distribution networks are in progress. Also, studies are to be implemented to extend high-efficient cogeneration applications

YEARS	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total (Thousand TOE)	78.331	83.826	87.819	91.075	99.824	107.627	106.338	106.139	109.266	114.480	120.093
Household	18.463	19.634	20.252	22.923	23.860	24.623	28.323	29.466	28.868	29.974	31.509
Industry	24.782	27.777	29.358	28.084	30.996	32.466	25.677	25.966	30.628	30.830	30.368
Transportation	11.405	12.395	13.907	13.849	14.994	17.284	16.044	15.916	15.328	15.950	20.796
Agriculture	3.030	3.086	3.314	3.359	3.610	3.945	5.174	5.073	5.089	5.756	1.944
Not Energy	1.806	2.098	2.174	3.296	4.163	4.430	4.341	4.153	3.459	4.442	4.390
Conversion Sector	18.845	18.836	18.814	19.564	22.201	24.879	26.779	25.565	25.894	27.528	31.086

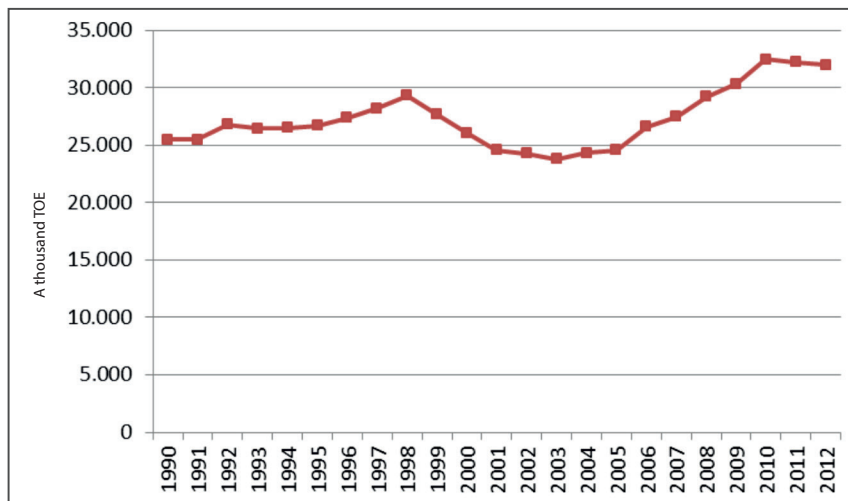
Source: Ministry of Energy and Natural Resources, General Directorate of Energy Affairs

10- ENERGY

10.4- Primary Energy Production

While total primary energy produced in 1990 was 25,478 TOE ,it became 31,964 TOE in 2012. From 1990 to 2012, the primary energy rate has been increased 25,45%.

PRODUCED PRIMARY ENERGY BY THE YEARS (Thousand TOE)



Source: Ministry of Energy and Natural Resources, General Directorate of Energy Affairs

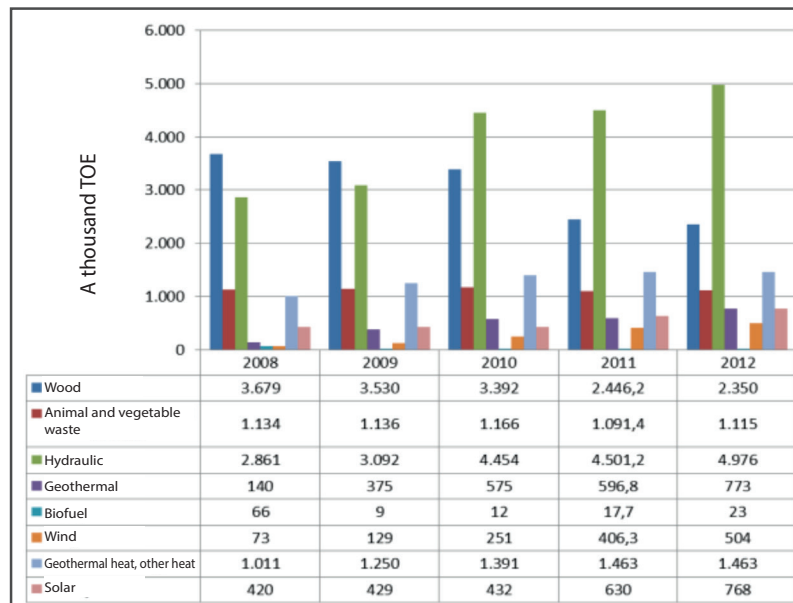
10.5- Share of Renewable Energy Sources in Consumption

Renewable energy sources are environment-friendly and have much lower CO₂ emission values per power unit generated. The most common renewable energy sources in Turkey are hydraulic, wind, solar, geothermal and biomass (wood, animal and plant residues) energy forms.

Turkey increases its renewable energy potential every year and put it into use for its investment, which continues increasingly. While contribution of renewables to total energy consumption was approximately 18% in 1990, in parallel with increasing energy demand, this figure decreased to almost 10% in 2012 according to TURKSTAT data.

By the end of the 2012, the gross amount of produced domestic energy was 31,964 thousand TOE. 11,972 TOE of the total amount was renewable energy sources in gross domestic production with the rate of 37,4%.

GROSS ENERGY PRODUCTION FROM THE RENEWABLE ENERGY SOURCES IN TURKEY (Thousand TOE)



Source: Ministry of Energy and Natural Resources, General Directorate of Energy Affairs

To be able to increase the rate of the renewable energy consumption (except for wood), plans and investments are still in progress.

By the end of 2013 the amount of the national gross electricity production was 239,308 GWh (Temporary data). The amount of electricity produced by renewable sources in the whole gross value was 68,047 GWh with 28, 4%. It is aimed to reached at least 30% in 2023.

GROSS PRODUCTION VALUES BY TYPE OF RESOURCES (GWh)

Fuel Type	PRODUCTION (GWh)
HYDRAULIC	59.272,2
WIND	7.494,0
GEOTHERMAL	1.281,3

Source: Turkish Electricity Transmission Company. (TEİAŞ), <http://www.teias.gov.tr/yukdagitim/2013Gecici.htm>
Note: DATA is temporary.

10.6- Primary and Final Energy Density

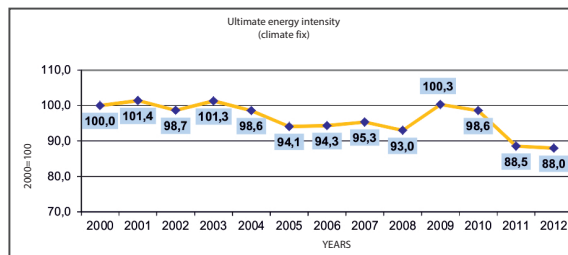
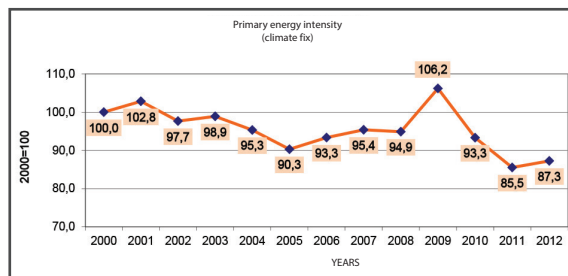
The term 'Energy Density' is one of the indicators of energy efficiency that is described as the ratio of energy consumption (TOE, joule) to the financial indicators (gross domestic product-GDP, added value etc.). When any of the technical or psychical indicators (specific energy consumption, energy consumption) cannot explain the efficiency rate of an activity, energy density is used as an indicator of the energy efficiency.

The ratio of the primary energy consumption to GDP (Gross Domestic Product) is considered as Primary Energy Density, and the ratio of the final energy expenditure to the GDP is considered as Final Energy Density.

The primary energy expenditure is the indicator which calculates the energy needed to be able to create 1 unit of GDP on basis of countries and regions. The level of this indicator shows the economic structure, energy consumption structure, climate conditions and the energy efficiency rates of the countries or regions.

Energy Density Tendency is influenced by structural changes in economy and industry, structural changes energy consumption, equipment used by final consumers and the efficiency of the construction.

There was a 0,9% decrease in the index of primary energy Intensity and 1,0% in the index of final energy intensity between 2000 and 2012. According to previous year, it is seen that there was a 2,0% increase in the rate of the Primary Energy Intensity index while Final Energy Intensity rate reduced by 0,6% in 2012. Compared to 2000, there was 12,7% improvement in the intensity of primary energy index and 12,0% in the intensity of final energy index. ^[39]



Source: Ministry of Energy and Natural Resources, General Directorate of Renewable Energy
 Note: 1998 GDP Based data have been used to identify the densities.

10.7- Energy Efficiency in Buildings

In order to make future generations and our country more eco-friendly and livable, building industry is of great importance. That 40% of the total energy is consumed in buildings clearly shows the importance of the issue. When energy efficiency and savings potential of the construction sector is compared with current consumption, we can reach a rate of 50%.

To convey the idea of Energy Efficient Building to the society in cultural base the necessary studies are done and some activities are organized in this context.

Regarding Turkey's building industry, existing building supply and new buildings must be dealt within the framework of sustainability. Energy efficiency in building is important in terms of reducing greenhouse gas emissions and air pollution as well as providing energy savings. The By-Laws on Energy Efficiency in Buildings and Central Heating and Hot Water Cost Sharing by our Ministry under the Law on Energy Efficiency were issued and came into force.

Within the scope of the 'By-Law on Energy Efficiency in Buildings', to have an Energy Performance Certificate that determines the energy consumption class of the building is obligatory. As of the end of 2012, a total of 139,500 Energy Identity Certificate 133,014 for new and 6,493 for present buildings were already given.

Number of Buildings Given Energy Identity Certificate / Years	2011 YEAR	2012 YEAR	2013 YEAR
New Building	7.805	43.834	81.375
Old Building	400	2.300	3.793
TOTAL	8.205	46.134	85.168

Source: <http://www.csb.gov.tr/gm/meslekihiizmetler/index.php?Sayfa=sayfa&Tur=webmenu&d=9690>

All existing and new buildings are required to fulfill expense-sharing applications in central heating systems. Within the context of sharing the expenses of heat for central heating systems, 60 company were authorized in Turkey in 2013.

It is aimed to reduce the fuel consumption by average of 30% without damaging the comfortable conditions in these buildings. The process of adapting the new technology and compliance to the legislation in force is rapidly going on. By 2023, the Ministry, targets an Energy Identity Certificate to be given to all existing and new buildings. In this way it will be possible to collect the data about existing building stock, urbanization rates, energy and greenhouse gas emissions and thus to enable the future plans to be shaped will be more accurately.

Taking the building stock in Turkey into consideration, it is determined that the renewable energy consumption was only 2, 3%. With the recent legislation, it became mandatory to invest at least 10% of the construction cost on renewable energy investments in the new buildings with a 20,000 m² or more area. In this way, renewable energy usage rate is estimated to be no less than 7% by the end of 2017^[8].

11.1- Agricultural Area Per Capita

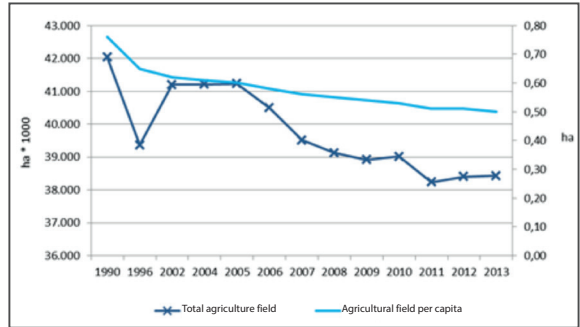
While our agricultural land is essential for herbal production, our pastures, winter quarters and summer pasture are necessary for the improvement of animal husbandry and protection of the nature.

According to the temporary data of TURKSTAT, in 2013, total agricultural land was approximately 38,428,000 hectares (this includes land under permanent meadows and pastures). Of the total agricultural land, 53.6 % was planted areas, 8.4 % was sustainable yield areas (perennial fruits), and 38 % was permanent pastures and grassland.

Due to the increase in Turkish population, total agricultural area decreased, which resulted in a decline in of the amount of agricultural land per capita. From 1990 to 2013, Turkish population rose by 35.7% while agricultural land per capita decreased by 34.1%.

In 1990, agricultural land per capita was 0.76 hectares, this number decreased to 0.50 hectares by 2013. As of 2013, when total arable land is considered (23,811,000 hectares) the area per capita was 0.31.

Agricultural Area Per Capita Through the Years



Source: Ministry of Food, Agriculture and Livestock, TURKSTAT

(1) multiple cultivations after 2011 are excluded.

(2) Ministry of Food, Agriculture and Livestock DATA have been taken under consideration in calculating the Agricultural Census 2011 for the Meadow and Pasture Area

(3) According to EU Activities, classifications are made by Statistical Classification of Goods (CPA 2002)

(4) 2013 Data is not permanent.

According to Food and Agriculture Organization of the United Nations (FAO), agricultural land per capita for the world is 0.23 hectares and this number is forecasted to decrease to 0.15 hectares by the year 2050^[19].

11.2- Chemical Fertilizer Consumption

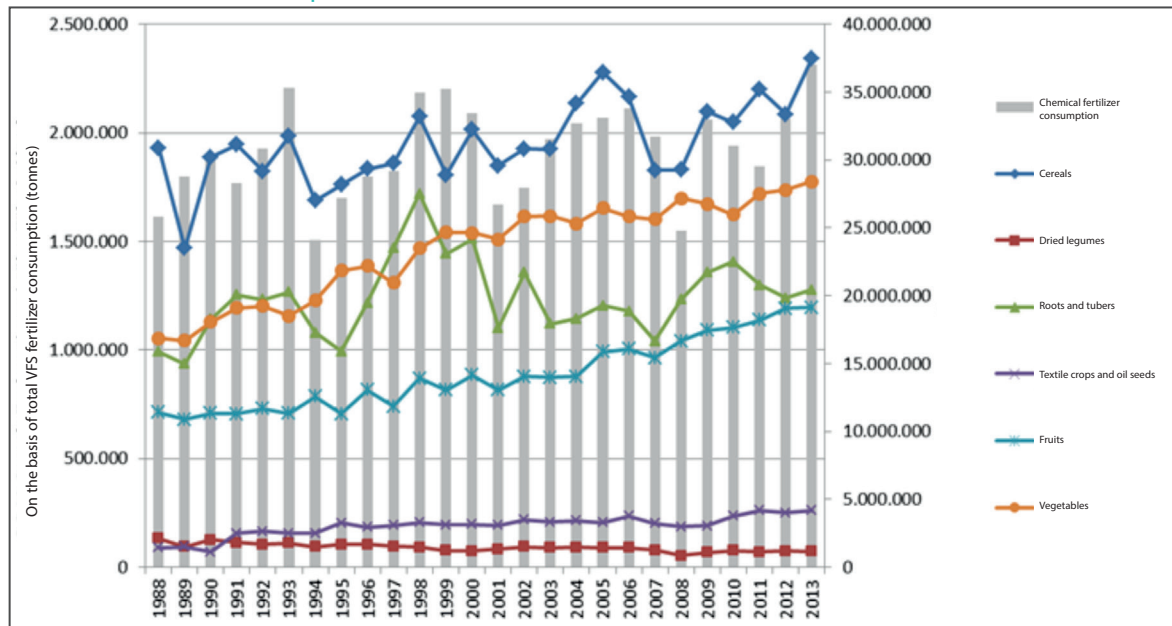
While total chemical fertilizer consumption on the basis of herbal nutrients (V.F.S) showed fluctuations between 1988 and 2012 in Turkey, it showed a general tendency to increase. Chemical fertilizer consumption on the basis of herbal nutrients was 1.613.692 tons in 1988. This number increased to 2.312.724 tons in 2013. When the plant production values for the same period are evaluated, there was an increase in the production rates of cereals, vegetables and fruits; production rates of root-tuber crops, plants used in textile-oilseeds and legumes general trend was stable.

When TURKSTAT data are taken into account, considering that there was the 23.8 million hectares of arable land in 2013; fertilizer use per each hectare (on the basis of herbal nutrients) was approximately 97 kg. There was an excessive use of fertilizers in certain sporadic areas and areas where secondary or tertiary products are planted. By Republic of Turkey Ministry of Food, Agriculture and Livestock villagers are supported to make soil analyses to ensure conscious fertilizer consumption. ^[42]

According to 2009 data, for EU-27 countries, an approximate average fertilizer consumption was estimated as 82,5 kg/ha while that for EU-15 countries was 95 kg/ha.

However, the rate of the fertilizer consumption for Belgium and Luxemburg was for 173,9 kg per hectares. This figure was 135,9% for countries such as Germany and 145,8 for Netherlands kg/ha, The lowest amount of the fertilizer usage across Europe was Bulgaria (48,7 kg/ha), Leetonia (35,1 kg/ha), Romania (33,4 kg/ha) and Portugal (29,2 kg/ha) ^[42].

The Amount Total Fertilizer Consumption Based on Nutrient and the Plant



Sources: Chemical Fertilizer as Nutrient data by Ministry of Food, Agriculture and Livestock
 Nutrient Production data, TURKSTAT, Statistics by Subject, Agriculture, Plant production Statistics, Statistical Tables and Dynamic Examination (http://www.tuik.gov.tr/PreTablo.do?alt_id=1001).

11- AGRICULTURE

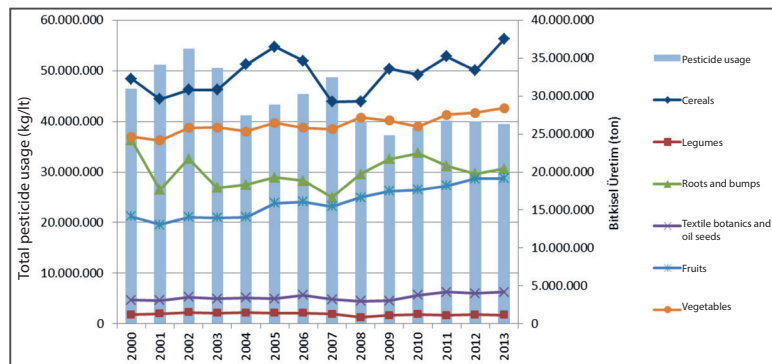
11.3- Pesticide Use

Between 2000 and 2013, while total usage of pesticides fluctuated, it showed a general tendency to decrease. The total pesticide usage in Turkey for 2000 was 46.428.641 kg/ Lt (kg or Lt). This number decreased to 39,438,637 kg/ Lt in 2013. When plant production data for the same period is analysed, grain, vegetable, and fruit production showed a tendency to increase while production in tubers, plants used in textile, legumes and oily seeds was stable.

Considering the total pesticide usage, among the provinces the highest pesticide usage was in Antalya with 5, 5197.558 kg/ Lt (13,2% of the total pesticide used in the country). It is followed by Manisa with (4.652.066 kg / Lt), Bursa with (2.521.635 kg/ Lt), Konya with (2.363.367 kg/Lt), Mersin with (2.080.223 kg/ Lt), Adana with (1.985.262 kg/ Lt), Malatya with (1.724.578 kg/Lt) and Izmir with (1.594.004 kg/Lt) respectively.

2013 total pesticide usage was composed of 41,2% of fungicides, 19,6% of insecticides, 18,6% of herbicides, 2,2% of mite killers, 0,3% of rodenticides and 18,1% by others..

TOTAL PESTICIDE USAGE AND AMOUNT OF PLANT PRODUCTION



Sources: data about the amount of pesticide used, by Ministry of Food, Agriculture and Livestock Nutrient Production data, TURKSTAT, Statistics by Subject, Agriculture, Plant production Statistics, Statistical Tables and Dynamic Examination (http://www.tuik.gov.tr/PreTablo.do?alt_id=1001).

It is aimed to level up the pesticide usage at about 40 tons by 2023 by the Ministry of Agriculture and Livestock and to reduce the ratio of pesticides used in plant protection products to 85% by 2018, and 75% by 2023. Sustainable agriculture that accepts humans and environment as part of the same system must be utilised. With this goal in mind, Integrated Protection Management (IPM) system was improved.

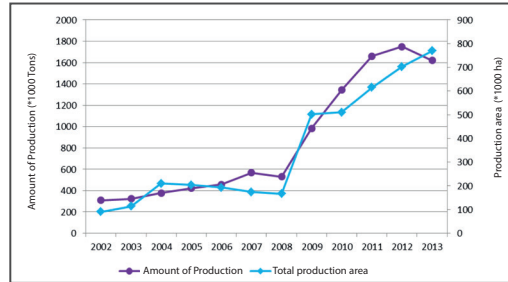
11.4- Organic Agricultural Implementation

In 1985 the organic agriculture applications started with 8 types of product due to the demand in exporting and this number reached to 213 in 2013 as there was an increase in the demand. In 2002 12,428 farmers planted 89,827 hectares and harvested 310,125 tons of organic product. In 2013 this amount reached to 1, 620,466 tons and 60,792 farmers planted 769,014 hectares.

In 2013, compared to the previous year, while areas dedicated to organic agriculture increased by 9, 4%, amount of production decreased by 7, 4%.

For 2013, the ratio of total organic production area to the total agricultural land was 1,95%. It is aimed to increase this number to %3 by 2015, and 5% by 2023. In 2012, 1% of the world's total agricultural lands and 7.8% of EU countries' total agricultural lands was dedicated to organic agriculture^[42].

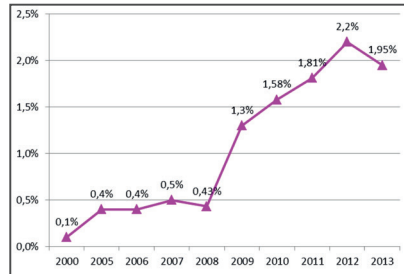
ORGANIC AGRICULTURE AND PRODUCTION BY THE YEARS



Source: TURKSTAT

Note (1) Transitional period data is included. (2) Natural landfill Areas are included.

THE RATIO OF THE ORGANIC AGRICULTURAL AREAS TO TOTAL AGRICULTURAL AREAS BY YEARS (%)



Source: Ministry of Food, Agriculture and Livestock,
Note (1) Transitional period data is included. (2) Natural landfill Areas are included.

11- AGRICULTURE

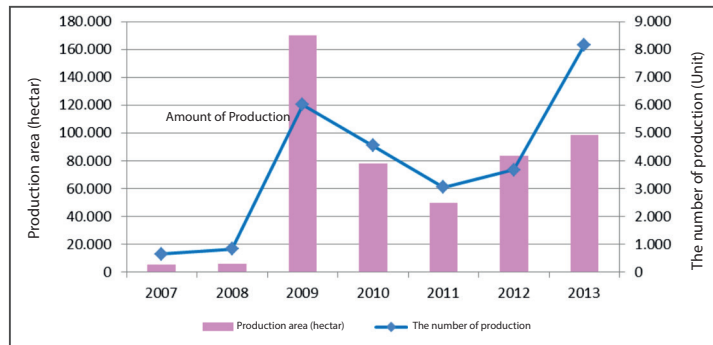
11.5- Good Agricultural Practices

The aim of Good Agricultural Practices is to avoid any remains of the pesticides on the product damaging human health, and to protect environment, soil, water and living creatures, to be careful about the welfare and health of animals and to produce plants in accordance with the standards. Therefore, production has to be traced from the soil to the dining table, and every step has to be recorded. Pesticide, fertilizer and hormone should be used according to the results of analyses and be kept under control. The last product is certificated by the report given by the control institution. In the near future, all garden products to be exported to European countries are expected to have this certificate.

In Turkey, Good Agricultural Practices Certificate started to be given in 2007. In the same year, 651 producers from 18 provinces harvested 5,360 hectares and in 2013 8,170 producers from 56 provinces harvested 98,510 hectares and produced a total of 1,599,636 tons of products.

The number of producers which was 3,676 in 2012 increased more than twice in 2013, and in 2012 the production area which was 83,717 increased 17,6% reaching ha 98,510 ha in 2013.

GOOD AGRICULTURAL PRACTICES PRODUCTION AREAS AND PRODUCER NUMBER BY THE YEARS



Source: Ministry of Food, Agriculture and Livestock

It is aimed to increase the number of producers 10%, and products 20% each year for Good agricultural practice [42].

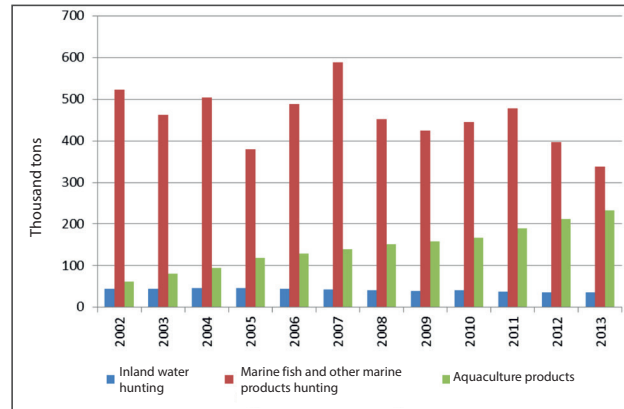
12.1- Aquaculture Production

There is 24 million ha of sea area and 1 million ha of inland water area in Turkey. Based on the TURKSTAT data; in 2013, fishery production declined to 607,515 tons with the rate of 5,8% in comparison with the previous year. 48,6% of the total amount was sea fish, 38,4% aquaculture, 7,2% other sea fisheries, 5,8% inland fisheries.

In 2013, the amount of fished water products decreased by 13,5% while the amount of aquaculture production increased by 9,9% compared to the previous year. The products fished was 374,121 tons while the aquaculture production reached to 233,394 tons. Compared to the previous year, sea fishery hunting was decreased 14,5%, and inland fishery hunting dropped to the 2,9%. 52,7% Aquaculture production was done in inland waters, 47,3 in seas.

With regard to sea fishery production, East Black Sea region took the 1st place with the rate of 51%. It is followed by West Black sea region with 21,7%, Marmara region with 12%, Aegean region with 9,4% and Mediterranean region with 5,9% respectively ^[45].

AQUACULTURE PRODUCTION DATA BY THE YEARS



Source: Ministry of Food, Agriculture and Livestock, TURKSTAT

To protect fishery sources and provide sustainability, some applications about place, time, length, kind, distance, depth, and hunting equipment related to fishery hunting are made. Water pollution monitoring have been carried out in zones fishery belonging to 773 stations under 14 parameters. In fishery cultivation, Environment-Friendly production techniques are used and environmental, economic and social sustainability is provided. Activities such as monitoring of fish stocks, and protection of endangered species, reinforcement of the fish stocks and monitoring of water resources pollution and taking preventative measurements performed. ^[46]

12- FISHERY

12.2- Fishing Fleet Capacity

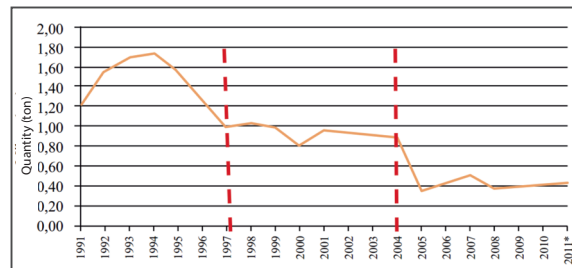
Indicator is the measurement of the size and capacity of the fishing fleet that is assumed to have a pressure on fish source and environment.

YEARS	2009	2010	2011	2012
Total Fleet Power (kW)	1.084.081	1.147.876	1.131.940	1.125.231

Source: TURKSTAT, Sustainable Development Indicator 2012-2013.

Despite the high fishing effort, the amount of the fishery has not increased and therefore it is considered that the values about fishery production is on the upper limit. Compared with the neighboring countries Turkey is way forward in terms of the fleet power, size, technology and hunting equipment. The capacity of the fishery fleet is 3 times bigger than the required size considering the current amount of fish to be caught. Due to excessive hunting, stocks are increased. Thus the amount of the product that the ships had in terms of kW decline by years. In 2002, after the number of vessels was frozen, 900 kg product was obtained by consumed energy. And this amount has continued to decline since then ^[47].

THE PRODUCTION AMOUNT OF THE FISHING FLEET PER SHIP (PER Kw)



Source: TURKSTAT, Ministry of Development, 10th Development Plan (2014-2018), "Aquaculture" Specialized Commission Report

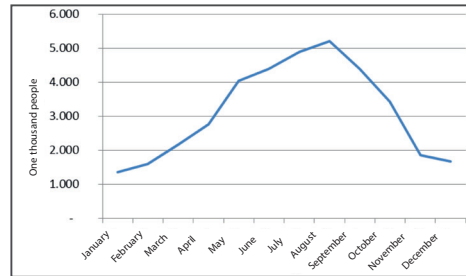
It is known that neither in the world nor in Turkey the amount obtained by hunting will not increase significantly. This is why, it is necessary to sustain the sources as efficiently as possible. Under the scope of Aquaculture Law aquaculture inspections are done by Ministry of Food, Agriculture and Livestock, Turkish Coast Guard Command and the other related institutions

13.1- The Number of Tourists

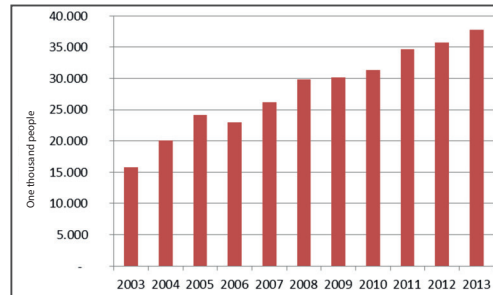
The number of tourists is found by subtracting the number of overnight tourists from the total of foreign visitors and the visitors residing abroad.

In 2003, 15.774.505 tourists visited Turkey, and this number increased to 37.794.908 in 2013. When the distribution of tourists visiting Turkey by months is considered, it is seen that tourists visited the country mostly in summer. In summer while water resource capacities are minimum level, increasing water consumption per capita in touristic facilities bring about environmental problems related with water. Drawing an excessive amount of water from deep water wells, is also a risk which increases the water problem. In the touristic zones in Turkey, environmental problems such as wastewater, waste, energy consumption, use of natural resources and noise are experienced. However, the ultimate attention is given to touristic investments that this investment to be in an approach to protect and improve natural, historical and social environment

Distribution of Tourists Visiting Turkey by Months in 2013



2003-2013 Period Number of Tourists



Source: Ministry of culture and tourism

13.2- The Number of Environmentally Sensitive Accommodation Facilities

To protect the environment, to improve environmental awareness and to encourage touristic facilities, "Touristic Management documents" to adopt a positive contribution towards the environment, "A certificate and a plaque under the legislation within the framework of the "accommodations that operate ecologically sensitive" are presented to the environmental friendly touristic accommodation facilities by the Ministry of Culture and Tourism. Cost of some the electric energy consumed by the accommodations with this certificate is supported by the Ministry of Tourism and Culture.

Today, there are 3056 accommodations with tourism management documents and their total bed capacity is 774.215. 67 of these accommodations are presented with environmentally sensitive accommodation certificate and the total capacity of beds they have is 52.182.

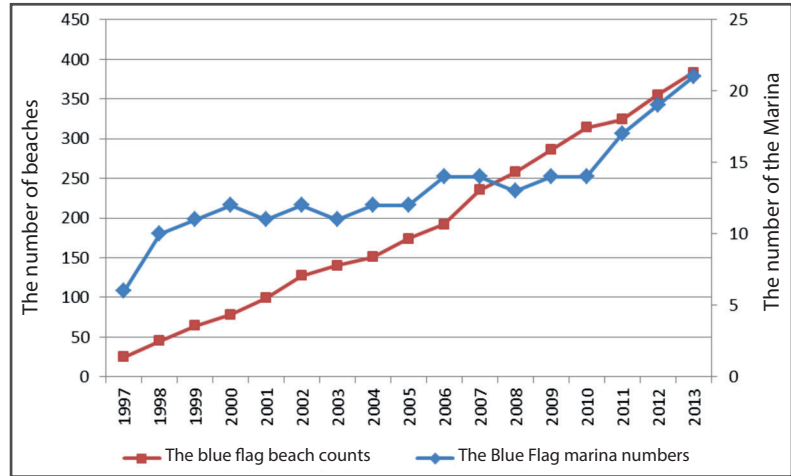
13.3- Blue Flag Implementations

Blue flag is an international environmental award which is given to the qualified beaches, marinas and yachts in accordance with required standards. The purpose of Blue Flag Implementations, started in 1978 in Europe and in 1993 in Turkey, is to constitute high standards for beaches and marinas.

Beaches are considered within 33 and marinas are considered within 25 criteria in this procedure. The places providing all the criteria, (for beaches there are 33 and for marinas there are 25 criteria) have the right to get the Blue Flag for one-year with the approval of first the national and then of the international jury.

The number of Blue Flags in Turkey steadily increased between 1997- 2013; reaching 383 beaches, 21 marinas and 13 yachts

In 2013, Turkey, ranked the third among the 49 countries following Spain with 552 and Greece with 393 blue flag beaches As for marinas with blue flag, Turkey ranked the 7th in the world.



Source: Ministry of Culture and Tourism

14- DISASTERS

14.1- Forest Fires

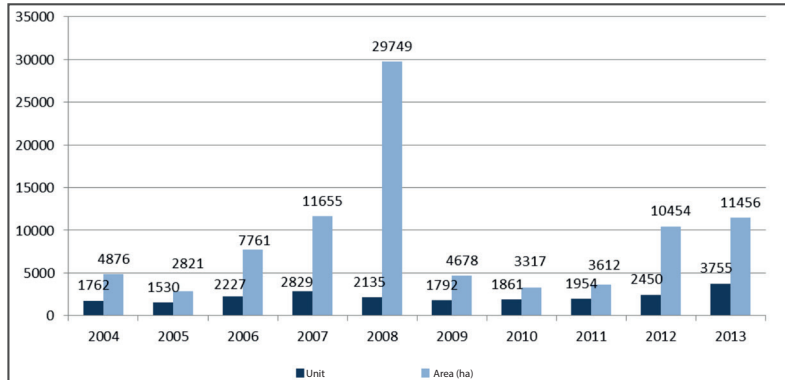
The majority of the forests located in Turkey, which is in the Mediterranean climate zone, are under the threat of forest fire.

According to the statistical values for the last 10 years (2004-2013), approximately 2230 forest fires occurred, and in average 9039 ha of forest area was damaged annually.

For the last 10 years (2004-2013) 4,1 ha area was damaged per incident of fire.

Considering the mediterranean countries for the last decade, the rate of the damaged forested areas to the whole forested areas of the countries are stated as follows: Portugal 38,2%, Greece 6%, Italy 5,6%, Spain 4,2%, France 1,2%, and Turkey 0,04% respectively.

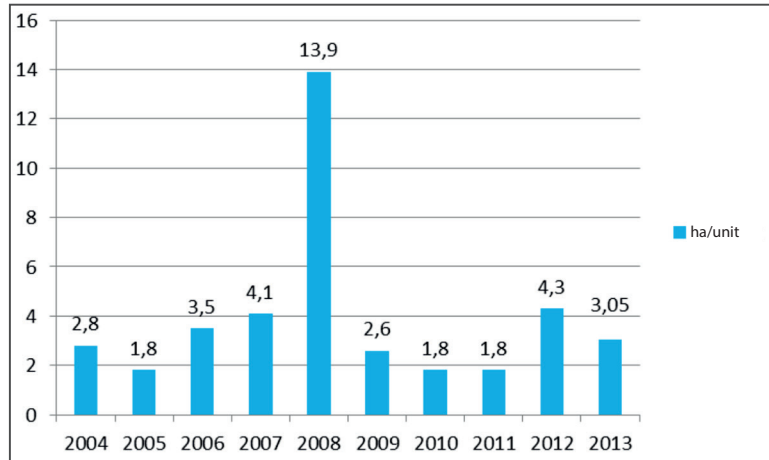
2004-2013 TRENDS IN FOREST FIRE



Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry

The majority of the forest fires are caused by people. Based on data of the last 10 years (2004-2013) fires broke out due to: negligence, carelessness and accidents (48%), intentionally (10%), and natural reasons (lightning) (12%), and 30% could not be specified. 85% of forest fires in terms of both numbers and the area occurred between June and October which is the period when the risks are at their peak. The distribution of the burned areas per incident to the months shows that most damage occurred in July with 44%, August with 29% and September with 11% respectively.

2004-2013 DAMAGED AREA PER FOREST FIRE



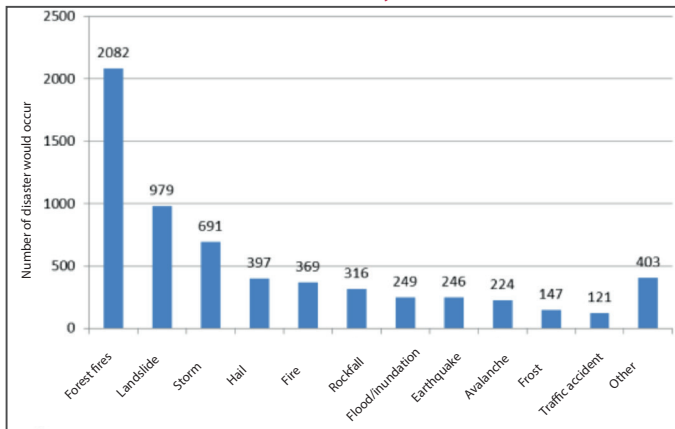
Source: Ministry of Forestry and Water Affairs, General Directorate of Forestry

14- DISASTERS

14.2- Disasters by Types

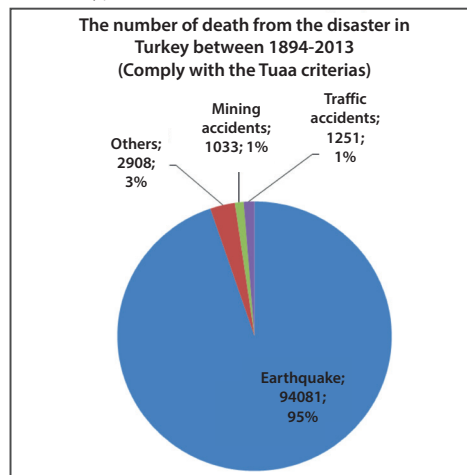
As a result of the assessment of occurrences of the disasters (that comply with the criteria of National Disaster Data Bank of Turkey) during the period of 1894-2013, forest fires seem to be the most frequent disaster with 2082 incident; that is 33% of all the disasters. In the same period there were 979 Landslide (15 %), 691 Storms (11%) and 397 hails (6%).

TYPE AND THE OCCURANCES OF DISASTERS (that comply with the criteria of National Disaster Archive Data Bank of Turkey) BETWEEN 1894-2013



Source: AFAD (Republic of Turkey Prime Ministry Disaster & Emergency Management Presidency) National Disaster Archive Data Bank of Turkey (TUAA) <https://tuaatest.afad.gov.tr/main.jsp>

In the disasters (that comply with the criteria of Turkey National Disaster Archive Data Bank of Turkey) during the period of 1894-2013, deaths occurred mostly in the Earthquakes (94,081 lives 95%). In addition to this 1251 people were killed in traffic accidents (1%), 1033 people in mining accidents (1%) and 2908 people in different types of disasters (3%).



Source: AFAD National Disaster Archive Data Bank of Turkey (TUAA) <https://tuaatest.afad.gov.tr/main.jsp>

14.3- Liability Insurance

The concept of risk brings the concept of insurance as a requirement to assure the risk. In this context, environmental liability insurance is used as a tool of management of environmental risks nowadays.

The companies with the potential of causing environmental pollution can assure the damages to the third parties due to a possible environmental risk or damage to the environment. Within scope of environmental legislation; General Conditions of Compulsory Marine Pollution Financial Liability Insurance for Coastal Facilities dated 01 July 2007; General Conditions of Compulsory Financial Liability Insurance for Hazardous Substances and Hazardous Wastes dated 11 March 2010 and General Conditions of Financial Liability Insurance for Environmental Pollution dated 01 September 2011 have entered into force.

Due to the pollution or the risk of pollution which occurs in inland waters, in territorial waters, in continental shelves and in territorial waters consisting of exclusive economic zones caused by the coastal facilities; the expenses for cleaning, for transport and disposal of wastes, damages due to injuries or deaths of third persons and for damage to private goods are compensated by Compulsory Financial Liability Insurance of Marine Pollution by Coastal Facilities. Concerning the mentioned insurance, the number of insurance policies 295 in 2012 and it reached to 434 in 2013; and the premium production was 4.186.604 TL.

Compulsory Financial Liability Insurance for Marine Pollution by Coastal Facilities

YEARS	2009	2010	2011	2012	2013
Number of Policies	1	140	203	295	434
Amount of Premium (TL)	438.737	2.067.525	2.068.738	1.956.053	4.186.604

Source: Prime Ministry Undersecretaries of Treasury

14- DISASTERS

Financial Liability Insurance for Environmental Pollution has been established as a necessity due to insufficient coverage by the compulsory insurance of the liability of coastal facilities rising from the Law no. 5312. Due to the pollution or the risk of pollution caused by the activities of the facility identified in the policy; the expenses of the personal injuries, death or material damage to third persons are compensated by the insurer of this insurance. Also the expenses for cleaning, waste collection and disposal made outside the facility are compensated by the insurer. In 2012, there were 32 Liability Insurance of Environmental Pollution policies, which reached to 38

in 2013 and the premium production related to this insurance was 3,275,324 TL.

within the scope of "Compulsory Financial Liability Insurance for Dangerous Substances and Hazardous Wastes", direct damages to third parties, physical and financial, as a result of accidents that could be caused by occupational activities related to hazardous substances, are compensated. In 2012, the number of policies was 32,998 while it was 36,998 in 2013, and the premium production was 24,291,389 TL.

Compulsory Financial Liability Insurance for Environmental Pollution

Years	2009	2010	2011	2012	2013
Number of Policies	70	209	39	32	38
Amount of Premium (TL)	497.769	1.369.406	2.499.595	664.645	3.275.234

Source: Prime Ministry Undersecretariat of Treasury

Compulsory Financial Liability Insurance for Dangerous Substances and Hazardous Wastes

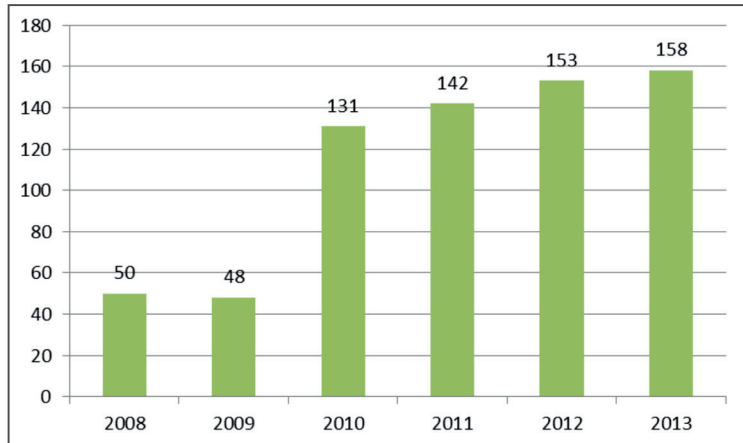
Years	2009	2010	2011	2012	2013
Number of Policies	18.893	27.484	32.383	32.998	36.298
Amount of Premium(TL)	11.079.390	15.508.967	18.265.577	20.656.890	24.291.389

Source: Prime Ministry Under secretariat of Treasury

15.1- The Number of Laboratories Operating within Environmental Legislation

In 2013, in Turkey there were 158 laboratories operating within the scope of environmental legislation. The qualifications and the places of these laboratories can be inquired at the following address: <http://laboratuvar.cevre.gov.tr/yonetim/sorgu.asp>

NUMBER of LABORATORIES OPERATING WITHIN ENVIRONMENTAL LEGISLATION BY YEARS



Source: Ministry of Environment, General Directorate of the EIA, Permit, and Inspection , Department of laboratory, Measurement and Monitoring

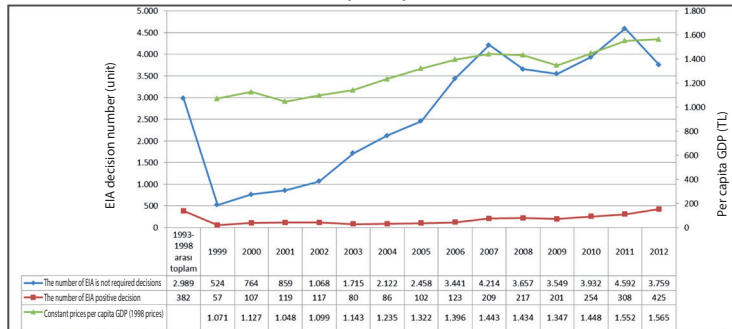
15.2- Environmental Impact Assessment Decisions

Environmental impact assessment (EIA), which is one of the most important tools of sustainable development, has been in implementation in Turkey since 1993. EIA is a tool applied to prevent the potential impacts of the projects planned on the environment and in determining the technological alternatives together with the selected location. Before the projects are put into practice, it is mandatory to receive a certificate of EIA Positive/ EIA not necessary within the scope of EIA legislation.

EIA decisions are significant as a reflection of the level of industrialization and development process of Turkey. Parallel to the development of the country, number of EIA Decisions tend to increase in years.

In summary, the EIA Positive Decisions are defined as the positive decisions made after investigating projects existing in the list in annex 1 of the Legislation which have relatively high environmental impacts. EIA not necessary decisions are the positive decisions given in the investigations of the projects existing in the list annex 2 of the legislation which have relatively fewer impacts on the environment when compared to annex 1.

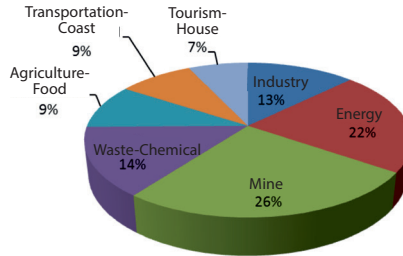
The Number of EIA Positive and EIA Not Necessary Decisions between 1993 When the First EIA Legislation was published and 2012 and GDP per Capita.



Source: EIA data of the Ministry of Environment, General Directorate of EIA, Permit and Inspection, the TURKSTAT data for GDP per capita (*) 1986-2023 mid-year population estimations and projections were used and, GDP per capita was revised in 1998.

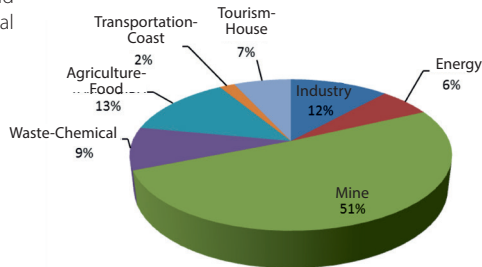
In Turkey, the first EIA Regulation was published in 1993 and by the end of 2012, a total of 2787 "EIA positive" decisions were given. When these decisions are investigated according to the distribution by sector we can see that mining investments ranked the first with 26%, and it is followed by energy investments with 22% and waste industry and the chemical industry investments with 14%.

DISTRIBUTION BY SECTOR OF EIA POSITIVE DECISIONS 1993-2012



From 1993 up to the end of 2012 a total of 39.643 "EIA not required" decisions were given and according to the distribution by sector mining investments again ranked the first with 51%. That is followed by agriculture and food investments with 13% and industrial investments with 12%.

DISTRIBUTION BY SECTOR OF EIA IS NOT REQUIRED DECISIONS 1993-2012



Source: Ministry of Environment, General Directorate of the EIA, Permit and Inspection

COMPARISON OF THE WATER, WASTEWATER AND WASTE DATA OF 2008, 2010 AND 2012 BY SECTORS

The amount of water drawing from sources by sectors						
	2008		2010		2012	
	Amount (Billion m ³ /year)	(%)	Amount (Billion m ³ /year)	(%)	Amount (Billion m ³ /year)	(%)
Municipalities	4,56		4,79	11,2	4,93	10,2
Villages	1,22		1,01	2,4	1,04	2,1
Manufacturing Industry Plants	1,20		1,42	3,3	1,67	3,5
Thermal Power Stations	4,54		4,27	10,0	6,40	13,3
Organized Industrial Zones	0,11		0,11	0,3	0,12	0,2
Mining Facilities	...		0,05	0,1	0,11	0,2
Irrigation	27,00		30,95	72,6	34,00	70,4
Total	38,62		42,61	100	48,26	100

Note: Sectorial transfers are not included.

... Information could be obtained.

Sources: "Watering" figures; Source: Ministry of Forestry and Water Affairs General Directorate of State Hydraulic Works (DSI), <http://www.dsi.gov.tr/dsi-resmi-istatistikler>
Figures rather than "Irrigation"; Source: TURKSTAT

Wastewater amount directly discharged to receiving media by sectors						
	2008		2010		2012	
	Amount (Billion m ³ /year)	(%)	Amount (Billion m ³ /year)	(%)	Amount (Billion m ³ /year)	(%)
Municipalities	3,11	35,7	3,50	38,5	3,90	32,4
Villages	0,20	2,3	0,19	2,1	0,19	1,6
Manufacturing Industry Plants	0,84	9,6	1,04	11,4	1,36	11,3
Thermal Power Stations	4,44	50,9	4,16	45,8	6,30	52,3
Organized Industrial Zones	0,13	1,5	0,16	1,8	0,20	1,7
Mining Facilities	0,04	0,5	0,10	0,8
Total	8,73	100	9,10	100	12,05	100

Note: Sectorial transfers are not included.

... Information could be obtained.

Source: TURKSTAT

Amounts of Wastes generated by sectors						
	2008		2010		2012	
	Total Waste Amount	Amount of Hazardous Waste in Total Waste Amount	Total Waste Amount	Amount of Hazardous Waste in Total Waste Amount	Total Waste Amount	Amount of Hazardous Waste in Total Waste Amount
	(1000 tons/year)	(1000 tons/year)	(1000 tons/year)	(1000 tons/year)	(1000 tons/year)	(1000 tons/year)
Municipalities	24.361		25.277		25.845	-
Manufacturing Industry Plants	12.482	1.136	13.366	964	14.420	806
Thermal Power Stations	25.622	24	18.748	(**)	19.262	5
Organized Industrial Zones	255	34	313	(**)	421	62
Mining Facilities	729.750 ⁽¹⁾	2.314	951.782 ⁽¹⁾	3.181
Healthcare Organizations	92	92	100	100	84	84

Sources: Data of Healthcare Organizations are given by Ministry of Environment and Urbanisation, General Directorate for Environmental Management, other data are given by TURKSTAT
(**) According to the Law no. 5429 privacy policies, data on units could not be given for the number of units three or more or two units dominated.

... Information could be obtained.

(1) Includes over burden and tailings wastes from mining activities.

POPULATION**Population Growth Rate**

Indicator shows the average annual increase of the population rate during a specific period or year. Growth rate is expressed as annual population increase for every 100 inhabitants.

Urban Population

Indicator shows the percentage of the population in provincial and district centers and within municipal boundaries in total population.

ECONOMY**Total Environmental Expenditures of Public Sector**

Environmental protection expenditures are the spending that are incurred to prevent, reduce and abate the pollution caused by the consumption of goods and services and production processes. For the public sector this expenditure also includes the costs of management, monitoring and the legislation enforcement. Classification of Environmental Protection Activities (CEPA) that is prepared by the United Nations Economic Commission for Europe and European Statistics Office is used to define the scope of environmental expenditures. Environmental expenditures of the public sector covers the environmental expenditures of public institutions, special provincial administrations and municipalities.

Sectoral Distribution of the Employment

It indicates the percentage of the active population of agriculture, industry, construction and service sectors in the total active population.

AIR, ATMOSPHERE, CLIMATE**Greenhouse Gas Emissions**

These emissions comprise of direct greenhouse gasses, such as: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydro fluorocarbons (HFCs) and sulfur hexafluoride (SF₆) and indirect greenhouse gases such as nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs) and carbon monoxide (CO) emissions that are generated by energy, industrial processes, agricultural activities and emissions from waste disposal. National Greenhouse Gas Emissions are calculated by using the guidelines of 1996 Intergovernmental Panel on Climate Change (IPCC).

Greenhouse Gas Emissions by Sectors

Indicator refers to the amount of the greenhouse gas emissions caused by different sectors and expressed as CO₂ equivalent.

Precipitation

The expression describes the average precipitation per unit area.

Temperature

This indicates monitoring of the average surface temperature time series.

Sea Water Temperature

This indicates the yearly change of the sea water surface temperature in time series.

DEFINITIONS

AIR QUALITY

Air Pollutant Emission

Emissions of air pollutants is the expression for particular pollutants that is obtained by multiplying annual activity data with the emission factors and expressed as total mass per year (Kilotons, giga grams, etc.).

Air Pollutants

This indicator; shows the mass concentrations of SO_2 and PM in the ambient air. SO_2 is a suffocating, colorless and acidic gas which mostly arises from generation of sulphurous compounds that are naturally present in the fuel substances during combustion of fuels.. Particulate matter (PM) is a mixture of solid particles and liquid droplets suspended in the atmosphere. It comes in a variety of sizes and can be composed of many types of materials and chemicals. PM could also be formed by the agglomeration and the chemical conversion of the gaseous emissions. 5-10 micrometer diameter is defined as suspended particles. Overall, SO_2 involves heterogeneous mixtures and their characteristics vary considerably from one location to another. Particulate matters are called PM_{10} if the aerodynamic diameter of the particles is less than 10 micrometers.

Short Term Limit Values (STL)

The maximum daily average values or, the value that 95% of the measurement results must not exceed. When results of measurements are statistically arranged according to the size of their values. For settling dust, this is the value that the maximum monthly average value of settling dust should not exceed. For

assessment, short term limit values for the year 2012 were defined as, $140 \mu\text{g} / \text{m}^3$ for PM_{10} and $280 \mu\text{g} / \text{m}^3$ for SO_2 as mentioned in the "By-Law on Air Quality Assessment and Management,"

WATER-WASTEWATER

Water Usage

This indicates the amount of total water which is drawn from the sources in a sectorial base such as municipality, irrigation, drinking and utilization and industry.

Oxygen Consuming Substances in Rivers

The primary indicator of oxygen concentration in water bodies, is expressed as biochemical oxygen demand (BOD)—which is the amount of dissolved oxygen required for the aerobic decomposition of organic matter present in water—and the level of concentrations of ammonium (NH_4/NNH_4) in rivers.

Nutrients in Fresh Water Sources

Indicators can be used to show geographical variations in current nutrient concentrations - orthophosphate and nitrate concentrations in rivers, total phosphate and nitrate in lakes and nitrate in underground water formations - and temporal leanings.

The Quality of Swimming Water

This indicates the quality of swimming water in the coastal areas. According to By-law on Swimming Water Quality following qualities represent Class A Very Good/Excellent, Class B good Quality, Class C Bad Quality ve Class D Very Bad Quality/Needs to be Banned.

Drinking and Potable Water Resources of Municipalities

This indicates the rate of the water drawn from dams, wells, natural springs, rivers, lakes and ponds by the municipalities for the consumption as drinking and potable water usage.

Municipalities Served by Wastewater Treatment Unit

This shows the number of the municipalities providing service with the wastewater treatment facility and the population that is benefited from this service.

Wastewater Treatment is a process in which the solids in wastewater are partially removed and partially changed by decomposition from complex highly putrescible organic solids to mineral or relatively stable organic solids. The extent of this change depends on the treatment processes involved. After all treatment processes are completed, it is still necessary to dispose the liquid and the solids that are removed.

Wastewater Treatment Facilities: Waste water treatment facilities are units which water pollutants removed from wastewater by using different methods (biological, chemical, physical)

Treatment Methods

- **Physical Treatment:** Physical methods is the process which the undissolved pollutants separated from the wastewater by sedimentation or floatation. The most common physical treatment units are; screens, sieves, sand traps, balancing and sedimentation

and floating pools.

- **Chemical Treatment:** In chemical treatment by using chemicals like coagulants and polyelectrolytes, matters which dissolved or suspended in wastewater are separated.

- **Biological Treatment:** In this method microorganisms are used to eliminate dissolved organic solid matters in the wastewater which cannot be smoothed away by physical or chemical methods. Biological treatment methods can be classified as trickling filter, activated sludge, stabilization pool (oxidation pool).

- **Advanced Treatment:** It is the treatment method applied when physical and biological treatment methods are not efficient to remove the pollutants or the pollutants such as nitrogen, phosphate, heavy metals, toxic organic matters, which are impossible to be treated. Some of the advanced methods are; nitrification, denitrification, adsorption, ion exchange, etc.

- **Natural water treatment system:** Sedimentation of pollutants in artificial wetlands and treatment of wastewater by plants which can live in this kind of environment.

The population related to at least secondary (biological) wastewater treatment plant

It is the information of the percentage of the population whose

DEFINITIONS

water is treated by at least secondary wastewater treatment. Therefore, urban wastewater is treated usually by biological treatment with secondary sedimentation or similar processes. In this way, biochemical oxygen demand in wastewater (BOD) is reduced to at least 70%, and chemical oxygen demand (COD) to 75%.

WASTE

Municipal wastes and disposal

This indicator shows the amount of the wastes collected by the municipalities or on behalf of municipalities and the amount of the landfilled municipal wastes. Wastes produced in the houses is the most significant quantity of the municipal wastes. It also includes the wastes made by the buying-selling and commercial companies, office buildings, institutions and small workplaces.

Landfill of wastes

Landfill facilities are the areas in which the wastes are disposed according to certain technical standards excepting the services in which the wastes are stored in the interim storages less than 1 year for disposal, facilities in which the wastes are stored in interim waste storages less than 3 years for recovery or pretreatment and the units in which the wastes are stored in temporary waste storages for disposal or pretreatment or recovery in the facility where the wastes are produced. This indicator contains information about the number of waste landfill facilities and the rate of population the service is provided.

Medical Wastes

It indicates the amount of medical waste produced and the number of disposal/sterilization facility according to years.

Waste oils

This indicator expresses the amount of gathered oil which is used, from the gasoline engine, diesel engine, transmission and differential box, transmission, grease and other private vehicle oils and hydraulic system, turbine and compressor, slide, open-closed gear, circulation, metal cutting and processing, textile, thermal processing, heat transfer, isolation and protection, isolation, transformer, mold, steam cylinder, pneumatic system protector, food and medicine industry, paper machine, bed and other industrial oils and industrial greases, used thickener, protective, cleaning and other similar substances and petroleum products which are not appropriate for use.

Waste Vegetable oils

This indicates the total amount of gathered vegetable oils which are soap-stocks from refinery industry (residue formed during the removal of the fatty acids from raw oil using the base), tank bottom residues, oiled soils, used frying oil, oils from the oil holders of various facilities and vegetable oils whose usage dates are expired.

Waste batteries and accumulators

It shows the collected amount and recovered amount of the used batteries and accumulators which are required to be collected, transported and disposed separately from household wastes.

Packaging Wastes

It contains the information about the amounts and recycled amounts of the sale, secondary and transportation packaging which are left to environment including the ones used for the presentation of the product during the process of reaching the material to the end user or the consumer and which are expired and formed after the usage and are reusable aside from the production wastes.

End of life Tires

This indicates the amount of end of life tires that are used as additional fuel in recovery facilities or cement factories

End of life Vehicles

This indicates the number of the scrapped vehicles through the years.

Waste Electrical and Electronic Equipment

This indicates the amount of waste electrical and electronic equipment collection and treatment facilities.

Mining wastes

This indicates the wastes determined by the result of the questionnaire made in the mining facilities such as coal and lignite, metal ore mining, mining and quarries and other sectors with supportive activities which employ 10 or more people.

Hazardous Wastes

It includes the information about the amount and recovery quantities of the wastes which carry of the properties of being explosive, flammable, self-combustible, exhaling flammable gases when in contact with water, oxidizing, containing organic peroxide, poisonous, corrosive, exhaling toxic gases when they are in contact with water or air and toxic and ecotoxic properties.

Business Firms

It includes the packaging producers, merchandisers and suppliers.

Polychlorinated Biphenyls (PCB)

PCBs one of the 12 pollutants is the name given to polychlorinated biphenyl which is a group of aromatic chlorinated compounds. The dangerous impacts of PCB occur when the food and drinks which are polluted by this chemical are consumed or inhaled, swallowed or touched. When they are disposed or burned for a different purpose, if they do not burn up completely, they produce much more dangerous side products such as furans (PCDF) and dioxins (PCDD).

Ship Wastes Management

It includes all the wastes and loads produced during the normal activities of a vessel including the sewage within the scope of MARPOL 73/78 APPENDIX-I, APPENDIX -IV and APPENDIX -V; and all other wastes apart from the weight and load residues described in Convention of MARPOL 73/78 APPENDIX -V application.

LAND USE

Distributions of General Land Cover:

According to the Coordination of Information on the Environment-CORINE project types of usage are divided into two.

1. **Land Cover:** It shows the state of the land covered with biological and physical elements such as, natural marquis, shrub lands, natural cliffs and natural pastures etc.
2. **Land Use:** It describes the land use appearing by human effect.

This indicator shows a comparison between the land use changes and proportional indication of land use types determined according to Coordination of Information on the Environment-CORINE project. Land use categories identified according to CORINE are:

1. **Artificial Areas:** Most of these areas are covered with buildings and transportation network.
2. **Agricultural Areas:** Both tamed agriculture lands and pasture areas are placed under this headline.
3. **Forest and semi-natural areas:** They are the areas consisting of forests, marquis, herbaceous plants and non-planted and less planted open areas.
4. **Wetlands:** These are areas which stay wet ecologically from the

coastal line to the land side and all the water, marshes, reeds and turbarry which do not exceed six meters during the tide movements of the seas, bitter or salted, stagnant or flowing, continuous or temporary, natural or artificial and which are important as the habitats of living things especially water birds.

5. **Water bodies:** It includes the water bodies such as the Land waters (stream surfaces) and sea waters (lagoons, bays, sea and oceans).

Out of Purpose Use of Agricultural Land

It means giving permission to the lands that have the agricultural land property into use out of purpose within the law and by-laws.

Zones under Threat of Erosion

Erosion is the movement of soil from its natural environment by certain influences such as water flow, wind or gravity. Although it is a natural event, it becomes stronger with the influences such as water flow, wind and gravity with the result of deterioration of the natural structure of the land. In country lands, several types of erosion are observed. Water erosion is the most common erosion type in the Turkey. This indicator is shown together with the strength of erosion occurring in agricultural areas, forests and meadows.

BIOLOGICAL DIVERSITY

Biological Diversity

Biological Diversity is the unity of genes, species, ecosystems and ecological events in a particular area. In other words, biological

diversity contains the whole genes in a certain area, the species carrying these genes, the ecosystems home for these species and all the events (processes) which bind these together.

Protected Areas

These areas are the areas protected according to the description by International Union for Conservation of Nature (IUCN) updated in 2008. It is the area which is managed by legal and other effective methods, having geographical borders clearly described for the purpose of protection of the nature and related ecosystem services and cultural values in the long term.

Forests

This indicator states the changes in the total surface areas of the natural and cultivated/planted forests concerning periods.

Definitions Related with Forestry Studies;

Functional Forestry

This indicator represents the areas which are reserved for the total timber production, nature conservation, erosion prevention, hydrological, aesthetic, ecotourism and recreation, climate protection, public health, national defense and scientific use in the total forested area.

Tree wealth

It is the sum of the body volume of cylindrical body-shell trees (m³) that have at least 8 cm or more than 8 cm of chest diameter.

Pasture breeding

It involves activities like irrigation, fertilization, weed control, seeding, planting, tree planting and other biological techniques to increase the feed efficiency of the meadows and pastures in terms of quality and quantity; and the construction of plants facilitating grazing and the application of a variety of physical, technical and administrative measures in order to maintain soil.

Rehabilitation

This indicates the steps that include protection, fertilization, pruning of existing species in degraded or unproductive forest areas and planting species that grow naturally in forests, including the plantation of grafted or non-grafted seedlings of these species.

Erosion control

This includes the studies involving the precautions taken against erosion and movement of soil because of several factors above the earth bedrock.

Artificial Tensile

This indicates soil processing, weed cleaning and wire embracing works by the help of machinery and manpower.

Special Afforestation

This indicates the afforestation that is permitted by approved projects by the Ministry of Forestry and Water Affairs, in the degraded forest areas, legal entities of the public domain and owned land in

DEFINITIONS

the villages, municipalities, associations, foundations, chambers, the related entities that wood and harvesting belongs to commercial companies that are legal entity and natural entities.

INFRASTRUCTURE AND TRANSPORTATION

Road and Railroad Network

This indicates development and the length of total roads (highways, state roads, province roads) and railroads

The Amount of Freight and Passengers Carried by Transportation Types

This indicator shows distribution by percentage between transportation types for the freight and passengers in the country.

Number of Road Motor Vehicles

It indicates the total number of Road Motor Vehicles such as automobiles (including land vehicles), minibuses, autobuses, vans, trucks, and motorcycles, special purposed vehicles, road and work machines and tractors.

ENERGY

Primary Energy Consumption According to the Type of Fuel

Total energy consumption or gross domestic energy consumption represents the amount of energy required to meet the domestic consumption of a geographical entity. The supply from solid fuels, oil, gas, nuclear energy, and renewable sources is calculated as the sum of gross domestic energy consumption. The relative contribution of a particular fuel is measured by the ratio between

energy consumption from this fuel and the total gross domestic energy consumption in a calendar year.

Primary Energy Consumption Per Capita

This indicates the amount of total energy to intensity gross energy consumption (or total energy consumption) per capita.

Total Energy Consumption by Sectors

This shows the total energy consumption of the residences, industries, transportation, agriculture, non-energy, conversion sectors with the petroleum equivalence.

Primary Energy Production

It explains the amount of energy supplied from solid fuels like coal and wood, petroleum, gas and renewable sources and the ratio of each resource to total energy production.

Energy Dependence

Energy dependence indicates to what extent the country is dependent of imports in order to meet the energy needs of an economy. The indicator is obtained by dividing net imported energy to the sum of gross domestic energy consumption and the sum of bunker fuel.

The Share of Renewable Energy Sources in Consumption

This indicator shows the rate of total energy consumption obtained from renewable energy sources (wood, animal and plant residues,

hydraulic, geothermal, wind and solar). Renewable energy sources correspond to current external flow of energy or energy obtained from materials derived from them.

The Primary and Final Energy Density

The ratio of the GDP to the primary energy consumption is considered as primary energy density, the ratio of the GDP to the final energy is considered as final energy density.

AGRICULTURE

Agricultural Land Per Capita

This indicates the ratio of the total arable land to total population.

Consumption of Chemical Fertilizer

It refers to the amount of active ingredients (tons / year) Nitrogen, Phosphorus, nitrogen - phosphorus – calcium; in the amount of fertilizer consumed in agriculture

Use of Pesticides

It refers to the total annual use of pesticides.

Organic Agriculture

Organic agriculture is agricultural production type in which no chemical inputs, are used in production, only with the usage of the entries permitted by the By-Law and controlled and certified in every stage from production to consumption. This indicator

represents the amount of agricultural products produced by organic agricultural methods and their fields.

Good Agricultural Practices

According to the By-Law published on the Official Gazette dated 7 December 2010 and with the issue number of 27778 ; good agricultural practices represent the processes to be applied to emphasize socially viable, economically profitable and efficient agricultural production which protects human health and environment and animal health and welfare.

FISHERY

Aquaculture Production

This indicates the amount of sea fish, shellfish, mollusks and fresh water products whether fished or cultivated from inland waters each year. The data related to production is the live weight of the product when it is caught.

Fishing Fleet Capacity

This indicates the Total Engine Power of the Fishing fleet.

TOURISM

Number of Tourists

It indicates the number obtained by subtracting the number of the overnight tourists from the number of foreign visitor coming to Turkey and the visits of the citizens residing abroad.

DEFINITIONS

Blue flag implementations

Blue flag is an international environment award which is awarded to the qualified beaches and marinas that have the required standards and it is the total number of blue flags given to the beaches and marinas in Turkey since 1997.

DISASTERS

Forest Fires

It indicates the total number of burned forest area within the whole forest areas in years.

Disasters by Types

It indicates the number of periodical occurrence of natural disasters such as Hydraulic (Flood, Landslide), Meteorological (Storm, Avalanche), Geophysical (Earthquake, Volcanic Activity) and Climatic (heating, malformation, drought, fire) and Industrial Accidents, traffic accidents, pipeline transportation, and the deaths and property loss caused by these disasters.

Compulsory Financial Liability Insurance for Marine Pollution by Coastal Facilities

In accordance with the law numbered 5312 on Pertaining to Principles of Emergency Response and Compensation of Damage in Pollution for the Marine Environment by Oil and Other Harmful Substances, the coastal facilities are obligated to make compulsory financial liability insurance against the damages. Within this concept as a result of an incident resulting from the coastal facility mentioned in the policy and Compulsory Financial Liability

Insurance for Marine Pollution by coastal facilities which entered into force on 01.07.2007; all the cleaning costs, transportation and disposal costs of waste, costs arising from injury or death of third parties and lost which might occur for private products arising out of the pollution or the danger of pollution in the sea judicial areas consisting inland waters of Turkey, land water, continental shelf and economic areas.

Financial Liability Insurance for Environmental Pollution

The coastal facilities cannot fulfill their responsibility totally by the law" Pertaining to Principles of Emergency Response and Compensation of Damage in Pollution for the Marine Environment by Oil and Other Harmful Substances" number 5312. Thus Financial Liability Insurance for Environmental Pollution appeared as a necessity. Due to the pollution or the risk of pollution in all or a number of soil, ground waters, inland waters and sea waters; the expenses of the personal injuries, death or material damage of third persons are compensated accordingly with the Environmental Legislation. Also the expenses for clearance, for collection and disposal of wastes made out of the facility are compensated legally from the owner of the policy as a scope of Liability Insurance of Environmental.

Compulsory Financial Liability Insurance for Dangerous Substances and Hazardous Wastes

Within the scope of Council of Ministers Decision about Compulsory Liability Insurance for the Dangerous Substances dated 11/03/2010

and numbered 2010/190; real and legal entities who have vocational activities related with hazardous matters are obligated to have a compulsory liability insurance against the damages within the scope of the second article of mentioned decision. Within this context; with the "Compulsory Financial Liability Insurance of Dangerous Substances and Hazardous Wastes" which entered into force on 11.03.2010 as a result of an accident which may occur due to the professional activities about the hazardous substances, the physical and material damages directly exposed by third parties will be compensated.

OTHER

Environmental Impact Assessment (EIA)

EIA contains the determination of the positive and negative impacts of the planned projects on the environment, preventing the potential negative impacts and in determining the technological alternatives to minimize the negative impacts with the chosen place. The application of the projects are monitored and inspected.

EIA Positive

It is the decision of the Ministry stating that the adverse impacts of the project on environment, which is accepted to be on the desirable level according to scientific bases and due to the precautions taken; taking into consideration of Scope Determination and Evaluation Assessment Commission about Environmental Impact Assessment report

EIA Negative

The decision of the Ministry stating that it is inconvenient to implement the project due to its negative impacts on the environment; considering Scope Determination and Evaluation Assessment Commission decisions.

REFERENCES

- [1] Turkish Statistical Institute, "Address-Based Population Registration System Results, 2013" News Bulletin, 29.01.2014, No: 15974, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=15974>
- [2] Turkish Statistical Institute, "Population Projections, 2013 -2075" News Bulletin, 14.02.2013, No: 15844, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=15844>
- [3] Turkish Statistical Institute, "Environmental Employment, Income and Expenditure, 2012" News Bulletin, 20.03.2014, No: 16178, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=16178>
- [4] Ministry of Finance, Department of Strategy Development, "Annual Economic Report 2011", <http://www.maliye.gov.tr/YillikEkonomikRapor/Y%C4%B1llikEkonomikRapor%202011.pdf>
- [5] Turkish Statistical Institute, "Greenhouse Gas Emissions Inventory, 2012" News Bulletin; 07.04.2014, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=16174>
- [6] Ministry of Environment and Urbanisation, General Directorate of Environmental Management
- [7] <http://www.eea.europa.eu/data-and-maps/indicators/greenhouse-gas-emission-trends/greenhouse-gas-emission-trends-assessment-5>
- [8] The Ministry of Forestry and Water Affairs, General Directorate of Meteorology, "2012 Precipitation Assessment", Research Department, Hydro-meteorological Branch Office, February 2014- Ankara, <http://www.mgm.gov.tr/FILES/arastirma/yagis-degerlendirme/2013-yagis-degerlendirmesi.pdf>
- [9] The Ministry of Forestry and Water Affairs, General Directorate of Meteorology, "2013 Climate Assessment ", Presidency of Research Department, February 2014- Ankara, <http://www.mgm.gov.tr/FILES/iklim/2013-yili-iklim-degerlendirmesi.pdf>
- [10] Ministry of Forestry and Water Affairs, General Directorate of Meteorology.
- [11] The Ministry of Environment and Urbanisation, General Directorate of Environmental Management, "2013 Air Quality" News Bulletin,
- [12] Ministry of Forestry and Water Affairs, General Directorate of State Hydraulic Works
- [13] Ministry of Development, 10th Development Plan (2014-2018), "Water Resources Management and Security" Specialization Commission Report, Ankara, 2014.
- [14] Ministry of Forestry and Water Affairs, General Directorate of Water Management.
- [15] Ministry of Health, Public Health Institution of Turkey.

- [16] Turkish Statistical Institute, "Municipal Water Statistics, 2012" News Bulletin, 20/02/2014, No: 16171, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=16171>
- [17] (<http://www.eea.europa.eu/data-and-maps/indicators/urban-waste-water-treatment/urban-waste-water-treatment-assessment-3>)
- [18] Turkish Statistical Institute, "Municipal Wastewater Statistics, 2012" News Bulletin, 18/02/2014, No: 16169, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=16169>
- [19] Turkish Statistical Institute, "Sustainable Development Indicators, and 2012-2013" News Bulletin, 26/03/2014, No: 16124, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=16124>
- [20] http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators/all_indicators
- [21] The Ministry of Interior, General Directorate of Turkish National Police.
- [22] Turkish Statistical Institute, "Mining Enterprises Water, Wastewater and Waste Statistics 2012" News Bulletin, 27/03/2014, No: 16173, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=16173>
- [23] Ministry of Forestry and Water Affairs, General Directorate of Information and Technology.
- [24] Environment in Europe, 2010 Status and Overview Synthesis, European Environment Agency, Copenhagen, 2010, <http://www.eea.europa.eu/soer/synthesis/translations/avrupada-cevre-2014-2010-durum>
- [25] The Ministry of Food, Agriculture and Livestock, General Directorate of Agricultural Reform
- [26] Former Ministry of Environment and Forestry, General Directorate of Nature Conservation and National Parks, Department of Environment Protect, "Biological Diversity Strategy and Action Plan" 2007, Ankara.
- [27] The Ministry of Forestry and Water Affairs, Forestry and Water Council, 2013, 21-23 March 2013, Sustainable Biodiversity Management Working Group Report, Working Group: 5, Ankara, 2012
- [28] The Ministry of Forestry and Water Affairs, Forestry and Water Council, 2013, 21-23 March 2013, Protected Areas and Wildlife Management Working Group Report, Working Group: 6, Ankara, 2012,
- [29] The Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks, "Nature Conservation Status Report (2002-2013)", Ankara. <http://www.milliparklar.gov.tr/kitap/90/?sflang=tr>
- [30] <http://www.iucn.org/about/work/programmes/pa>, 2010, Lockwood al. 2006.
- [31] The Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks

REFERENCES

- [32] The Ministry of Forestry and Water Affairs, General Directorate of Forestry, Forest Management and Planning Department, Existence of Forest in Turkey 2012, Ankara, 2012, (http://web.ogm.gov.tr/Resimler/sanalkutuphane/orman_varligi2012.pdf)
- [33] The Ministry of Forestry and Water Affairs, General Directorate of Forestry.
- [34] The Ministry of Transport, Maritime Affairs and Communication, Department of Strategy Development.
- [35] The Ministry of Transport, Maritime Affairs and Communication, Statistical Yearbook of the State Railways 2008-2012, <http://www.tcdd.gov.tr/Upload/Files/ContentFiles/2010/istatistik/20082012yillik.pdf>
- [36] The Ministry of Transport, Maritime Affairs and Communication, Turkey Transportation and Communication Strategy Target 2023, http://www.ubak.gov.tr/BLSM_WIYS/UBAK/tr/dokuman_sag_menu/20110323_142238_204_1_64.pdf.
- [37] EU Energy and Transport in Figures, Statistical Pocketbook, 2011.
- [38] Ministry of Energy and Natural Resources, General Directorate of Energy Affairs.
- [39] Ministry of Energy and Natural Resources, General Directorate of Renewable Energy Affairs.
- [40] Turkish Electricity Transmission Company (TEİAŞ), <http://www.teias.gov.tr/yukdagitim/2013Gecici.htm>
- [41] Ministry of Environment and Urbanisation, General Directorate of Professional Services.
- [42] The Ministry of Food, Agriculture and Livestock, General Directorate of Plant Production.
- [43] Environmental Indicators report 2013 <http://www.eea.europa.eu/data-and-maps/daviz/estimated-consumption-of-manufactured-fertilisers/download.table>
- [44] The Ministry of Food, Agriculture and Livestock, General Directorate of Food and Control
- [45] Turkish Statistical Institute, "Water Products, 2013" News Bulletin, 26/06/2014, No: 15933, <http://www.TURKSTAT.gov.tr/PreHaberBultenleri.do?id=15933>
- [46] The Ministry of Food, Agriculture and Livestock, General Directorate of Fisheries and Aquaculture,
- [47] Ministry of Development, 10th Development Plan (2014-2018), "Aquaculture" Specialization Commission Report, Ankara, 2014.
- [48] The Ministry of Culture and Tourism
- [49] Prime Ministry Disaster and Emergency Management Presidency, Turkey National Disaster Archive (TUAA) <https://tuaatest.afad.gov.tr/main.jsp>
- [50] Prime Ministry Undersecretariat of Treasury