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**REPORT**

**Low Carbon Economies – Energy Sector Example**

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## Low Carbon Economies – Energy Sector Example

### 1. General

Turkey has officially become a party to the Kyoto Protocol on August 26, 2009. Turkey is among the Annex-1 countries in the mentioned Protocol.

Along with the reluctant attitudes of USA and China, Japan and Russia have also adopted a similar approach at the 16<sup>th</sup> Conference of the Parties held in Cancun, Mexico on December 2010. In fact, China is currently declaring unilateral targets in terms of emission reduction and energy efficiency.

Despite the uncertainties arising from this situation, Turkey has declared several times that it is ready to undertake responsibility in a just manner. These liabilities are planned to be determined after the impact analysis studies that are to be conducted.

According to the latest 2009 greenhouse gas inventory published by TurkStat, data related to emission sources in Turkey are as listed below:

- Energy 75.3% (278.33 million tons of CO<sub>2</sub> gas)
- Waste 9.2% (33.93 million tons of CO<sub>2</sub> gas)
- Industry 8.6% (31.65 million tons of CO<sub>2</sub> gas)
- Agriculture 6.9% (25.70 million tons of CO<sub>2</sub> gas)

On the other hand, the share of Turkey of global emissions stands at around 0.4% with 369.65 million tons of CO<sub>2</sub> gas.

In this context, although Turkey is an Annex-1 country, it is currently not among the biggest polluters in addition to not bearing the burden of historical responsibility.

In this framework, Turkey has “special circumstances”. In fact, this “special position” attribute has been legalized with Decision no. 26/CP7 that was taken at COP7 held in Marrakech on November 9, 2001.

Accordingly Turkey, along with being in a different position than the other parties to the Kyoto Protocol, does not find itself among the Annex-2 countries (states undertaking responsibility for direct reduction).

### 2. Climate Change and Turkey

Turkey is the country with the lowest carbon emission per capita value among the Annex-1 countries. According to data dated 2007, the carbon emission value per capita in Turkey was recorded to be at 5.3 tons of CO<sub>2</sub>. This figure rises up to 10.2 tons of CO<sub>2</sub> for the EU-27 average and 15.0 tons of CO<sub>2</sub> for the OECD average.

Furthermore, the special position of Turkey was recognized with Decision no.26/CP7 taken at the United Nations Framework Convention on Climate Change (UNFCCC) 7<sup>th</sup> Conference of the Parties organized in

Marrakech as mentioned before. As a result, Turkey was removed from the list of Annex-2 countries that was to bring about higher liabilities.

In the “Copenhagen Accord” issued at the 15<sup>th</sup> Conference of the Parties held in Copenhagen on December 2009, the countries were classified into two categories: “Annex-1” and “non-Annex-1”; in which Turkey was listed as an “Annex-1” country.

According to this, the “Annex-1” countries are to undertake responsibilities and provide reduction commitments; whereas the second category of “non-Annex-1” countries are to carry out NAMAs (Nationally Appropriate Mitigation Actions). Although Turkey has made no commitments regarding emissions reductions so far, it has expressly declared that it wishes to carry out NAMAs in the framework of the Copenhagen Accord.

The Turkish authorities have indicated each time that they are ready to undertake liabilities in the framework of just responsibility and this approach received the full support of the private sector. In fact, before 1992, during the creation of the list of countries that are to take place among the Annex-1 countries, countries were selected on the basis of whether or not they were a member of the OECD. Consequently, it can be said that the international climate change negotiations are regulated and carried out as per the conditions of 20 years ago.

Turkey does not have any liabilities in terms of reductions in the scope of the First Commitment Period (2008-2012) of the Kyoto Protocol. In this context, Turkey does have a liability within the Second Commitment Period (2012-2016) as it resides among Annex-1 countries.

On the other hand, Turkey is not a strong beneficiary of the carbon trade mechanisms either. Bearing in mind the fact that China is enjoying investments close to 1 Billion Dollars per annum through Clean Development Mechanism (CDM) investments, the burdens of this missed opportunity brought about of Turkey being kept distant from this pool is evident.

### **3. Carbon Emission Trade**

Owing to its special position, Turkey can only take part in the Voluntary Carbon Market regarding the Carbon Emission Trade, and thus, is unable to reap the benefits of the investments from mechanisms such as the CDM which can be utilized by developing countries. Furthermore, it cannot partake within the Joint Implementation (JI) programme either.

The Voluntary Carbon Market (VCM) covers only 1% of the global carbon markets. Turkey is in a leading position regarding the implementation of the VCM. It is shown as an example in the United Kingdom Emissions Trading System (UK-ETS) and the Chicago Climate Exchange (CCX) voluntary carbon markets implemented in Chicago. The carbon emission trade activities in Turkey are not subject to any taxation.

As a result of the carbon reductions projects realized, the obtained “carbon credits” or “carbon certificates” are perceived as a share certificate or bond. Subsequently, these certificates can be purchased by the enterprises of the country with a liability within the scope of Kyoto Protocol whose carbon emissions value has neared its limit and thereby carbon trade is realized. The preferred method of carbon trading is through the mediation of “brokers”. Since Turkey is in the VCM, “Voluntary Emission Reduction” (VER) certificates are being granted for reductions achieved in Turkey.

According to several views, the Achilles’ Heel of the Turkish carbon market is the fact that prices are as low as 4-9 Dollars per ton. There appears to be various methods that can be carried out to increase the value of these

carbon certificates, which may aid in bringing the price up to the worldwide average price of 16 Dollars per ton. In this respect, within Turkey:

- The certificates obtained in the scope of an internationally recognized Standard should be registered with a “Carbon Registry”. In this respect, membership application can be made to Carbon Registry Centers, most of which are located in the USA and charge an annual fee, in which it is then possible to certify the certificates. It is seen that 80% of the certificates obtained in Turkey are of the “Gold Standard” that is based in Geneva, Switzerland. There is currently no carbon registration system based in Turkey, although the Ministry for Environment and Urbanization has announced it is working on creating their own carbon registration system.
- In addition to this, it is possible to further increase the reliability of the certificates by having it approved by the UNFCCC.
- Due to the fact that the VERs mentioned above only have represent a 1% share of global carbon emissions trading, it is seen that CERs obtained via the CDM prove to be more attractive for foreign investors. In this respect, there is the widespread view that it would be more beneficial to convert the VER certificates into CER certificates if possible, and prepare the basis for such conversions should this be a possibility.
- Bearing in mind the fact that about 78% of the carbon emissions in Turkey is from energy production, the majority of investments tend to shift towards this sector. In this context, it is observed that the hydroelectric energy-related projects have become more popular and widespread. Besides hydroelectricity, there are also projects which cover other renewable energy sources. In this respect, it is possible to witness the development of energy projects for renewable sources such as wind, solar and geothermal energies.
- Although it is labeled as “Carbon Emissions Trade”, the projects in question can be aimed at reducing other greenhouse gasses as well. Methane is a fine example in this sense. Due to the fact that methane gas causes a 27-fold greenhouse gas impact as compared to carbon, it is possible to observe an increase of value in this ratio as a result of the obtained certificates for methane. However, since carbon gas emissions are more widespread, it is observed that most projects are at the reduction of carbon emissions.
- It is considered fundamental that the traceability of the mentioned projects be transparent and conforming to Measurable, Readable and Verifiable (MRV) methods.

It is expected that Turkey will monitor the developments in the EU ETS throughout its EU accession process.

Turkey has explicitly stated its approach regarding the ETS. In this respect, harmonization to the EU ETS is being fully pursued. However, it has been declared by officials that full implementation will not come to realization prior to a full EU membership. This approach has received the full support of the private sector as well.

Recently, a new unit has been established by the Ministry of Environment and Urbanization regarding Carbon Emissions Trade. In this respect, it is expected that harmonization of measurement methods of emissions within the scope of the EU ETS will be carried out in full cooperation with the representatives of the respective sectors.

#### **4. Climate Change and Low Carbon Economy**

Turkey, continuing its harmonization under the framework of the *acquis*, based on the consideration that transition to a clean energy world is the biggest economic opportunity in the 21<sup>st</sup> century; is aware that the criteria to impact the balance of the free competition-trade medium at a national, regional or international scale is the Economic Security, Energy Security and Ecologic Security triad being the basic building Stones of development. In this framework, climate change and the phenomenon that is environment are not just made up of ecologic events, rather they are topics that consist of various aspects such as the economy, energy investments, social life and legal issues, and should thus be treated as a whole.

Low Carbon Economy (Green Development) is an economic model that minimizes the pressure on the environment and natural resources while keeping the energy and water consumption in production at a minimum, thereby foreseeing to obtain the highest level of benefit, ensuring the reduction and control of the greenhouse gases causing climate change, making a contribution to the struggle of poverty in the sense of establishing global finance resources and incentive mechanisms and elevating the ecologic efficiency in consumption models and products. The low carbon economy, bringing about a new update in the economic aspect, also denotes a high quality development model. This does not mean a complete shift from existing energy sources, but rather making use of and evaluating the supply of more environmentally friendly energy resources within the energy market with incentives and supporting it with permanent policies and implementations.

In this process, where we are in a critical period at the ongoing negotiations regarding climate change, low-carbon competitive power emerges as an important topic for developing countries. In this period we are in, the importance of utilizing clean production Technologies as a part of daily life and the clean energy and low carbon solutions via innovation is ever-increasing worldwide, from a social level to that of a governmental and reaching out to the business world.

For the transition to a world-wide sustainable development understanding, states, politicians, the business world, NGOs, scientists, the media, public benefit associations worldwide must all be in cooperation. If the goal of preventing a rise of 2°C in temperatures is to be pursued, robust and fair efforts are needed on a global scale in order to reduce greenhouse emissions. In order to realize this purpose, certain changes must be made both in the global economy and the domestic economies of every country. In this period, depending on how each state will adapt itself to a carbon-free world shall, in a larger scale, determine the welfare it will create for its citizens and future economic competitiveness.

Some of the topics in the low-carbon development model that aim to ensure low-carbon economic activities can be listed as follows:

- Efficient use of natural resources,
- Eco-efficiency,
- Low-carbon development,
- Adaptation to climate change,
- Sustainable city management,
- Advancement of public transportation with low carbon consumption,
- Green employment,
- Sustainable waste management,
- Advancement of environment-friendly R&D,
- Ecologic buildings,
- Eco tax – Green budget reforms.

## **5. Common Assessment of Environmental Policies and Economic Policies**

By preparing the Climate Change National Strategy Paper and approval thereof at the Higher Planning Board on May 3, 2010, Turkey has established a road map putting forth the short, medium and long-term targets in the struggle against climate change covering all the sectors.

In the mentioned paper, the national approach Turkey adopted for climate change is termed as follows;

“To become a country that integrates climate change policies into development policies; promotes energy efficiency; increases the use of clean and renewable energy resources; providing active contribution in the framework of the “special circumstances” in the struggle against climate change, and that can provide a quality of life at high standards to all its citizens”.

One of the most important milestones in this roadmap prepared through extrapolation for the years 2010-2020, is the expression of “*With the provision of supports aimed at technological innovation, emission control, climate-friendly technology production, clean product design and production Technologies, the orientation towards a low carbon economy shall be accelerated.*” stated under the financing section. Furthermore, in this same section the concept of a Low-Carbon Economy has been referenced among the medium-term targets. The action that needs to be taken from here on is the transfer of the basic approaches to Low Carbon Development to the future National Development Plans and ensuring that it is adopted as a model at the relevant sectors with the necessary financial support.

Turkey is targeting the reduction of the greenhouse gas emissions on one hand, and aiming to maintain its economic development in the framework of the sustainable development principle by orienting more towards clean production Technologies and consuming less energy in unit production on the other hand. By ensuring the realization of increased capacity in this regard, supporting the development of renewable energy and energy efficiency and new environmental sectors, such as the insulation sector, and in the local managements, new employment opportunities are to emerge and create jobs such as environmental engineering, environmental consulting, ecological architecture, environmental law, environmental instructing, people working at environmental protection and eco-technology, and environmental regulation, ultimately paving the way for green-collar employment.

Various indexes have been developed in order to measure the new generation competitiveness at a universal scale. The Low Carbon Competitiveness Index, among such indexes, is a parameter that demonstrates the competitiveness of countries in a low carbon world and their capabilities to create material welfare to its citizens, based on the existing political structure and socio-economic indicators of each country.

The list of large-economy countries according to the Low Carbon Competitiveness Index:

<b>Country</b>	<b>Place</b>	<b>Index</b>
France	1	0.67
Japan	2	0.66
U.K.	3	0.66
South Korea	4	0.64
Germany	5	0.63

China	6	0.61
Canada	7	0.58
Italy	8	0.58
Brazil	9	0.56
USA	10	0.56
Mexico	11	0.55
Russia	12	0.54
Argentina	13	0.54
<b>Turkey</b>	<b>14</b>	<b>0.54</b>
Australia	15	0.50
South Africa	16	0.50
India	17	0.48
Saudi Arabia	18	0.43
Indonesia	19	0.40

Source: Turkish Ministry of Environment and Urbanization

In general, it can be seen at the table above that the countries with high GNP per capita values have accepted the necessity to make arrangements in its economies to achieve low carbon growth score high on the Low Carbon Competitiveness Index. However, in the lower parts of the index, Non-1 countries, Australia and Turkey are present among the countries that are highly dependent upon high carbon production to achieve an increase in national income.

When the subject is evaluated on a worldwide basis, it is observed that rapid developing countries with relatively low carbon emissions per capita such as China, South Korea, Brazil and Mexico, who are parallel to Turkey's development criteria, have also developed strategies and begun undertaking tasks under the context of low carbon economies. These are also countries that Turkey will compete with in its bid to achieve a top 10 rank in the global economy by the year 2023.

As it is the case globally, Turkey continues to experience issues due to unemployment. With the *climate initiative* that may come with a low carbon development package, new alternatives are expected to bring the current unemployment values by about %12, with the introduction of new employment opportunities and bring about further opportunities and solutions. Under the framework of this orientation, a decrease of uncertainties in

markets and the paving of the way for long term investments will be the main objective in which investors and business world representatives will be guided towards a concrete target.

In Turkey's 9<sup>th</sup> Development Plan (2007-2013), it is stated as follows: "In the framework of the conditions of our country, a National Action Plan shall be prepared that puts forth the greenhouse gas reduction policies and measures, with the participation of the relevant parties, and the obligations related to the UNFCCC shall be fulfilled." Turkey, who has advanced in this direction and fulfilling its obligations, has clearly established its awareness and determination in this regard by preparing its Climate Change National Action Plan just recently.

With the Climate Change National Action Plan, a road map is set which puts forth the short, medium and long term targets in the struggle against climate change covering all the sectors. In the Action Plan that focuses on the 2020s, Turkey is aiming to label itself as "a developing environmentalist country" and it is anticipated that Turkey will rapidly continue the integration of its future targets related to development and environment in an uninterrupted fashion.

In the Action Plan, there are climate-friendly fundamental growth targets such as strengthening the existing knowledge base until 2015 for low carbon development, determination of financing models for transition to low carbon development with the aim of developing the financial and technical infrastructure for the classification of greenhouse gas emissions, supporting the transition to low carbon concentration at industrial sub-sectors and furthermore integrating the goals and targets aimed at a low carbon economy into the main plan for transportation.

As a result, when we look at the development since the beginning of the 21<sup>st</sup> century; the "Climate (Environment) Friendly Development" paradigm is portrayed as the new vision in the contemporary world. Preparing the legal infrastructure and administrative structure necessary to encourage investments made in fields such as hybrid cars, Technologies with low fuel and emission, ecological building and eco-cities, protection and improvement of the forests, and orienting the subventions and financial arrangements towards climate-friendly R&D activities and Technologies will play a key role in the competitive and development medium.

By foreseeing the highly possible problems that may arise in the future agenda, associated solution infrastructures must be prepared in advance; and the energy & industrial production and environmental values should not be considered as conflicting fields, but rather, they should be understood as topics that need to be addressed in an integral approach in the basis of energy production and, in the meantime, protection of the environment at this stage with the aim of establishing welfare for mankind and high quality living standards.

## **6. Environmental Chapter in Turkey-EU Relations**

Within the framework of negotiations for full EU membership, the Environmental Chapter has been opened to negotiations on December 21, 2009. In this respect, Turkey has begun undertaking the task of harmonization to the *acquis* in the fields of horizontal legislation, air quality, waste management, water quality, nature protection, industrial based pollution and risk management, climate change, chemicals and noise.

The closing of the Chapter consists of 5 prerequisites:

- Development of legislation on cross-boundary aspects,
- Development of legislation on water quality,
- Adoption of the legislation regarding industrial based pollution and risk management,

- Achieve progress in the implementation and regulation regarding nature protection and waste management in all sectors,
- Building administrative capacity for regulation/inspection.

The topic of harmonization to the “Environmental” acquis necessitates technically difficult and at the same time, significant structural changes and adaptations. According to the “EU Integrated Harmonization Strategy” prepared by the former Ministry of Environment and Forestry, the harmonization process brings about the burden of a requirement of 60 billion Euros in investments. The methods of supplying this amount foreseen for investments and the financing resources have not yet been put forth.

## **7. Result**

As a result, in the scope of both international climate change negotiations and indirectly the Environmental Chapter acting as a guide to the transition to the low carbon economy, Turkey is continuing its operations for transition to a low carbon economy in the framework of its international obligations, the EU accession process and of course its economic capacity and priorities.