ASSESSMENT REPORT ON TURKEY

WITHIN THE SCOPE OF

UNITED NATIONS

FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

This report, which also includes the opinions of the members of the Climate Change Coordination Committee, has been prepared by the experts of Ministry of Foreign Affairs, Ministry of Energy and Natural Sources, Undersecretary of State Planning Organization, and Ministry of Environment and Forestry under the coordination of Ministry of Environment and Forestry to provide support to the assessment of the special conditions of Turkey and will be submitted to Climate Change Coordination Committee.

DECEMBER, 2009

ANKARA

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1. PREFACE

Following the Decision 26/CP.7 adopted at the 7th Conference of Parties (COP.7) of the United Nations Framework Convention on Climate Change (UNFCCC) held in Marrakesh in 2001, which "**recognized the special circumstances of Turkey and accepted that Turkey remains an Annex I Party of the UNFCCC, in a position that is different to that of other Annex-I countries and Turkey will be removed from Annex-II**", Turkey became a party to the UNFCCC on May 24th, 2004.

The Kyoto protocol was ratified at Turkish Grand National Assembly on 5 February 2009 and Turkey officialy acceded to the Protocol on 26 August 2009.

National communication which is one of the commitments under the Protocol was prepared within the "First National Communication Project" executed by Ministry of Environment and Forestry and implemented by UNDP and submitted to the UNFCCC Secretariat at the beginning of 2007.

At the 1st National Communication, the greenhouse gas emission inventory for the period between 1990 and 2004 was prepared, and the inevitable increase in the greenhouse gases in Turkey, which is a developing country, was presented. The analysis of the potential measures to decrease the increase of greenhouse gas emissions, the applicable measures against the potential impacts of climate change in Turkey, and the costs and the benefits of the alternative energy policies have been detailed in this report.

Within the submission year of Turkey's first national communication, which highlights the circumstances of Turkey in terms of energy, transportation, industry, waste, agriculture, forestry, ecology and climate while the communication is still up to date, it is planned to submit a Declaration of Policy to the Conference of Parties, which will support Turkey's position as presented clearly in the National Communication and will include economic, social, environmental and energy indicators.

In addition, it is expected that the declaration shall be a supporting document during the assessment of the special circumstances of Turkey and it shall establish proof for Turkey's sensitivity towards the problem of global climate change.

Within that framework an annotation has been prepared to review the position of Turkey by Ministry of Environment and Forestry, Ministry of Foreign Affairs, Ministry of Energy and Natural Sources and the Undersecretary of State Planning Organization to be submitted to the Climate Change Coordination Committee, which consists of senior representatives from Ministry of Foreign Affairs, Ministry of Public Works and Settlement, Ministry of Transportation, Ministry of Agriculture and Rural Affairs, Ministry of Industry and Trade, Ministry of Energy and Natural Sources, Undersecretary of State Planning Organization, and Turkish Union of Chambers and Commodity Exchanges, established under the chairmanship of Ministry of Environment and Forestry.

2. THE PROCESS OF TURKEY'S CLIMATE CHANGE FRAMEWORK CONVENTION

The purpose of the United Nations Framework Convention for Climate Change is to prevent the negative effects of the anthropogenic greenhouse gas emissions that have reached dangerous levels in the atmosphere, and to keep greenhouse gas emissions, especially carbon dioxide, at the levels of 1990. UNFCCC was adopted at the Environment and Development Conference held in Rio de Janeiro in 1992, and came into force on March 21, 1994.

The basic principles of the Convention are as follows:

- Protecting the climate system on the basis of equity, and in accordance with the common but different responsibilities of the participating countries.
- Giving full consideration to the specific needs and special circumstances of the developing countries that will be affected by the climate change.
- Making the measures dealing with climate change efficient and cost-effective.
- Promoting sustainable development and integrating the measures and the policies with national development programs.

The Kyoto Protocol is to tighten the commitments and to create a binding document, since UNFCCC would be inadequate to keep the developed country's year 2000 greenhouse gas emissions to the level of 1990.

As of April 2009, 184 countries and the EU countries became party to the Kyoto Protocol, which came into force on February 16, 2005 (Table 2.1). The aim of the Kyoto Protocol is to reduce the greenhouse emissions levels of the Annex-I countries to at least 5% below the level of 1990 until the year 2012. The quantitative emissions reduction commitments of the countries are provided in Annex-B of the Protocol (Table 2.2). In this Annex, the EU-15 countries have agreed on a burden sharing among them to reduce Green House Gas emissions. (Table 2–3).

Table 2-1: Annexes of United Nations Framework Convention on Climate Change

Annex-I Countries	Annex-II Countries
EU, Belgium, England, Italy, Norway, Germany, Denmark, Ireland, Iceland, Portugal, USA, Finland, Spain, Japan, Australia, France, Sweden, Luxemburg, Greece, Austria, Netherlands, Switzerland, Canada, **Turkey** <u>Economies in Transition (EIT):</u> Russian Federation, Czech Republic, Croatia, Belarus, Lithuania, Slovenia, Ukraine, Poland, Romania, Latvia, Slovakia, Bulgaria, Estonia, Hungary	EU, Belgium, England, Italy, Norway, Sweden, Germany, Denmark, Ireland, Iceland, Portugal, USA, Finland, Spain, Japan, New Zealand, Australia, France, Luxemburg, Greece, Austria, Netherlands, Switzerland, Canada

Table 2-2: Kyoto Protocol Annex-B and Quantitative Reduction Commitments

Annex-B Countries	Commitments (According to the Level of 1990)
EU-15, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	-8%
USA	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federations, Ukraine	+0%
Norway	+1%
Australia	+8%
Iceland	+10%

Table 2-3: Burden Sharing Among EU–15 Countries

Luxemburg	-28%	Sweden	+4%
Germany, Denmark	-21%	Ireland	+13%
Austria	-13%	Spain	+15%
England	-12.5%	Greece	+25%
Belgium	-7.5%	Portugal	+27%
Italy	-6.5%		
Netherlands	-6%		
Finland, France	0%		

(In accordance with the resolution adopted by Environment Council on June 16, 1998)

The Kyoto Protocol which is an international agreement under the UNFCCC established to reduce emissions of greenhouse gases was adopted in 1997 and entered into force in 2005. Turkey was not party to the UNFCCC during the time Kyoto was adopted so under the Kyoto Protocol, Turkey does not have an emission target ascribed to it in Annex B and therefore is a non-Annex B Party under the Protocol.

Climate change is considered to be one of the most important environmental problems that the world is currently facing. Today, climate change affects many aspects of life, such as physical and natural environment, urban life, development and economics, technology, agriculture and food, clean water, health, etc., and thus it has become a necessity for all countries to give rise to their efforts to overcome such problems.

Turkey, as a member of the Organization for Economic Cooperation and Development (OECD), was included among the countries of Annex-I and Annex-II of the United Nations Convention on Climate Change (UNFCCC) together with the developed countries when it was adopted in 1992. Although Turkey supported the purpose and general principles of the Convention, it did not become a party to the Convention as a result of its unfair position at the Convention. Turkey struggled to change that position, and became a party to the Convention on May 24, 2004 after the name of Turkey was deleted from Annex-II (Decision 26/CP.7) and Turkey remained an Annex-I Party of the UNFCCC, in a position that is different than that of other Annex-I countries, at the 7th Conference of Parties (COP.7) held in Marrakesh, Morocco in 2001.

In order to determine the climate change policies and measures Turkey shall adopt, and to set out climate-related activities, the Climate Change Coordination Committee has been established under the chairmanship of Ministry of Environment and Forestry, consisting of senior representatives of Ministry of Foreign Affairs, Ministry of Public Works and Settlement, Ministry of Transportation, Ministry of Agriculture and Rural Affairs, Ministry of Industry and Trade, Ministry of Energy and Natural Sources, Undersecretary of State Planning Organization, and Turkish Union of Chambers and Commodity Exchanges. Later on, Ministry of Health and Ministry of Finance were included in this Coordination Committee. Eight working groups were established under the Climate Change Coordination Committee to implement climate change-related activities in order to meet the responsibilities and commitments of Turkey as detailed under the framework of the Convention. The coordinators and the fields of these groups are as follows:

- Analyzing Impacts of Climate Change (General Directorate of State Meteorology Affairs)
- Greenhouse Gases Emissions Inventory (Turkish Statistics Institution)
- Industrial and Household Wastes Management and Reducing of the Greenhouse Gases at Service Sector (Ministry of Energy and Natural Sources)
- Reducing Greenhouse Gases of Energy Sector (Ministry of Energy and Natural Sources)
- Reducing Greenhouse Gases of Transportation Sector (Ministry of Transportation)
- Land Use, Land Use Change and Forestry (Ministry of Environment and Forestry)
- Policy and Strategy Development (Ministry of Environment and Forestry)
- Training and Public Awareness-Raising (Ministry of Environment and Forestry)

Turkey is committed to the basic principles of the Convention which are: protecting the climate system on the basis of equity, and in accordance with the common but different responsibilities of the participating countries; giving full consideration to the specific needs and special circumstances of the developing countries that will be affected by the climate change; adopting efficient and cost-effective measures to deal with climate change; promoting sustainable development; and integrating the measures and the policies with national development programs.

This document has been prepared in cooperation with the relevant institutions to clearly describe the special circumstances of Turkey which have been recognized at CoP 7 by the decision 26/CP.7 and to establish a foundation for the climate-related work that needs to be done during the following period, all of which shall prove the differences of Turkey from other Annex-I countries in terms of some basic climate-related indicators and shall develop a strategy.

The 2007 Conference of Parties/Meeting of Parties held in Indonesia, Bali produced the Bali Road Map which consists of four “building blocks” that must be negotiated to successfully address climate change: mitigation, adaptation, technology transfer, and finance. During the following international meetings, negotiations and submissions were based on these 4 building blocks of Bali roadmap.

Representing the energy sector which is the significant source of greenhouse gas in Turkey, Ministry of Energy and Natural Resources ensures the necessary coordination among the institutions and provides contribution to the submissions under the mitigation building block of climate change negotiations. Adaptation which is expected to become more important during the post-2012 period, is mainly under the responsibility of State Hydraulic Work , Turkish State Meteorological Service and Ministry of Agriculture and Rural Affairs. The Ministry of Industry and Trade ensures the necessary coordination on "development of technology and transfer", the Ministry of Finance and State Planning Organization ensures the necessary coordination on "financing", and the Ministry of Environment and Forestry in cooperation with the Ministry of Foreign Affairs ensures the necessary coordination on "common vision". The mentioned Ministries/public institutions contribute to the negotiations on behalf of our country in the meetings they participate in.

3. POTENTIAL DANGERS TURKEY MAY FACE AS A RESULT OF CLIMATE CHANGE AND THE NEED FOR ADAPTATION

Turkey is located in a large belt of climate, called Mediterranean climate, which is on the western end of the subtropical belt. In Turkey, which is surrounded by seas on three sides and has an average approximate elevation of 1100 m, many subtypes of climates occur. This diversity in climate types is related to the fact that Turkey is on a transitional region that is affected by several pressure systems and weather types arising out of central latitudes, polar and tropical belts, as well as physical geographic effects such as the complexity of its topographic nature and its trend of changing in short distances.

Due to being surrounded by seas on three sides, being in the Eastern Mediterranean Basin, and having the characteristics of Mediterranean climate observed in a vast region, Turkey is considered to be in the high risk group of countries in terms of negative effects of climate change. Fierce summer droughts, sudden and heavy rains, floods and gales, all being the characteristics of the said climate belt, make the regions in which this climate prevails more vulnerable.

Considering the changes in the climate of Turkey in the long run, observed changes (increases of average summer temperatures (particularly in western parts), significant and prevalent trends of warming up in minimum temperature zones, significant decreasing trends in precipitation and in characteristics of winter, prevalent and severe meteorological droughts due to insufficient precipitation) and foreseen changes (according to the A2 emission scenario, increasing temperatures by 2–6°C in the period of 2071-2100 in comparison to the averages of 1961-1990, decreasing precipitation in the southern and the western parts and increasing precipitation in the north during winters and springs), and other effects such as the changes in land cover and in land use, and rapid increases in population and urbanization, it is possible to say that Turkey is very vulnerable to climate change and to its potential effects. The negative consequences of climate change on Turkey may manifest themselves in dwindling water resources, changes in agricultural productivity, forest fires, erosion, droughts and desertification, ecological deterioration, deaths due to heat waves, and increases in diseases due to vectorial reasons. Possible environmental and socioeconomic effects of global climate change on Turkey are briefly mentioned below:

- Depending on the increase in the duration and severity of hot and dry periods, the frequency, field of impact, and duration of forest fires may increase,
- Agricultural productivity potential may change (this change may be an increase or decrease in types, depending on the regional and seasonal diversities),
- Climate belts may shift from the equator towards the poles by hundreds of kilometers, as was the case in the Earth's geological history, and consequently, Turkey may be under the effects of a hotter and drier climate belt, as prevailing today in the Middle East and North Africa. There may be a decrease in the fauna and flora species that cannot adapt to this shift of climate belts,
- Natural terrestrial ecosystems and agricultural productions may be negatively affected by the increase of pests and ailments,
- Human pressure on the vulnerable mountain and valley/canyon ecosystems will increase,

- New problems will be added to those related to water resources, particularly in urban areas of dry and semi-dry regions of Turkey; need of agricultural and fresh drinking water may increase,
- In regard to the natural alterability of climate itself, the greatest pressure on the water resources of Turkey is caused by summer droughts, a common characteristic of Mediterranean climate, and by, in other seasons, the high random changes of precipitation, caused by weather anomalies. Therefore, a negative change in drought risk may make the effect of climate change on agriculture more severe,
- In addition to widening of dry and semi-dry areas, increases in the duration and severity of summer droughts will lead to desertification processes, salt crystallization, and erosion,
- Increases in the frequency of hot days (i.e. tropical days) and in the direction of higher values in statistical range may affect human health and its biological productivity,
- With the addition of urban heat island effect, particularly in large towns, night temperatures during hot periods will increase markedly; this in turn would cause energy consumption used for air conditioning and cooling to increase,
- Infections due to thermal stress and to changes in water substance may increase health problems, particularly in metropolitan cities,
- Although the effects on renewable energy resources such as wind and solar power will be different in every region, the amount of blowing and force of wind, and the duration and intensity of sunny days may change,
- In sea streams, sea ecosystems and the field of fishing may there be some changes that would consequently cause some considerable socioeconomic problems,

  Depending on rising of sea level, along the coasts of Turkey, which are the areas of intensive settlement, tourism and agriculture (those estuarial and ria type), low-flood deltas and coastal plains may submerge.
- Drought originated by climate change will have negative effects on sectors such as fishery and agriculture and bring water shortages for domestic use which as a result would lead to ill-balanced urban-rural population resulted from climate migrations.
- Change in precipitation patterns will make settlements more vulnerable to floods and pose significant challanges to transportation infrastructure.
- With also contribution of urban heat island effect, not only energy consumption will increase but also health and living conditions of all living creatures including humanbeings will be affected.

Turkey's high vulnerability to the negative effects of climate change shows how important it is to adapt to the change as well as fight against it. In Turkey, considerable measures have been taken in regard to policymaking, regulations and organizational structuring, even though these are not directly in the scope of preventing or lessening the effects of climate change. In the country, agriculture has an important place economically, and the negative effects on water resources will be reflected in the need for irrigation. In terms of implementation, the positive activities within the scope of adaptation to climate changes are preservation of water resources, generalizing and subsidizing modern irrigation

techniques, enabling water savings, establishing early flood warning systems, generalizing the use of renewable energy in many sectors including agriculture, and creating some initiatives to develop drought-tolerant seeds. Also, the Coordination Center for Agricultural Drought Administration, which was established last year, embraces the adaptation of this sector to climate change in Turkey, which is still a country of agriculture. Of the UN and Ministry for Environment and Forestry, the joint project, which is funded by the Millennium Development Goals Fund and titled as "Enhancing the Capacity of Turkey to Adapt to Climate Change", will display the need of Turkey's adaptation to climate change and its sincere efforts to achieve this goal. In addition, within the scope of the "World Water Forum" which was held in Istanbul in March 2009, a gathering was realized in order to establish better water management by sharing opinions and experiences in this field.

However, due to increasing pressure on natural resources and environment together with rapid urbanization, industrialization and economic development, climate change adaptation will affect the sustainable development of Turkey, which is already vulnerable to natural alterability in climate. It is a fact that in developing countries, like Turkey, adaptation efforts are not easy and there are difficulties in reserving financial resources. In this regard, Turkey is ready to play a focal role on a regional scale in the efforts of adaptation to climate change.

Considering that there are over 30 million people living in coastal areas in Turkey, any small or large scale negative effect to be encountered in such areas can directly harm the regional economy (1st National Communication). Therefore, it is necessary to develop and implement plans and policies to reduce potentially harmful economic and social effects.

On the other hand, it has been stated that children, the elderly, the disabled, the poor, and those with health problems such as asthma and heart diseases living in the areas that have insufficient health services, lack first step health services, have insufficient infrastructure, or are of a lower socioeconomic level and have limited income resources are in the high risk groups that will be affected by climate change.

Moreover, because the tourism sector is one of the sectors of Turkey that will be most subjected to the effects of climate change, it is important that this sector is aware of such effects, and that the long terms plans in the sector be made in accordance with the changing conditions.

Assuming that there will be a rise in sea levels; a master plan must be prepared, in terms of measurements for floods and wash outs in the basins in which there are structures of transportation systems. In this regard, as a result of a theoretical work published by Ministry of Transportation, it is reported that the costs of improvement works for airports, particularly in the coastal regions that may experience a rise in water level, are estimated at 50-65 million $, while the costs for preservation of railroads is estimated to be around 160 million $. However, such relevant cost estimations require a more extensive and technical verification.

In sub clause 8 of Article 4 of the United Nations Framework Convention on Climate Change, there are provisions to consider the use of tools such as financial resources, insurance and technology transfer in order to meet the unique requirements arising from the

negative impacts of climate change and/or for precautionary measures during the implementation of commitments within the Agreement. Of the indexes forming criteria in implementing such aforementioned actions and listed in nine articles, the ones listed below are applicable to Turkey:

Countries with low-level coastal areas: Depending on the rise in sea level, it is possible that low-flood deltas, coastal plains and estuaries that are areas of expansive settlement, tourism and agriculture, may submerge. Turkey, surrounded by the Mediterranean Sea, Black Sea and Aegean Sea, and having 70% of its industry located in coastal areas, has a global importance in terms of its economics, geopolitics and ecology. Its coast is 8.333 km - the longest among the EU countries.

Countries having dry and semi-dry areas, afforested areas and areas vulnerable to forestry decay: In Turkey, in addition to expansion of dry and semi-dry areas, increases in the duration and the severity of summer droughts will lead to desertification, salt crystallization and erosion.

Countries having areas prone to natural disasters: Depending on the increase in the duration and intensity of hot and dry periods, frequency, area of impact and duration of forest fires may increase. With the weather temperatures getting higher, fires in the forests of about 12 million hectares that are located on the coasts of Mediterranean, Aegean and Marmara coastal regions and that are prone to first-degree fires could increase, and having in such areas predominantly forests of needle-leaved Calabrian pine could cause the fires to spread to vast areas in a very short time with wind and other factors. Droughts or floods could cause considerable economic losses in agriculture and water resources in the settlement areas.

Countries having areas prone to droughts and desertification: Climate change will directly affect land (soil) corruption, particularly in Turkey. Erosion, being one of the biggest reasons for desertification in Turkey (86% of its land experiences erosion), the problem will be even more severe due to droughts and sudden and heavy rains which are results of climates change. As another result of climate change, vulnerability to soil erosion will increase, and this in turn will lead to greater expenditures on erosion control. Reduction of soil productivity will increase the migration from rural areas to metropolitan cities and this will exacerbate socioeconomic problems. With droughts, ground and underground water will go to deeper levels, and in order to make use of underground water for irrigation more economic investments will be needed. Moreover, this will require the use of more energy. There will be a loss of forest products and consequently, there will be less productivity in forest fields. In the industries that are directly connected to agricultural production, there will be economic problems and losses. Proportional to the losses in farmers' revenues and drops in agricultural production, there will be more unemployment.

Countries having areas with high urban air pollution: Due to extensive urbanization, rapid population increase rates, industrialization, and topographical and meteorological ill-placement of cities, metropolitan cities experience air pollution, particularly during the winter time. Principal causes of air pollution during winter months are: heating, the use of low-quality fuels without processing them to improve quality, using incorrect igniting techniques, and not periodically maintaining operational conditions of the burners used. Inappropriate location of industrial facilities also contributes to air pollution.

Countries having areas with delicate ecosystems, including mountain ecosystems: Turkey has richer wetlands in comparison to Middle Eastern and European countries, except Commonwealth of Independent States. The wetland of Turkey, as much as 783.562 square km including artificial lakes, constitutes a vital habitat for water birds and species living in water. 58 of 200 wetlands in Turkey are classified as "internationally important". In addition, Turkey plays an important role in terms of biological diversity. 3000 species having been endemic, there are 9000 of plant species in existence. In terms of endemic species, the richest region of Turkey is the Mediterranean Region, housing 631 species. A similar figure can be named for fauna as well. More explicitly, Anatolia houses 413 and 93 species of birds and creepers respectively, while the European Continent has 500 and 125 species of birds and creeper respectively.

4. TURKEY AND OTHER COUNTRIES

In order to portray the conditions of Turkey, its economical, social, environmental and energy-related indicators are compared with those of countries from both Annex-I and Annex-II, and Countries with Economies in Transition (EIT), and also with Countries with Fast-Growing Economies other than those in Annex-I.

4.1. SOCIAL INDICATORS

POPULATION GROWTH RATE

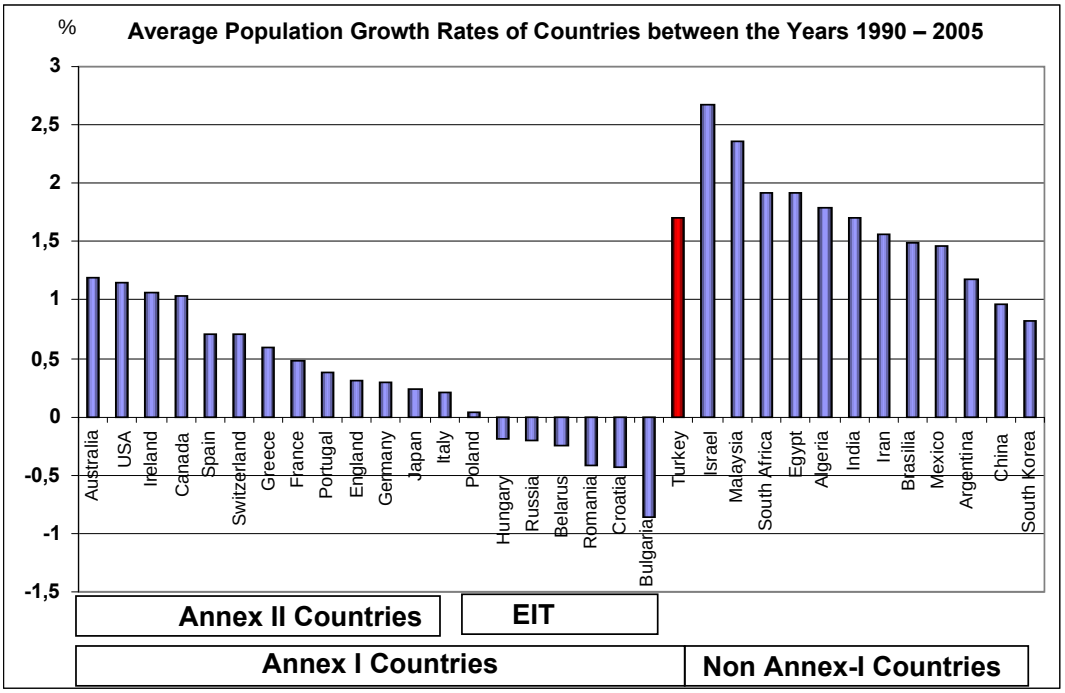

Figure 4-1 : Average Population Growth Rates of Countries between the Years 1990 – 2005
(Source: World Development Indicators, 2007)

The population growth rate of Turkey is higher than all of other analyzed Annex-I countries. It is quite noteworthy that transition economies have a negative value of population growths rate. Turkey has a value close to all other analyzed non-Annex-I countries, except for Israel and Malaysia (Figure 4–1).

The fact that the population growth rate of Turkey is higher than all of the other Annex-I countries signals that the demand will increase for services consuming natural resources and the need will persist for products provided by chief sectors causing greenhouse gas emissions. All of these factors are expected to cause a parallel increase in greenhouse gas emissions. Therefore, it would not be rational to expect Turkey to cut back greenhouse gas emissions until reaching a certain economic level of prosperity. Nonetheless, the objective is to ensure that the greenhouse gas emissions rates increase at a decreasing rate.

URBAN POPULATION GROWTH RATE

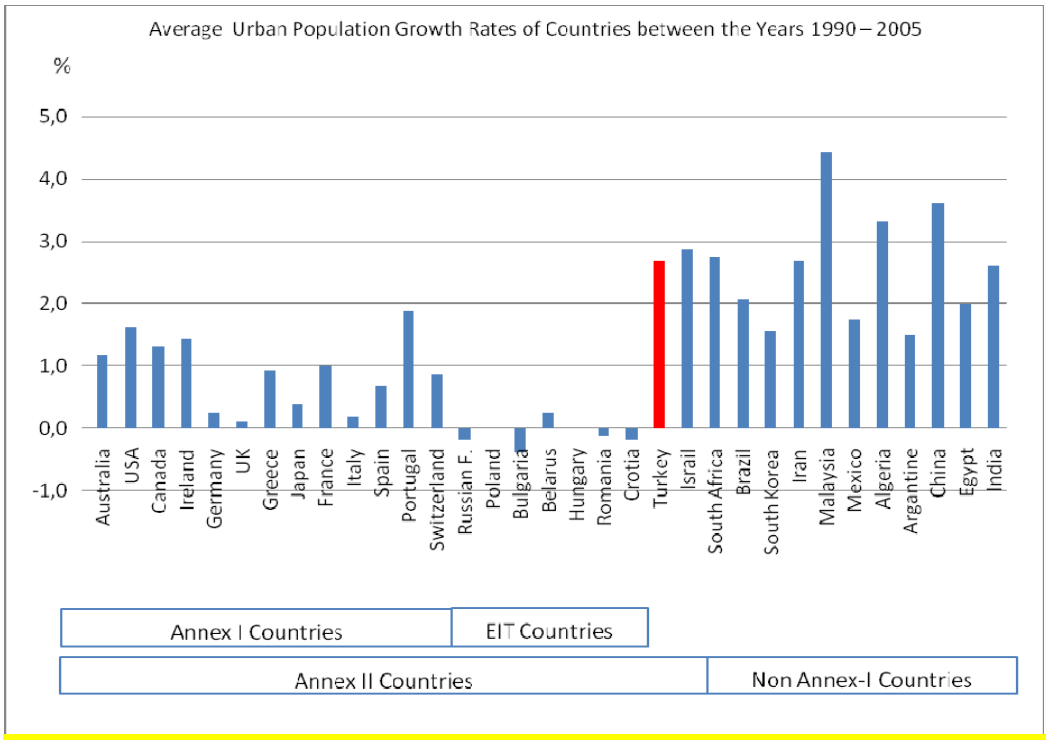

Figure 4-2: Average Urban Population Growth Rates of Countries between the Years (1990-2005) (Source: World Development Indicators,2007)

The urban population growth rate of Turkey is higher than all Annex–I countries (Figure 4–2). It can be seen that Turkey is becoming urbanized at least twice as fast as Annex–I countries. The growth rate in Turkey is lower than Malaysia and China, higher than South Korea and Argentina. When compared with other developing non-Annex-I countries, Turkey's population growth rate has a similar value.

As a result of the high urban population growth rate, consumption of natural resources will increase and more resources will be needed to fight environmental pollution. It is clear that, parallel to the urban population growth rate, the demand for urban transportation will rise rapidly and consequently, greenhouse gases caused by transportation will increase, and heating necessities (and thus electricity consumption) will increase cumulatively compared to rural areas.. Furthermore, as a result of urban population increase, settlements will tend to locate outside the cities (urban sprawl- spreading of a city and its suburbs over rural land at the fringe of an urban area) which will put natural resources such as forests and water basins under pressure. In other words, the urban population growth rate will put pressure on the consumption of some specific natural resources, which is expected to lead to an increase in greenhouse gas emissions.

EMPLOYMENT

Unemployment rates are higher in Turkey than in Annex–I countries, although those who work in the rural areas participate in the labor force as well (Figure 4–3). Although unemployment rates appear to be lower than a fair portion of the developing countries, when considered together with the labor force participation rates (Figure 4–4), it can be seen that the population participating in the labor force is very low compared to other countries.

Turkey must continue its development and its industrialization course in order to create employment; as a result, it is expected that greenhouse gas emissions will continue to increase.

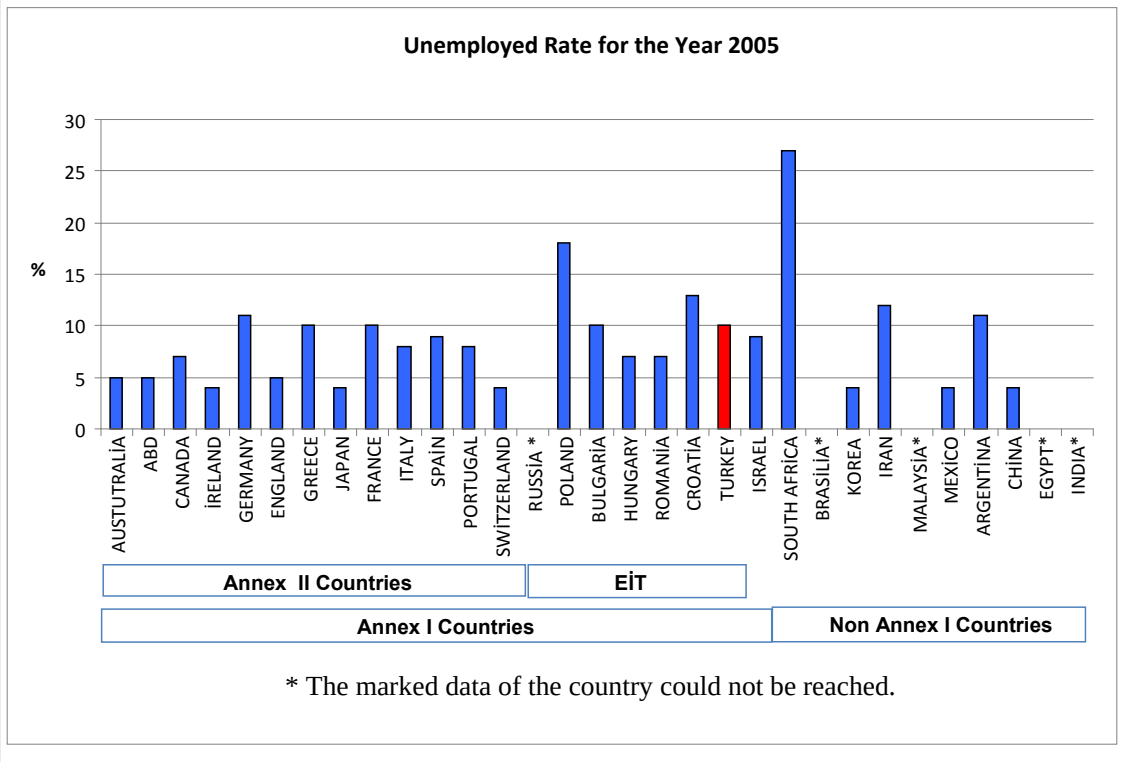

Figure 4-3: Unemployment Rates of Countries for the Year 2005 (Source: World Development Indicators, 2009)

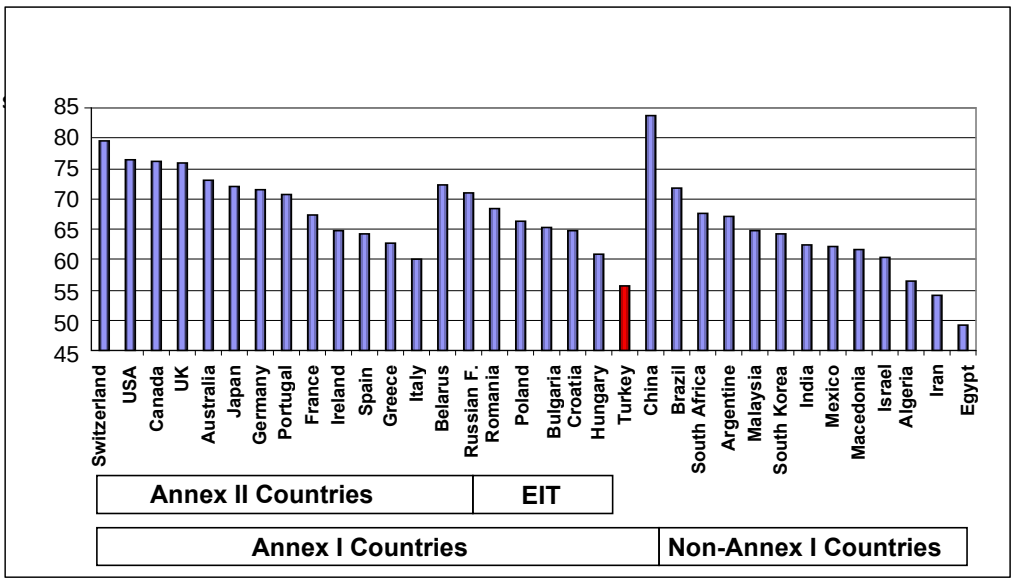

Figure 4-4: Average Values of Countries' Rates of Participation in the Labor Force between the Years 1990 and 2005 (Source: World Development Indicators, 2007)

HUMAN DEVELOPMENT INDEX

Table 4-1 below was generated according to comparisons that have been made with Annex-I countries, and with countries with fast-growing economies other than those in Annex-I. In addition to basic social indicators, the table has been prepared in the context of the Human Development Index composed by United Nations Development Program, which bases its evaluation on many social indicators like health, education, and a quality of life meeting basic standards.

Açıklama [s1]: Tablo 4.1 var

When the below table is analyzed, , it can be seen that Turkey ranked higher in 2006 human development index by standing 76th out of 177 countries compared to be ranking 84th in 2005.

In the year of 2006 Turkey up-grated herself in the raw of 76. Turkey is at a lower rank than all other Annex–II countries that are included in Annex–I, and than all transition economies. It can also be seen that Turkey has a lower rank on the Human Development Index than many non-Annex–I countries that receive financial aid and have a fast-growing economy.

Table 4-1: Human Development Index (HDI) of Countries Compared in the Year 2005 and 2006

Countries	Countries' Status in the Specification Appendix	Rank of Countries (2005)	HDI (2005)	Rank of Countries (2006)	HDI (2006)
Australia	Annex I	3	0.962	4	0,965
Ireland	Annex I	5	0.959	5	0,960
Canada	Annex I	4	0.961	3	0,967
Japan	Annex I	8	0.953	8	0,956
USA	Annex I	12	0.951	15	0,950
Switzerland	Annex I	7	0.955	10	0,955
France	Annex I	10	0.952	11	0,955
Italy	Annex I	20	0.941	19	0,945
UK	Annex I	16	0.946	21	0,942
Spain	Annex I	13	0.949	16	0,949
Germany	Annex I	22	0.935	23	0,940
İsrael	**Non Annex-I**	23	0.932	24	0,930
Greece	Annex I	24	0.926	18	0,947
South Korea	**Non Annex-I**	26	0.921	25	0,928
Portugal	Annex I	29	0.897	33	0,900
Hungary	*EIT*	36	0.874	38	0,877
Argentina	**Non Annex-I**	38	0.869	46	0,860
Poland	*EIT*	37	0.87	39	0,875
Croatia	*EIT*	47	0.85	45	0,862
Mexico	**Non Annex-I**	52	0.829	51	0,842
Bulgaria	*EIT*	53	0.824	56	0,834
Romania	*EIT*	60	0.813	62	0,825
Malaysia	**Non Annex-I**	63	0.811	63	0,823
Russian Federation	*EIT*	67	0.802	73	0,806
Belarus	*EIT*	64	0.804	67	0,817
Brazil	**Non Annex-I**	70	0.8	70	0,807
China	**Non Annex-I**	81	0.777	94	0,762
Turkey	**Annex I**	**84**	**0.775**	**76**	**0,798**
Iran	**Non Annex-I**	94	0.759	84	0,777
Algeria	**Non Annex-I**	104	0.733	100	0,748
Egypt	**Non Annex-I**	112	0.708	116	0,716
South Africa	**Non Annex-I**	121	0.674	125	0,670
India	**Non Annex-I**	128	0.619	132	0,609

Source: United Nations Development Program (2009)

4.2. ECONOMIC INDICATORS

GDP PER CAPITA

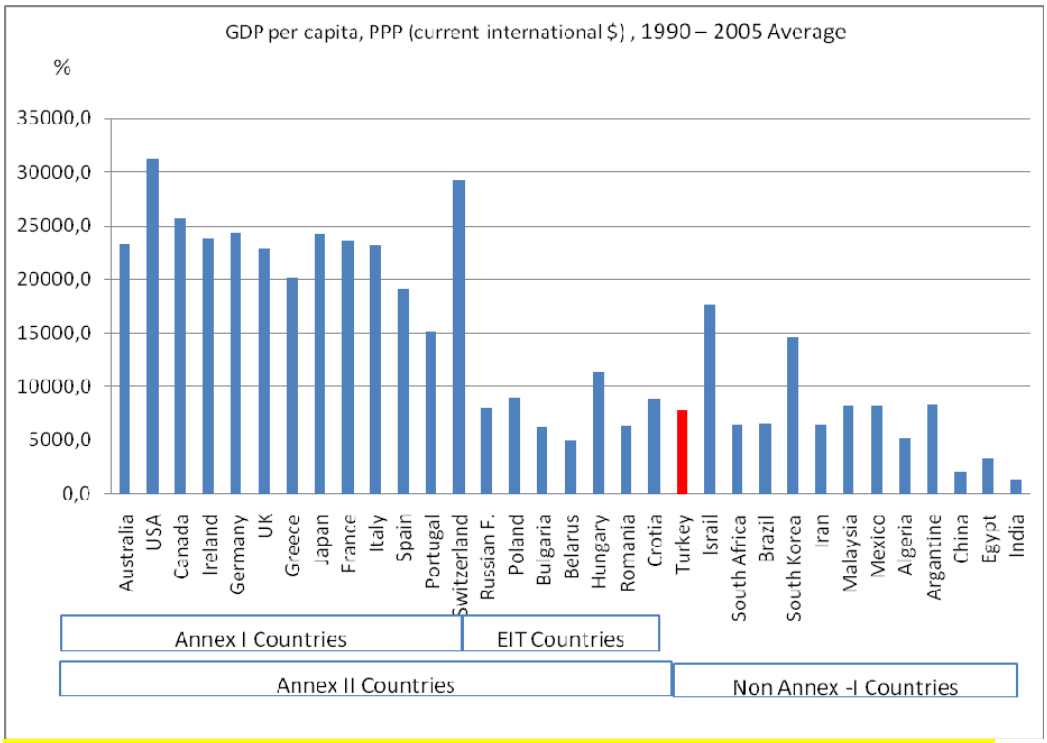

Figure 4-5: Average Per Capita GDP Values of Countries between the Years 1990–2005 (Source: World Development Indicators, 2009)

Per capita GDP of Turkey is lower than that of all Annex–I countries, other than Belarus (Figure 4–5). At the same time, non-Annex-I countries that have fast-growing economies, no quantitative emissions reduction commitments under the Kyoto Protocol and that can benefit from financial aid have higher per capita GDP values than Turkey.

Increasing Turkey's per capita GDP parallel to its growing population is only possible if the rate of increase in GDP is higher than the rate of increase in population growth. It is expected that national production will increase in the upcoming years without losing its dynamism. In a country where production is increasing and prosperity level is ascending relatively, greenhouse gas emissions are expected to continue increasing until a threshold year or years.

RATE OF INCREASE IN PER CAPITA GDP

When values between the years 1990–2005 are averaged (Figure 4–6), it can clearly be seen that the per capita GDP increase rate of Turkey is higher than that of Annex–1 countries; in other words, Turkey is still a developing country. However, in all of the analyzed non-Annex-I countries, a per capita GDP increase rate similar to or higher than that of Turkey can be seen, and this is expected to continue due to the efforts to catch up with the industrialization level of other OECD member countries.

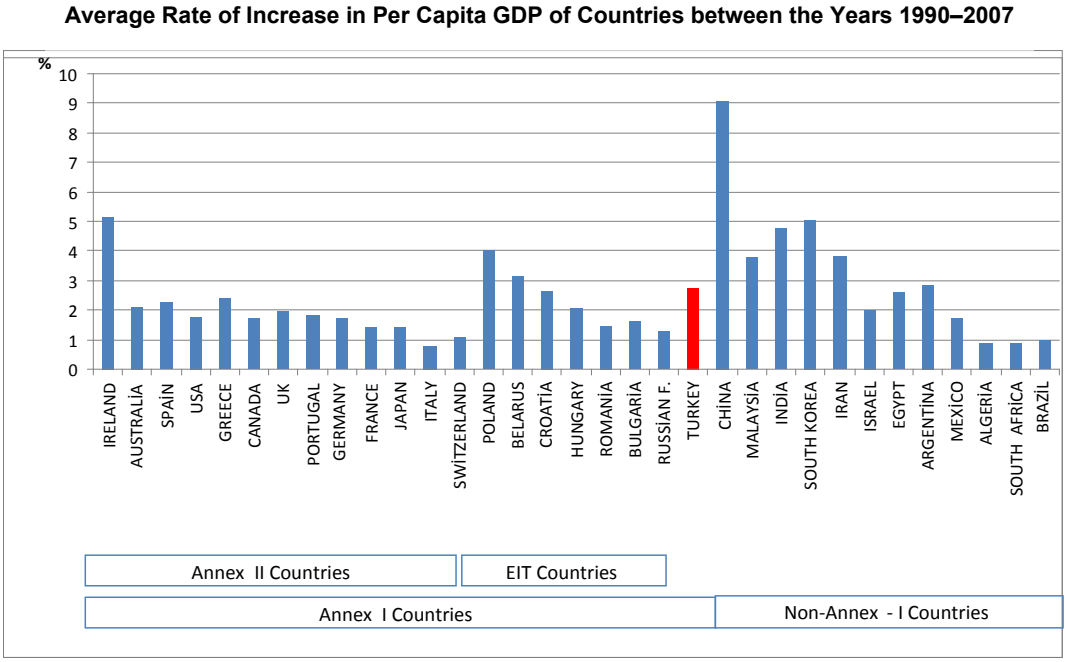

Figure 4-6: Average Rate of increase in Per Capita GDP of Countries between the Years 1990–2007(Source: World Development Indicators, 2007)

FOREIGN TRADE

Like the non-Annex-I countries, Turkey tends to be more open to foreign trade. Also, similar to other developing countries, most of the trade is done with developed countries and, due to supply management; Turkey cannot have control over the pricing of these products. The fact that prices of basic export products are determined externally increases the risk of macroeconomic instability.

EXTERNAL DEBT AND INTEREST PAYMENTS

External debt payments are one of the primary issues on the economic agenda. Turkey, which has a higher debt service ratio than transition economies, has a better debt service structure/composition than Algeria, Brazil and Argentina, but a higher percentage of debt service than the economies of Mexico and India (Figure 4–7).

As it can be seen below in Figure 4-8, the average total interest payments between the years 1990 and 2005 constitute approximately 30% of public expenditures. With such a ratio, Turkey has a greater burden than all Annex-I and almost all non-Annex-I countries (except for Algeria, Brazil and Argentina). The fact that Turkey's interest payments are high undermines its competitiveness, and increases the fragility of the national economy.

INFORMAL ECONOMY

In Turkey there is a rather high rate of informal economic activity. According to the "Fight against Informal Employment" (KADIM) Project report composed by the Circular of the Prime Minister numbered 2006/28, it is estimated that the informal economy accounts for more than 50% of the GNP. This situation may cause problems in the implementation and fair share of enterprise based policy measure

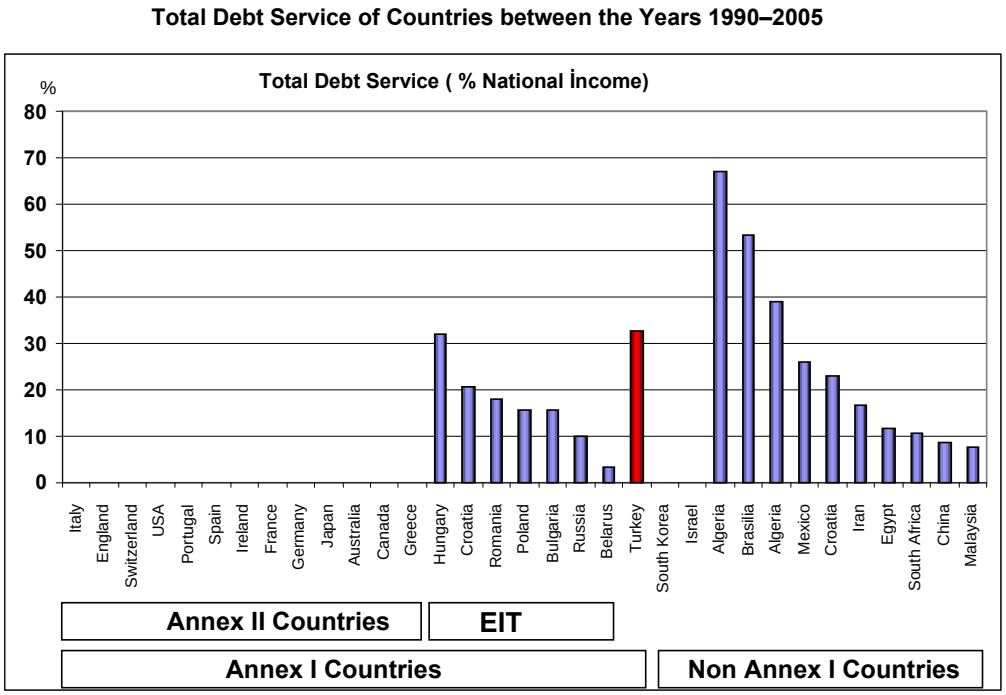

Figure 4-7: Total Debt Service of Countries between the Years 1990–2005 (% National Income)

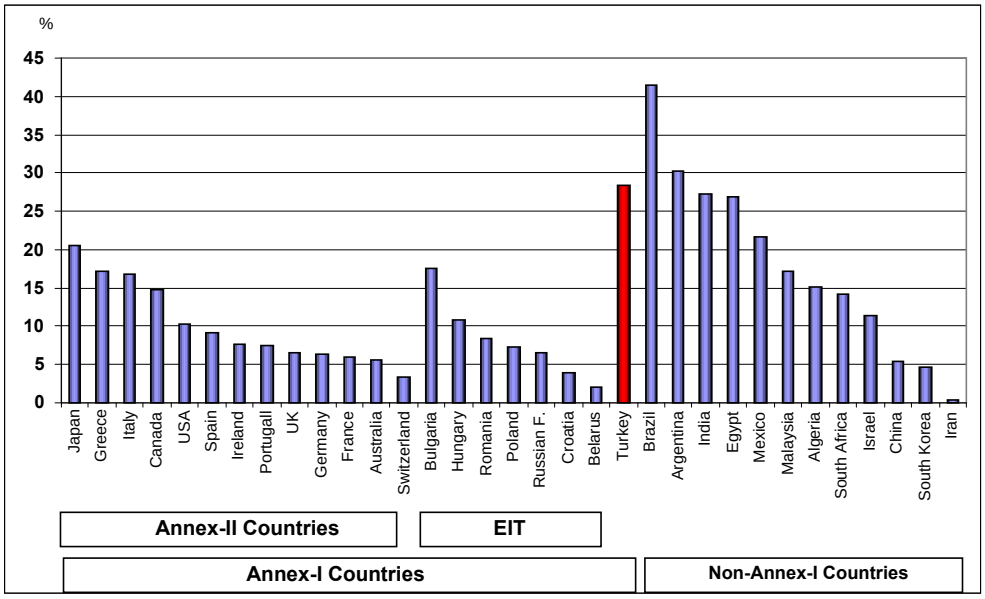

Figure 4-8: Total Interest Payment of Countries between the Years 1990–2005 (% GDP) Interest Payments on the Public Expenditures

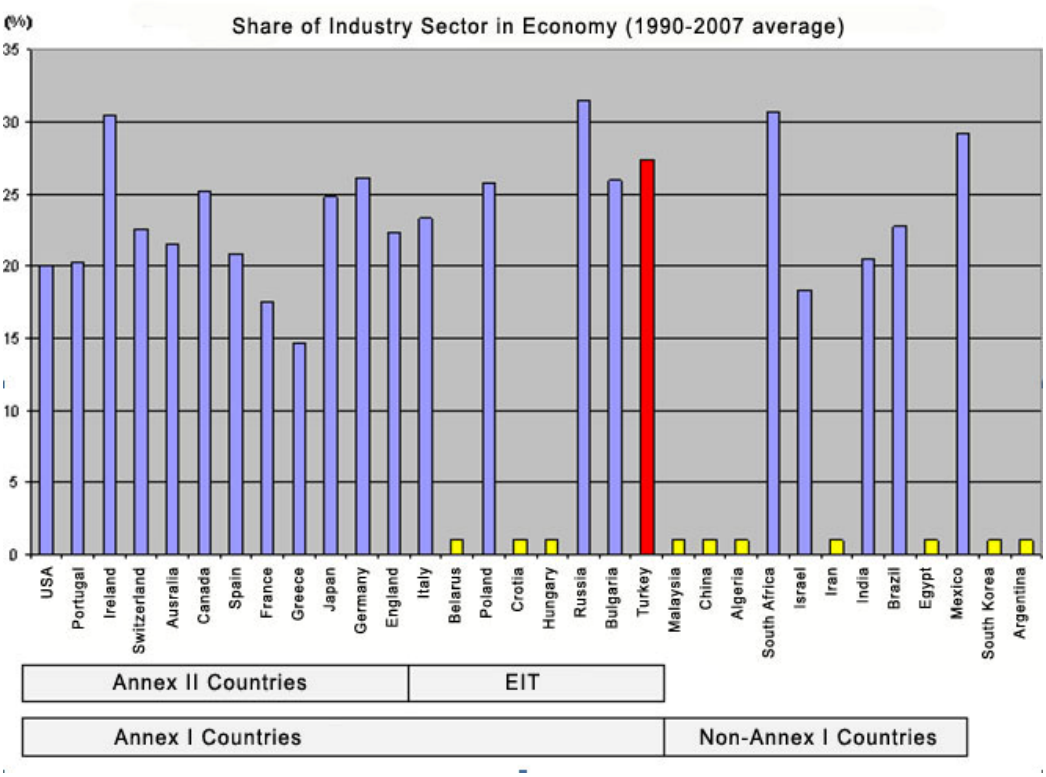

Figure 4-9 Share of Industry Sector in Economy (1990-2007 average)

Source: OECD Factbook 2009: Economic, Environmental and Social Statistics - ISBN 92-64-05604-1 - © OECD 2009, Macroeconomic trends - Economic structure - Value added by activity

* Blue represents 1990-2007 averages of countries

** Yellow represents countries of which data is unavailable. The average was accepted to be1.

***.Red represents Turkey

As can be seen from the above graph, when considering the share of industry sector in Annex I countries' economies, Turkey has almost same percentage share with Japan, Australia and USA. Furthermore, share of industry sector in economies of some non-Annex I countries such as South Africa, India, Brazil and Mexico is similar with Turkey's. In order to be able to fight effectively against climate change, it is important that these non-Annex I countries also take quantified emission reduction committments for the post-2012regime.

4.3. ENVİRONMENTAL INDICATOR

"Greenhouse Gas Emissions Data" and the necessity for "Investment in the Environmental Sector" have been analyzed as environmental indicators. In this context, basic greenhouse gas emissions indicators such as total greenhouse gas emissions, per capita greenhouse gas emissions and per GDP greenhouse gas emissions of Annex–I countries and non-Annex-I countries with fast-growing economies have been compared.

CUMULATIVE GREENHOUSE GAS EMMISSIONS

Percentage distribution of cumulative CO_2 emissions among various countries between the years 1850 and 2002 have been shown below in Table 4-2 and Figure 4-9.

When the distribution of cumulative greenhouse gas emissions among countries between the years 1850 and 2002 is analyzed, it can be seen that about 30% of the total gas is emitted by the USA, 27% of it by 25 EU countries, 8, 1% by Russia and 7, 6% by China. When a 152-year period is taken into account, Turkey stands 31st with an emissions ratio of 0, 4%. Another issue to point out is that developed countries are responsible for 76% of the CO_2 emissions through the year 2002.

In this context, taking into account the cumulative emissions, it is unreasonable that Turkey is included in Annex–I of UNFCCC when even many non-Annex-I countries have more responsibility than Turkey. This situation shows that Turkey is different from the other Annex–I countries.

Table 4-2: Cumulative CO2 Emissions between the Years 1850 and 2002 (Source: World Resources Institute (WRI, CAIT), 2004)

COUNTRIES	Convention Appendix	Emission %	Cumulative Emission %	Rank
USA	Annex-I	29,3	29,3	1
EU 25	Annex-I	26,5	55,8	2
Russia	Annex-I (EIT)	8,1	63,9	3
China	***Non-Annex-I***	7,6	71,5	4
Germany (EU 25)	Annex-I	7,3		5
England (EU 25)	Annex-I	6,3		6
Japan	Annex-I	4,1	75,6	7
France (EU 25)	Annex-I	2,9		8
India	***Non-Annex-I***	2,2	77,8	9
Ukraine	Annex-I	2,2	80,0	10
Canada	Annex-I	2,1	82,1	11
Poland (EU 25)	Annex-I (EIT)	2,1		12
Italy (EU 25)	Annex-I	1,6		13
South Africa	***Non-Annex-I***	1,2	83,3	14
Australia	Annex-I	1,1	84,4	15
Mexico	***Non-Annex-I***	1,0	85,4	16
Spain (EU 25)	Annex-I	0,9		20
Brazil	***Non-Annex-I***	0,8	86,2	22
South Korea	***Non-Annex-I***	0,8	87	23
Iran	***Non-Annex-I***	0,6	87,6	24
Indonesia	***Non-Annex-I***	0,5	88,1	27
Saudi Arabia	***Non-Annex-I***	0,5	88,6	28
Argentina	***Non-Annex-I***	0,5	89,1	29
Turkey	Annex-I	**0,4**	**89,5**	**31**
Pakistan	***Non-Annex-I***	0,2	89,7	48
Other Countries		10,3	100	
Developed Countries		**76**		
Developing Countries		**24**		

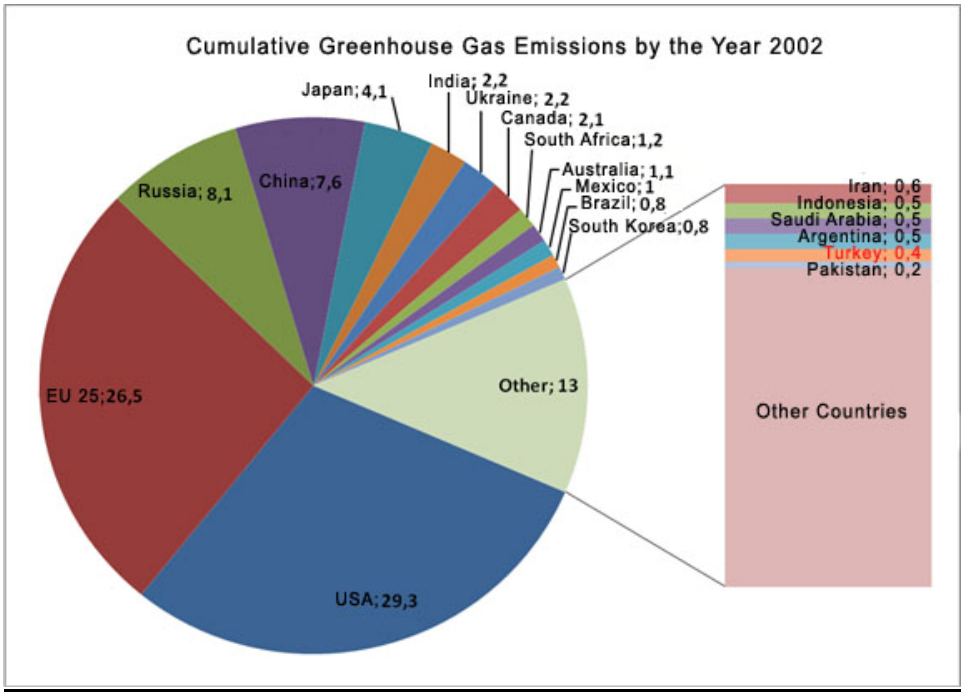

Figure 4-10: Distribution of Cumulative CO2 Emissions among Countries between the Years 1850–2002 (Source: World Resources Institute, 2004)

TOTAL EMISSIONS

On the basis of total emissions, the position of Turkey has been compared with that of Annex–I countries for the years 1990, 1995, 2000 and 2005. In the case of the non-Annex-I countries, due to lack of data, a comparison has been made by taking into account the year 1994 (**when the latest official announcement was made**) or the latest year available.

In this context, according to the comparison made with Annex–I countries covering the years 1990 and 2005 (Figure 4-10), when total greenhouse gas emissions values are taken into account Turkey has lower emissions than not only the developed countries in Annex-I, but also than non-Annex-I countries with fast-growing economies, such as Brazil, China, Mexico and India.

Although a decrease has been observed in the emissions values of transition countries, in general the emissions rates of countries with developing economies have increased. As a developing country, there has been an increase in the greenhouse gas emissions of Turkey due to the growing population, increasing industrialization and consequently the rising demand for energy and this trend is expected to continue in the forthcoming period.

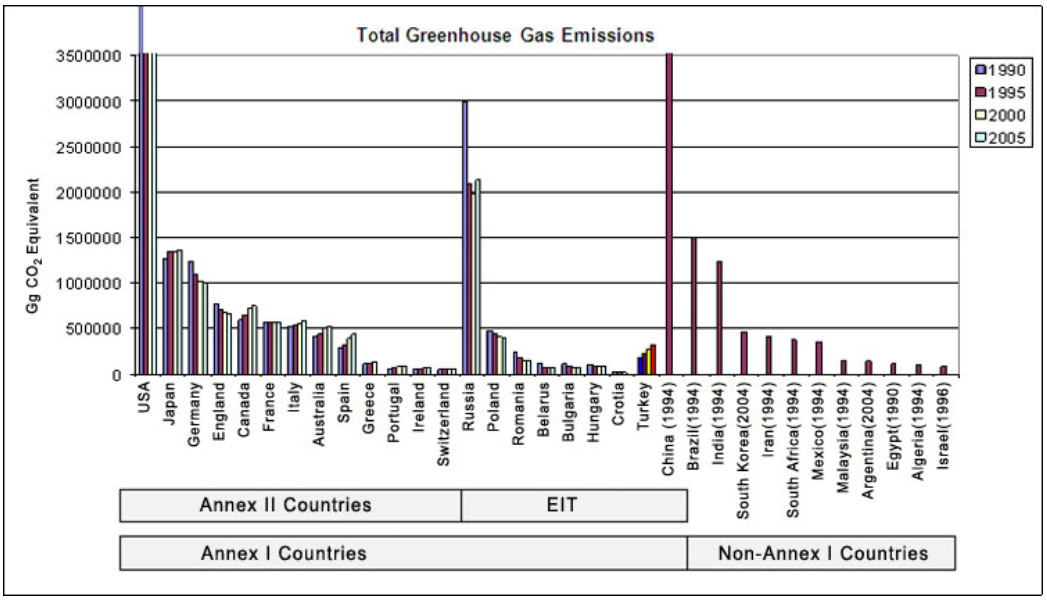

Figure 4-11: Total Greenhouse Gas Emissions (Gg CO2 Equivalent) (Source: UNFCCC Secretariat Inventory Tables, 2007; National Communications of non-Annex-I Countries))

PER CAPITA EMISSIONS

On the basis of per capita greenhouse gas emissions, the average of the values between the years 1990 and 2005 has been taken for the Annex-I countries; however, due to the lack of data concerning the non-Annex-I countries, an evaluation has been made by taking into account the year 1994 (**when the latest official announcement was made**) or the latest year available.

Taking into account the per capita greenhouse gas emissions**, all of the Annex-I countries**, including transtition countries, **have per capita emissions values that are higher than those of Turkey** between the years 1990 and 2005 **(Figure 4-11).** Therefore, regarding the per capita emissions values of Turkey, the conditions are not similar neither to Annex–I nor to transition countries. On the other hand, Turkey has lower per capita emissions values than the non-Annex-I countries that have fast-growing economies, that can benefit from financial aid, and that have no quantitative emissions reduction commitments under the Kyoto Protocol.

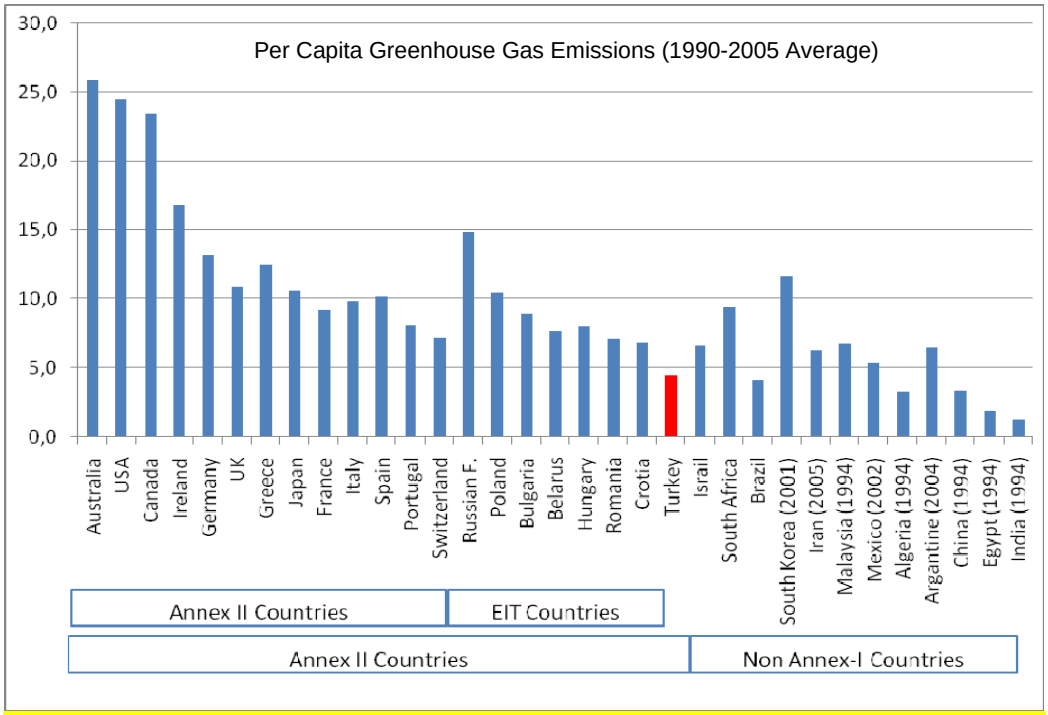

Figure 4-12: Per Capita Greenhouse Gas Emissions (Ton CO2 Equivalent / Person) (Source: World Development Indicators – 2009; UNFCCC Inventory, 2009

Figure 4-12 below shows the distribution of per capita carbon dioxide emissions among countries in the year 2004.

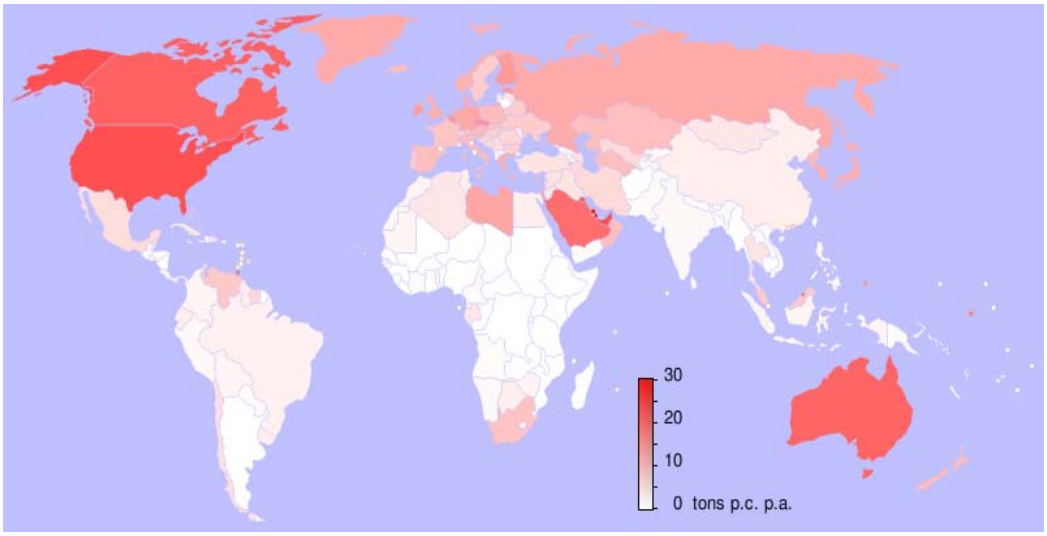

Figure 4-13: Distribution of Per Capita Carbon Dioxide Emissions among Countries (Ton CO2 / Person / Year)

EMISSIONS PER GROSS NATIONAL PRODUCT

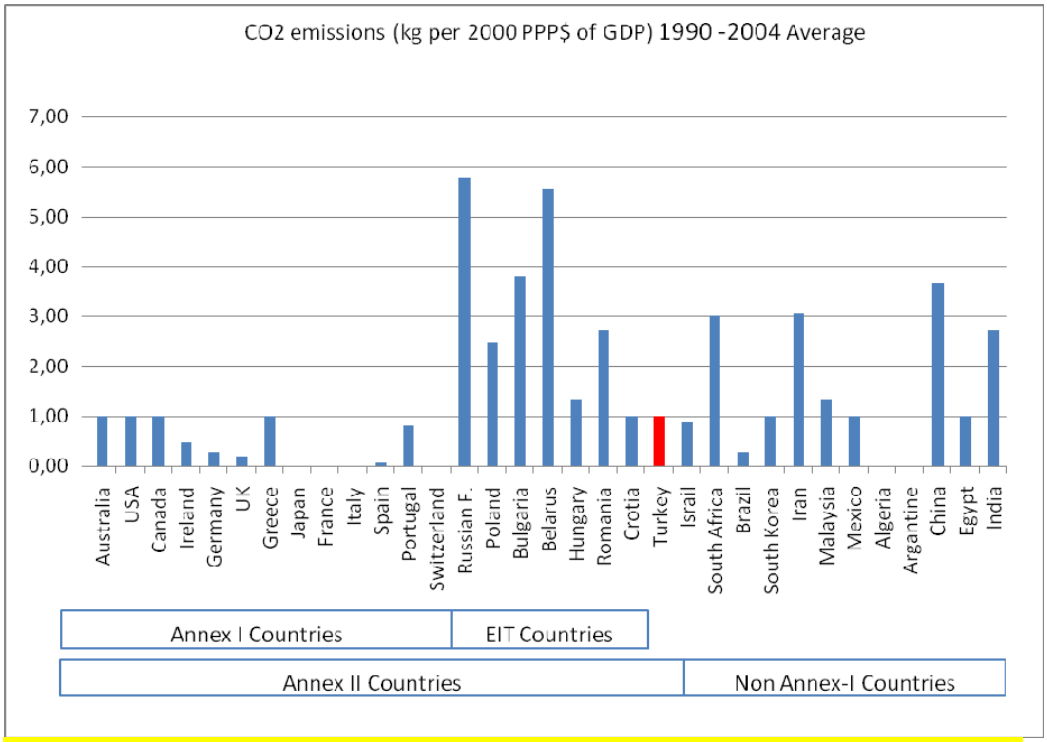

Figure 4-14: Carbon Dioxide Emissions Per GDP (Average Value for the Years between 1990-2004) (Kg CO2 / 2000 PPP $ GDP) (* PPP: Purchasing Power Parity)
Source: World Development Indicators (2009)

Taking into account the values of "Greenhouse Gas Emissions per Gross Domestic Product" (Fig. 4-13), it can be seen that the carbon density of Turkey's economy is not only equal to the average of the Annex–I countries, but also that Turkey has a high carbon density among the Annex-I countries in terms of "Greenhouse Gas Emissions per Total Primary Energy Production".

NECESSITY FOR ENVIRONMENTAL INVESTMENT

By taking into account its economic and social circumstances, Turkey, an EU accession candidate country, has prepared a National Environment Strategy which is compatible with development plans, annual programs, national strategies and policies of Turkey for the period between 2007 and 2023 in order to maintain a healthy and habitable environment and to develop, implement, monitor and control the necessary environmental legislation.

In this context, there is a need for an investment of approximately **59 billion Euros** for maintaining **general environmental services,** and for the waste and water sectors that have direct effects on public health the cost has been estimated at **45 billion Euros**. This situation is consistent with the target 7c of the 7th United Nations Millennium Development Goal, which is "**Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation**".

In this aspect, priority has been given to compatibility efforts in fields such as preserving public health, waste management, management of water resources and food security.

4.4. ENERGY INDICATORS

Per capita energy and electricity consumption in Turkey is lower than that of the entire Annex–I countries and many of the non-Annex-I countries. Turkey has achieved important economic growth in the last years, and this growth is expected to continue in the forthcoming years. Notably behind the other OECD countries in terms of economic development, Turkey's demand for energy will increase even more with the growth expected in economy and an estimated 20% growth in the population until the year 2020. In Turkey, a 4-5% increase in primary energy consumption and a 7-8% increase in electric energy consumption have been seen in recent years. The rates are expected to follow similar patterns in the medium and long run so that in 2020, primary energy consumption will reach 2,5 times its recent value and become 222,3 MTEP; similarly, the demand for electricity will reach about 2,2 times its recent value and exceed the 90.000 MW range. This estimated increase in demand calls for a significant increase in investment in Turkey.

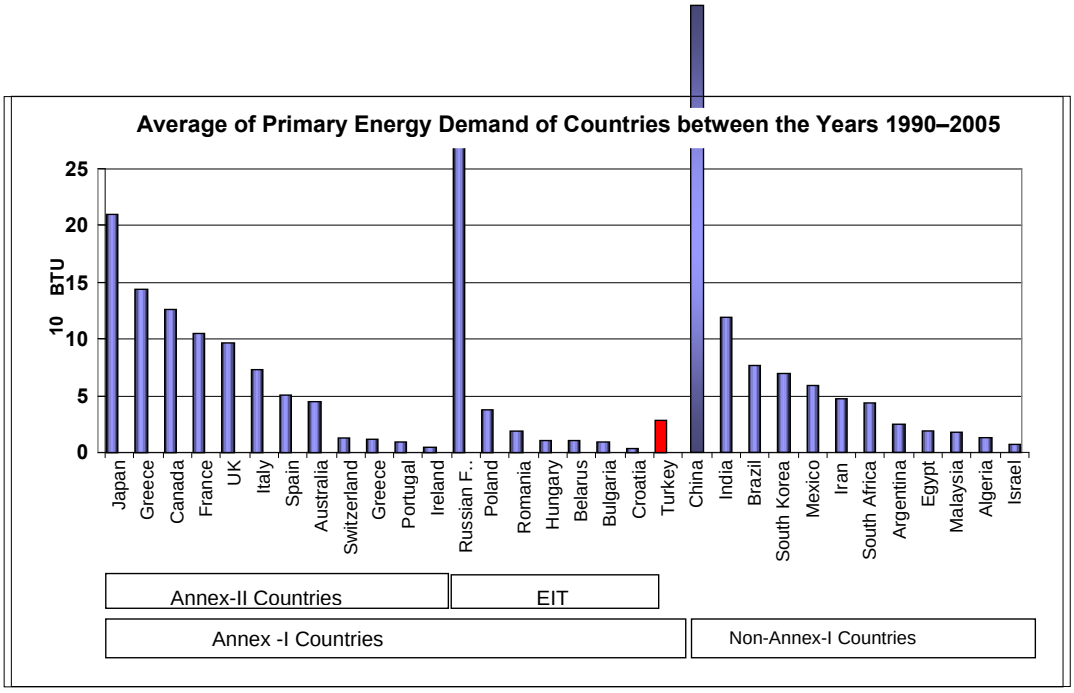

Figure 4-15 Average of Primary Energy Demand of Countries between the Years 1990–2005

Turkey has a problem of supply security and foreign source dependency. Turkey's energy policies, like the policies of all world countries, are centered on the utilization of its domestic resources with the goal of reducing its foreign dependency, which has reached 72%. Taking into account the resources and technologies that may be preferred to meet the aforementioned demand for energy, a notable rise is expected in the greenhouse gas emissions stemming from electricity production. According to the projections, greenhouse gas emissions from fuel consumption in Turkey will increase from the 226 MT value of the year 2004 to a value of 615 MT in year 2020. Despite the high rise in the demand, it can be seen that the carbon density in electricity production has fallen with respect to the levels of 1990, and that electricity production from renewable energy resources has doubled.

Turkey is a developing country and per capita energy consumption is at a very low level (Figure 4–15). Supplying energy to people at affordable prices and in sufficient amounts will play an important role in bringing Turkey's level of welfare closer to that of OECD countries. Most of the energy consumption of an average household is associated with heating.

Due to its geographical situation, Turkey is a country where heating needs are high between October and April, and where cooling needs are high in the other months, especially in the middle and southern regions. This situation identifies an important parameter about energy consumption, not only for today but also for the future when the observed effects of climate change are expected to increase. The fact that in Turkey there are a lot of unlicensed buildings that are poorly-insulated, that buildings are constructed

without taking into account the geographical requirements, and that adequate and accurate insulation materials are not used in buildings causes a great loss of heat and energy. Rural residents fulfill their need for energy with conventional methods. Unless modern energy technologies and necessary resources are introduced to these people, the amount of emissions generated by these areas will constitute an important ratio among the total rate of emissions.

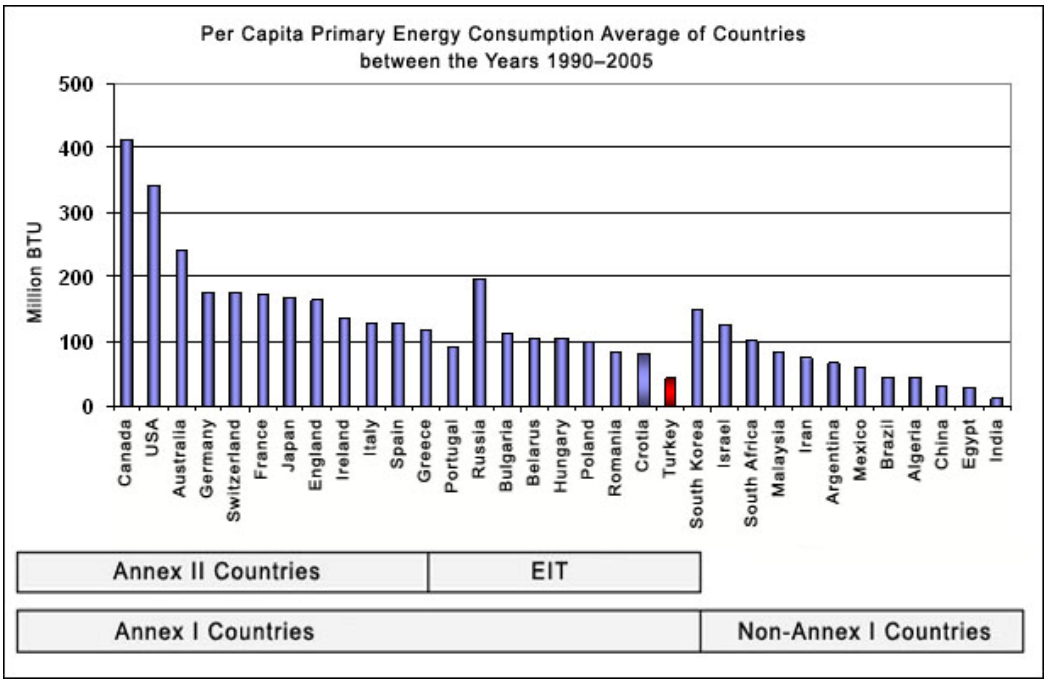

Figure 4-16: Per Capita Primary Energy Consumption Average of Countries between the Years 1990–2005

A liberalization process has been adopted in all energy sectors due to the abundance of the necessary investments and the limited resources of Turkey to meet the energy demand. The electricity, natural gas and oil sector in particular are being transformed into free markets, and investments in these sectors are expected to be made by private companies in the medium and long run.

It is expected that the amount of coal used to meet energy needs will increase in the medium and long run, and that that of oil and natural gas will decrease.

Turkey is lacking in energy resources. The most important energy resources available in Turkey are hydraulics, lignite and anthracite. Hydraulic resources play a role in electricity production. Turkey's economic hydraulic potential is determined to be at the level of 127, 4 billion kWh. 35% of Turkey's economic hydraulic potential is being used and 8% of it is about to be used, with facilities in construction. The remaining 57% is waiting for investment.

25% of electricity production in Turkey is provided by hydraulic resources, but due to the negative effects of climate change on water resources in Turkey, which is situated in the Eastern Mediterranean Basin, a decrease has been observed in its hydraulic electricity

production and this fall is expected to continue in the future. Droughts, extraordinary natural events, and climate system instability may cause expensive malfunctions in Turkey's energy infrastructure. The adaptation of Turkey's energy sector to the climate change constitutes an important issue for the country; however, sufficient studies have not been conducted about the cost of adaptation.

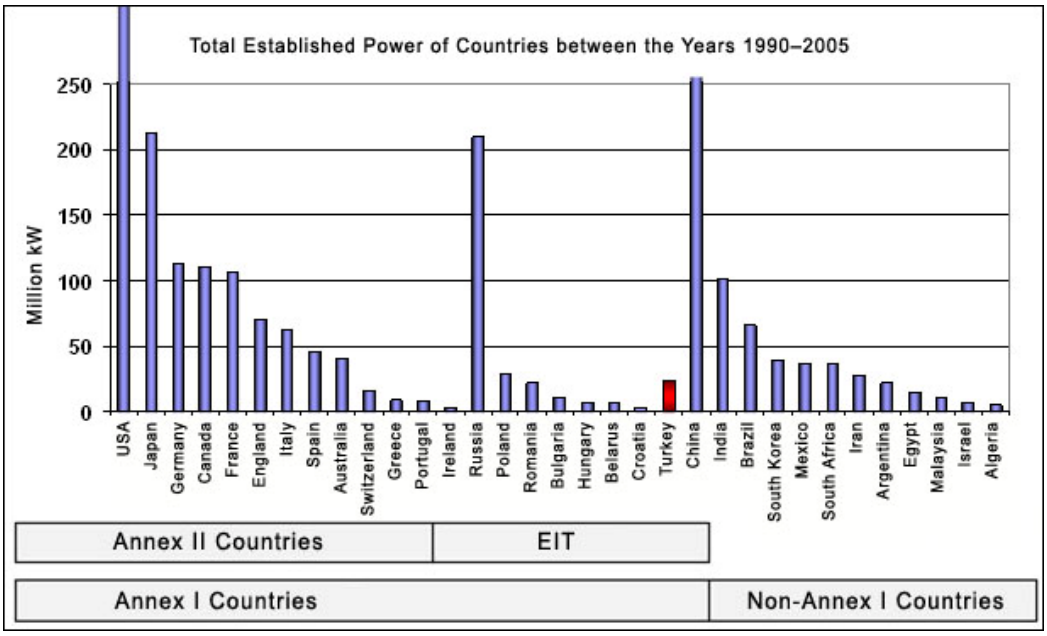

Figure 4-17: Total Established Power of Countries between the Years 1990-2005

Turkey has a significant level of lignite and anthracite reserves. It is very important that lignite and anthracite reserves are put to use with maximum efficiency in order to lessen foreign source dependency on energy and to maintain supply security.

As for oil and natural gas capacity, Turkey is quite far from meeting the demand. For this reason, Turkey's foreign source dependency has gradually increased in the last 5 years and has reached a level of 72%. Because such a high level of foreign dependency poses crucial risks, reducing foreign source dependency in energy is one of the priorities for policy in Turkey. The most important renewable energy resource in Turkey is hydraulic energy. 25% of Turkey's electricity need is met by this resource. With this ratio, it is clear that Turkey is in a rather good position compared to the rest of the world, including EU countries.

In Turkey, the **use of renewable energy resources doubled** between the years 1990 and 2004, rising from 23,23 billions of kWh to 46,23 billions of kWh. Energy production-associated per capita emissions**,** in other words **energy density in electricity production,** rose from 2,035 tons of CO2 equivalent/1000 YTL to 2,170 tons of CO2 equivalent/1000 YTL**, with an increase of 7%.** Again, in electricity production, **carbon density** declined from 0,529 kg CO2 equivalent/kWh to 0,469 kg CO2 equivalent/kWh, **with a decrease of 11%.** (Table 4-3).

Table 4-3: Data Regarding Electricity Production in Turkey between the Years 1990 and 2004

Indicator	1990	2004	Change Rate (%)
Total Electricity Production (Billion kWh)	57,54	150,7	162
Renewable Electricity Resources (Billion kWh)	23,23	46,23	99
Greenhouse Gas Emissions / GDP (Ton Equivalent-CO2/1000YTL)	2,035	2,170	7
Kg CO2 Equivalent / kWh	0,529	0,469	- 11

Source: First National Communication

Economic wind energy potential in Turkey is about 10.000 MW (approximately 25 billion KWh). Although the established wind plant power amount is low, recently many wind plant projects have received licenses. However, due to reasons such as the characteristics of wind energy and the technical constraints of conduction systems, the ratio of wind energy to energy production capacity is not expected to change significantly in middle term. Unless the necessary technologies are developed and mechanisms are established to transfer these technologies to Turkey, even keeping the current level of renewable energy would be a difficult objective to achieve.

Turkey possesses rich geothermal resources and Turkey is the fifth country in the World and first country in Europe in terms of geothermal resources. Turkey has an estimated thermal geothermal capacity of 31500 MWt, however, this potential has not been fully utilized so far. 1 million house is targeted to be heated by geothermal power in Turkey which would otherwise require 8000 MWt installed heat capacity that is approximately equal to 5 times of a nuclear power station with 1400 MWt capacity. It also corresponds to 3 times the annual heat substitute of Turkey. In other terms, it is equivalent to energy generated from two Blue Stream Gas pipeline Project. Compared to 16 billion m^3 /annual natural gas provision from Blue Stream Gas pipeline Project, our thermal geothermal capacity is 30 billion m3/annual.

As a developing country, Turkey's need for iron, steel, cement and metal products is increasing due to the rapid growth trend in the last ten years, population growth and urbanization. The fact that these products also play an important part in the country's export portfolio has transformed the country's industry sector into an energy-dense structure. The ratio of production of iron, steel, cement and metal products in the manufacturing export industry to the total export is 18% in the year 2005.

Use of old technologies in industry causes inefficient production. Furthermore, inadequate energy efficiency initiatives is among the reasons behind the high energy intensity figures in industry sector.

The use of old technologies in the industrial areas may cause inefficient production. Also, the fact that energy efficiency efforts are insufficient is one of the reasons behind the high energy density figures seen in the industry sector.

Rapid population growth, urbanization and increases in welfare cause an increase in the demand for transportation, especially for passenger cars. However, Turkey is behind the OECD and EU countries when comparing the number of passenger cars per person (Figure 4–17). Considering that per capita income and number of vehicles are two important factors

affecting transportation-related emissions, it is anticipated that in Turkey the demand for motor vehicles will continue to increase and consequently, transportation-related greenhouse gas emissions will increase as well.

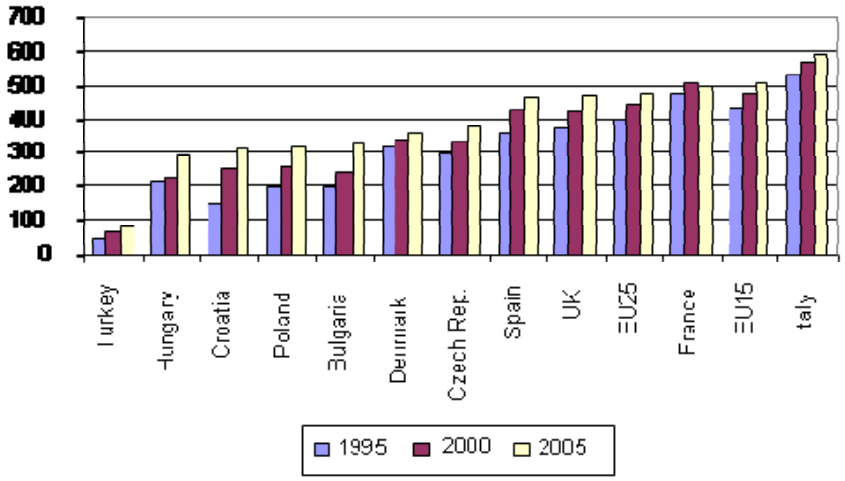

Figure 4-18: Number of Vehicles per Thousand People in Turkey and Other Countries

On the other hand, using low fuel-consuming vehicles, decreasing the vehicle fleet age average and improving the public transportation network will enable the lowering of transportation-related energy consumption and emissions.

In order to reduce transportation energy consumption and associated greenhouse gas emissions, paralell to what is being done in developed countries, paths should be provided for pedestrains and bikes. Furthermore bicycling and walking should be integrated into the transportation mainstream, transportation policies and urban planning.

5. GENERAL EVALUATION AND RESULTS

Following the Decision 26/CP.7 adopted at the 7th Conference of Parties (COP.7) of United Nations Framework Convention on Climate Change (UNFCCC) held in Marrakesh in 2001, which "**recognized the special conditions of Turkey and accepted that Turkey remains an Annex-I Party of the UNFCCC, in a position that is different to that of other Annex-I countries and Turkey will be removed from Annex-II**", Turkey became a party to the UNFCCC on May 24th, 2004.

The Kyoto Protocol was ratified at Turkish Grand National Assembly on 5 February 2009 and Turkey officialy acceded to the Protocol on 26 August 2009.

The Kyoto Protocol which is an international agreement under the UNFCCC established to reduce emissions of greenhouse gases was adopted in 1997 and entered into force in 2005. Turkey was not party to the UNFCCC during the time Kyoto was adopted so under the Kyoto Protocol Turkey does not have an emission target ascribed to it in Annex B and therefore is a non-Annex B Party under the Protocol.

Committtment period of Kyoto Protocol is 2008-2012 and Turkey does not have any quantified emission reduction or limitation commitments until 2012. What is important is that by effectively engaging in post 2012 negotiations, ensuring that Turkey takes a fair position in the new agreement.

When evaluated with respect to the **Human Development Index** published by UNDP (United Nations Development Programme), it can be seen that Turkey stood 84th among 177 countries in the year 2005.

In terms of GDP, Turkey has low level of welfare compared to all annex I countries which have quantified emission reduction committments and most of the non Annex I countries which have fast growing economies.

Although the population growth rate of Turkey has decreased in the last years, it is still higher than that of all the Annex-I countries. This situation causes stress on natural resources to increase gradually and necessitates the allocation of more resources to the fight against environmental pollution.

It is clear that as a result of **Rural** - **Urban** distribution of overall population (increase in percentage of urban population compared to rural population), need for some infrastructure services such as housing, drinking water, waste water, solid waste and demand for local transportation, heating and electricity consumption has increased which in return led to increases greenhouse gas emissions. This increase is expected to continue in the near future.

Due to the increasing ratio of urban population to rural population in terms of total population, the need for urban transportation, heating and electricity production, and for infrastructural services such as housing, drinking water, waste water, and solid waste disposal has increased. This in turn leads to an increase in greenhouse gas emissions as well.

When developing policies for reducing the amount of anthropogenic greenhouse gas emissions accumulating in the atmosphere since the 1850's (when the industrial revolution began) the principle of **"historical responsibility"** should be taken into account. In this aspect, based on cumulative emissions, 76% of the anthropogenic greenhouse gas emissions are caused by developed countries and 24% of it is caused by developing countries, one of which is Turkey. The ratio of Turkey in this 24% is calculated at 0, 4%.. As a consequence, when Turkey's historical responsibility is compared with other countries, it is relatively low.

In terms of greenhouse gas emissions per capita, Turkey has less emissions than all Annex I countries and some fast growing non Annex I countries whose economic structure is similar to Turkey's such as Mexico, Brazil, South Korea and Argentina.

In terms of energy indicators, Turkey's primary energy consumption per capita is lower than all Annex I countries and some non-Annex I countries with fast growing economies such as South Korea, Israel, Argentina, Brazil and Mexico.

In Turkey, the use of **renewable energy resources has doubled** between the years 1990 and 2004. Although the **total electricity production has tripled**, greenhouse gas

emissions per GDP, in other words **energy density in electricity production, increased by 7%** percent in the same period. Again, carbon density has **decreased by 11%** in electricity production.

Although Turkey does not have a quantitative greenhouse gas emissions reduction commitment under the Protocol, comprehensive studies have been conducted in all sectors, necessary legislation preparation has been accelerated and environmental, energy efficiency and renewable energy acts and related regulations have been developed and enacted. Greenhouse gas emissions were at 312 million tons in 2005 as a result of the measures taken in the fields of transportation, waste, energy and industry, which are main sources of greenhouse gas emissions, and also in land use and forestry, which have an important role in carbon capture.

Important initiatives are being applied in the transportation sector, such as the enhancement of the quality of the fuels consumed in vehicles, the utilization of bio-fuels, the use of vehicles with new technology motors, the withdrawal of old vehicles from the road, the expansion of metro and light rail networks in big cities in order to encourage mass transportation, the launch of the Marmaray Sub-sea Tunnel Project in Istanbul (which will connect the Asian and European sides of the city and will prevent an important amount of greenhouse gas emissions), and the expansion and improvement of the railway network, including high-speed train lines. In the industry sector, efforts are being made especially in the cement and iron-steel facilities in order to increase energy efficiency and to promote the use of better quality and alternative fuels. Initiatives to increase energy efficiency, promote more qualified and alternative fuels in industry sector especially in cement and steel& iron facilities has already begun. In the waste management sector, the following actions are being promoted primarily: the waste reduction (reduction of waste at its source), recycling, regular waste storage and the conversion of landfill gas to energy. In addition to these efforts, in order to create carbon sinks, 2, 3 million hectares of area throughout the country is planned to be afforested within the context of National Forestation Campaign between the years 2008–2012.

In the scope of the Convention, Turkey supports to the extent of its available means the global efforts for the implementation of the policies and measures that are formulated with the goal of reducing greenhouse gas emissions and is determined to continue its economic development within the principle of sustainable development.

Based on the fact that urban areas are responsible from most of the emissions, in order to conserve environment and natural resources, prevent environmental pollution and fight against climate change, residential strategies should be developed which would include all settlements with different sizes and characteristics and give special emphasize to environment friendly techniques and renewable energy. There is a need to develop energy efficient, climate/environment friendly and productive urban and rural planning. Also in order to reduce impacts of climate change, making climate data of each settlement available, promoting use of local materials/supplies and developing settlement planning that would take into account environmental and topographical data should be a requirement.

Both measures that are taken to reduce the effects of climate change and to provide adaptation measures pose a significant burden on Turkey's economy and it is seen as difficult to cover the necessary costs from Turkey's budget alone, as Turkey is a country that has not completed its development yet and Turkey is one of the least historically responsible countries for climate change. In this sense, although Turkey is listed as an Annex–I country, it does not seem possible for Turkey to undertake any of greenhouse gas reduction commitments like the other Annex-I countries.

In the light of decision number 26/CP.7 of 7th Conference of Parties and the above mentioned points supporting this decision, without undertaking any quantitative greenhouse gas reduction commitments, but by continuing its voluntary emissions reduction approach within the framework of the existing initiatives. Turkey would also like to declare that by considering the principle of equity and Turkey's specific circumstances, Turkey is ready to take part in the new climate regime of the post-Kyoto period, and also may agree to undertake emissions limitation commitments in the context described below. In addition, the new international framework should be designed to allow for economic growth and consider the different capacity and development levels and respective cumulative or per capita greenhouse gas emissions values of different countries and the need for wider participation. Therefore we hope that the post-2012 climate regime includes applicable and flexible framework that should consider each country's specific circumstances and should contribute to their efforts in combating climate change.

Within the framework of ongoing initiatives by following voluntary emission reduction approach Turkey acceded to Kyoto Protocol without taking any quantified emission reduction or limitation committments based on decision no: 26/CP.7 taken in COP 7 and above mentioned facts that support this decision. We would like to mention that based on principle of fairness and special circumstances of Turkey, Turkey is ready to be part of the post-2012 regime and can take emission limitation commitments within the below outlined framework. The new climate regime should ensure that level of capacity and development of counties are taken into consideration and their economies are not negatively effected, committments are taken based on cumulative and per capita emissions and there is wider participation. Post 2012 regime needs to be applicable which takes circumstances of each countries into consideration and includes various flexible instruments which would contribute to countries' fight against climate change.

Turkey, as an EU candidate country, will continue its efforts towards the attainment of sustainable development goals after 2012 as well, and will have to increase its levels of greenhouse gas emissions in order to achieve these goals. On the other hand, if the emission per capita rate of Turkey moves towards to EU rate in upcoming 15-20 years, the new approach should consider historical responsibility principle. When developing a new approach, not only per capita emissions values, but also other indicators such as per capita income, development level, historical responsibility, etc. must be considered as well. Only with such a multifaceted approach can emissions reduction or limitation target be determined.

On the other hand, Turkey is considered to be among the most vulnerable countries in terms of the negative effects of the global climate change as it is surrounded by sea on three sides, located in the Eastern Mediterranean Basin and is under the wide prevalence of Mediterranean climate characteristics. Other facts that prove Turkey's vulnerability can be

explained as follows: the existence of low shores as well as arid and sub-arid areas, the existence of areas prone to natural disasters, droughts and desertification, and the existence of delicate ecosystems including mountainous ecosystems. Thus, Turkey needs adaptation activities to protect against the negative effects of climate change. Taking into account the **position of Turkey that is different to that of other Annex-I countries**, it is important that Turkey benefits from funds and mechanisms in order to play an effective role in combating climate change.

Regarding the post-2012 negotiations that will be conducted until COP15:

The necessary effort needs to be placed for ensuring recognition of Turkey as a developing country within the ongoing works of the AWG-LCA which will in parallel enable Turkey to benefit from flexibilities provided to the developing countries as well as new negotiated flexible mechanisms (sectoral approach and crediting of NAMAs) that are being negotiated. Besides, the necessary steps should be taken towards Turkey to benefit from existing and new financial resources.

Considering the additional burden and further responsibilities that will impact our economy quantified emission reduction commitment would cause during the post-2012 period, every possible effort shall be made not to have Turkey's name under Annex B of the Protocol.