ENERGY MARKET REGULATORY AUTHORITY

Electricity Market Report

2010

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ABBREVIATIONS

EU	: European Union
USA	: United States of America
ACER	: Agency for the Cooperation of Energy Regulators
BPM	: Balancing Power Market
SPO	: State Planning Organization
BSR	: Balancing and Settlement Regulation
ENTSO-E	: European Network of Transmission System Operators for Electricity
EMRA	: Energy Market Regulatory Authority
MENR	: Ministry of Energy and Natural Resources
EUROSTAT	: European Statistical System
T-BSR	: Temporary BSR
DAP	: Day-Ahead Planning
HEPP	: Hydroelectric Power Plant
IEA	: International Energy Agency
NLDC	: National Load Despatch Center
OECD	: Organisation for Economic Co-operation and Development
OIZ	: Organized Industrial Zone
AMRS	: Automatic Meter Reading System
MFSC	: Market Financial Settlement Center
WPP	: Wind Power Plant
ZBAA	: Zero Balance Adjustment Amount

SIP : System Imbalance Price

SDAP : System Day-Ahead Price

SMP : System Marginal Price

TAEA : Turkish Atomic Energy Authority

SCBI : Istanbul Stock Exchange – Settlement and Custody Bank Inc.

TEAŞ : Turkish Electricity Corporation

TEDAŞ : Turkish Electricity Distribution Corporation

TEİAŞ : Turkish Electricity Transmission Corporation

TEK : Turkish Electricity Administration

TETAŞ : Turkish Electricity Trading and Contracting Corporation

TAEWP : Turkish Average Electricity Wholesale Price

UCTE : Union for the Coordination of Transmission of Electricity

QSW : Quantity of Settlement Withdrawal

QSI : Quantity of Settlement Injection

LS : Load Shedding

RER : Renewable Energy Resources

BO : Build-Operate

BOT : Build-Operate-Transfer

ÖİB : Privatization Administration

INTRODUCTION

Electricity Market Law ("Law") No. 4628 has established the legal framework necessary for establishment of a market, which will operate in the competitive environment in accordance with the provisions of private law in order to provide electricity to the use of the consumers in a quality, continuous, cost-effective and environment-friendly way. In this context, the "Electricity Market Report – 2010", drawn up for establishment of competition in the market and contribution to its development, aims at informing the market about the developments occurred in the last year.

Development of the market model specified in the Law requires privatization proper to the market targets in the electricity distribution and production sectors, and generation of excess supply, open to competition and transparent. A market where liberalization is constantly increasing in a resolute and steady way will become a centre of attraction for investors in the internal and foreign private sectors.

In Turkey, achievement of targets by this legal regulation, a reform in character, necessitates its being adopted by all market participants, from the production stage to the end consumer as a common target. Achievement of this reform requires that the structure of the energy consisting of all processes of the energy sector such as production, distribution and wholesale should be made powerful and sustainable in financial sense. Taking these targets into consideration, the market report contains comprehensive evaluations made under the following headings:

- Evaluation related to international electricity markets,
- Turkish electricity market and insights,
- Amendments in the electricity market legislation in 2010 and insights on the forthcoming years,
- Development of electricity production and development in Turkey,
- Import and export activities,
- Operations of electricity transmission tariff and operation,
- Distribution and Retail Sale Activities and
- Electricity market activities of the Organized Industrial Zones,

and emphasizes the points important in practice to reach to the final targets. Furthermore, this report clearly expresses:

- works required to be performed for liberalization and development of private sector operation in the electricity market,
- related legislative regulations and applications carried out to make Electricity Energy sector in our country the most attractive sector for the internal and foreign investors; and
- production, transmission, wholesale, organized wholesale markets as the activities of the main sector

Well aware of our responsibility as an Authority authorized to regulate and supervise the electricity sector, I know we should successfully manage the development process of the electricity sector and, accordingly, I emphasize that we work precisely and in good dialogue with all components of the sector in order to meet any possible requirements and tackle problems that may occur without any discrimination between the equal parties as required by the Law.

In the coming process, it has been established by the Decree of Energy Market Regulatory Authority and announced publicly to the interested parties in the sector that **Day-Ahead Market** which has historical importance in terms of market reform and intended as the final stage of the Final Electricity Market Balancing and Settlement Regulation should take place the Day-Ahead Planning and should enter into force on the date of **December 1, 2011** as accompanied by the guarantee mechanisms. As the regulations in question allows the market participants to provide more effective offer structure and has a guarantee mechanism, it ensures formation of a much more efficient and reliable wholesale market structure. New market structure shall especially contribute to the privatization process significantly because it establishes a more reliable environment for the investors.

I know that this report will provide the market with correct, impartial and real orientations and signals about future of the market, and I hope it will serve as a basis for future publications as well. I hereby grant my acknowledgements and gratitude to the employees of Authority, Electricity Market Department, Transmission Group and Distribution Group for their valuable efforts. I also express my gratitude to **Association of Energy Experts** for their valuable contribution in translation of the report.

I hope this study would be useful as a reference resource for all participants of the Turkish energy sector, which acts as a driving force in the process of economical growth rightly acknowledged worldwide, and the achievement of the sector would reach higher levels.

Hasan KÖKTAŞ

President

EXECUTIVE SUMMARY

World Markets:

- Dependency of Turkey on fossil resources, especially natural gas, is above the world average.
- While energy consumption per capita in Turkey is below that of the developed countries and world in average, the rate of increase in energy demand is highly over the said average.

EU markets:

- Residential and industrial prices in Turkey are below EU in average.
- Tax rates imposed on electric in Turkey are below EU in average.

Developments related to the Legislation:

- By the Law No. 6094 of 29.12.2010, significant amendments were made in the Law on Utilization of Renewable Energy Resources (RER) for Generation of Electrical Energy. With the said amendment in the RER Law, new regulations have been established concerning at what price and through which mechanism shall the electrical energy generated by the facilities producing by use of renewable energy resources be sold.
- Regulation Relating to Unlicensed Electrical Generation in the Electricity Market (Regulation) entered into effect after it was published in the Official Journal No. 2774 of 03.12.2010. Aim of the Regulation is to set principles and procedures concerning the real and legal persons that will generate electricity from the production facilities based on renewable energy resources with maximum installed capacity of 500kW and micro-cogeneration facilities as well as their engagement with electrical production activity without any need to obtain license from EMRA.
- A number of amendments were made in the Electricity Market Balancing and Settlement Regulation, Eligible Consumer Regulation, Ancillary Services Regulation and Tariffs Regulation. With the amendment made in BSR, the guarantee mechanism was detailed concerning the Day-Ahead Market, which constitutes the final stage of the wholesale market where stage of the Day-Ahead Planning has been implemented already. Energy Market Regulatory Authority decided to proceed to the Day-Ahead Market on 1 December, 2011 and the said Decree of the Board was communicated to the participants of the market.

Production-Consumption balance:

- Total 119 licenses were granted in 2010 with total installed capacity of 2769 MW.
- Average installed capacityof the licensed plant reduces.
- In 2010, capacity of 4800 MW was commissioned. This amount is above that of the year 2009 by about 60%. Share of natural gas in the commissioned capacity has significantly reduced. Total installed capacity in Turkey reached to 50.003 MW as of February 2011.
- In the licensing process, demand of installed capacity is more than 70,000 MW. About half of it is in the stage of Inspection and Evaluation. And significant part of this amount is made of wind-sourced license applications.
- In 2010, Turkey has entered into an economical recovery process to a great extent. Peak demand increase was 11.8% and energy demand increase was 7.9%.
- According to the Revised Strategic Documents Concerning Electricity Market and Demand Supply Security, Turkey plants that 5% of the electrical installed capacity shall be nuclear power by 2023.
- Law on verification of "the Agreement on Cooperation between the Turkish Government and Russian Government for Establishment and Operation of a Nuclear Power Plant at Akkuyu Field in the Republic of Turkey" signed in Ankara on May 12, 2010 was published in the Official Journal. And, accordingly, Akkuyu NGS Electricity Generation Corporation has legally established on December 14, 2010.

Wholesale Market:

- In the Day-Ahead Market, the average price was 122 TL /MWh in 2010. While the highest SDAP was 420 TL /MWh, the lowest SDAP was 0,00 TL /MWh.
- In the Balancing Power Market, the average price was 118 TL /MWh in 2010. While the highest SMP was 420 TL /MWh, the lowest SMP was -0,32 TL /MWh.
- In both markets, the highest price, 420 TL, realized on August 19, at 13:00 at the time of annual peak. And the lowest prices for SMF occurred on January 1, 2010 and for SDAP on March 28, 2010, at 13:00.
- Almost 30% of the energy in the market is listed in DAP and BPM. And part of this energy up to 80% is generated in the natural gas-fuelled plants.

- Quantity of bilateral agreements with all their parties are private companies increased eight times in 2010.
- Total cost of the system constraints approached close to TL1 billion and almost half of which is made of instructions generated by the Market Management System software.
- Distribution companies procure about 85% of their average consumption through bilateral agreements.
- Rate of deviation from the monthly consumption estimations made by the distribution companies varies between -1% and 5%.
- While the eligible consumer limit was reduced to 30 MWh/year, theoretical market float rate reached to about 78%.
- Although the theoretical market float rate, which is calculated according to the eligible consumer limit specified as 100 MWh/year for the year 2010, it is seen that part of the electricity sector which is open to competition is 30.7% compared to the entire market, taking into consideration the installed capacity on part of the production side; the actual market opening rate has realized as 17%, the highest one, taking into consideration the consumption by the consumers that exercised their eligible consumer right in 2010 on part of the consumption side.

Import-Export activity:

- Turkish Electricity System entered into the stage of 1-year Trial Synchronous Parallel Operation with ENTSO-E system on September 18, 2010.
- Turkish Electricity System is connected to the Bulgarian Electricity System by two 400 kV transmission lines, and to the Greek Electricity System by one 400 kV transmission line, both of these countries are members of ENTSO-E.
- Import and export figures for the year 2010 realized as 1148 GWh and 1921 GWh, respectively. Share of the import and export in the total production of Turkey is below 2%.

Transmission activity:

- Since 2010, Use of Transmission System Charge increased by 7.2% compared to the previous year.

- System Operation Charge increased by 9.5% compared to the previous year.
- Market Operation Charge increased by 17% compared to the previous year.
- Transmission investment of 698 million TL was approved by the Decree of the Board for the year 2011.

Distribution activity:

- Distribution privatization contracts were completed in 2010. Total amount to be obtained from privatization reached to 15,889 billion USD.
- Although loss-illegal rate reduced, the quantity of energy loss does not reduce due to energy demand.
- The highest loss-illegal rate and energy loss quantity is in Dicle Electricity Distribution Company.
- Investment budget of about 9 billion TL for 2011-2015, the second Tariff period, was approved by the Board.

Organized Industrial Zones (OIZs):

- OIZs have electricity consumption above 15 TWh and natural gas consumption above 4,5 billion m^3. About 8% of the electrical energy in our country is consumed by OIZs.
- OIZ Distribution Licenses were given to 127 of the active 148 OIZs by the end of 2010; and OIZ Distribution Prices to be applied by OIZs in the year 2011 were approved by the Board and posted in its website.
- While distribution charges approved for 2010 was 1,09 Kr/kWh in average, the distribution charges proposed for the year 2011 was 1,39 Kr/kWh in average, average of the approved prices was 1,22 Kr/kWh, and weighted average 1,14 Kr/kWh.

1. INTERNATIONAL MARKETS

This section shall examine, firstly, the electricity sector in the world and, secondly, electricity markets in European Union (EU) comparatively with the Turkish market, and finally deal with those parts of the EU progress reports that are related to the Turkish electricity market over the last three years.

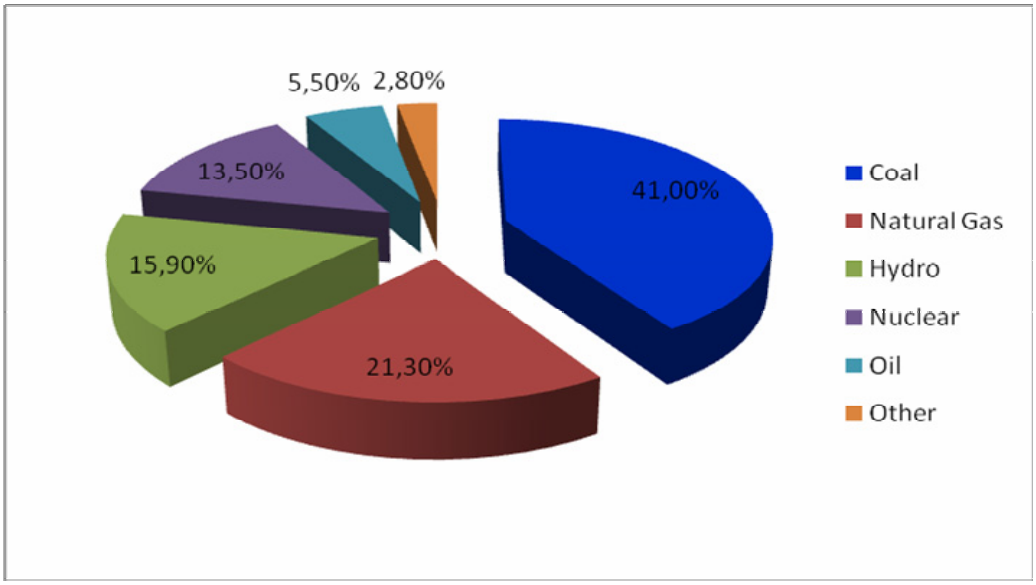
1.1 ELECTRICITY SECTOR IN THE WORLD

Particularly, in order to have a look at the electricity sector worldwide, the electricity production and consumption values, electricity prices in recent years, electricity import/export data in comparison with the values for our country are presented.

1.1.1 GENERATION

According to data for the year 2008, the world electricity production was 20.181 TWh and 41% of which obtained from coal, 21.3% from natural gas and 15.9% from hydroelectric resources. Distribution of the global electricity production by resources has been as follows:

Figure 1-1: World Electricity Production by Resources in 2008



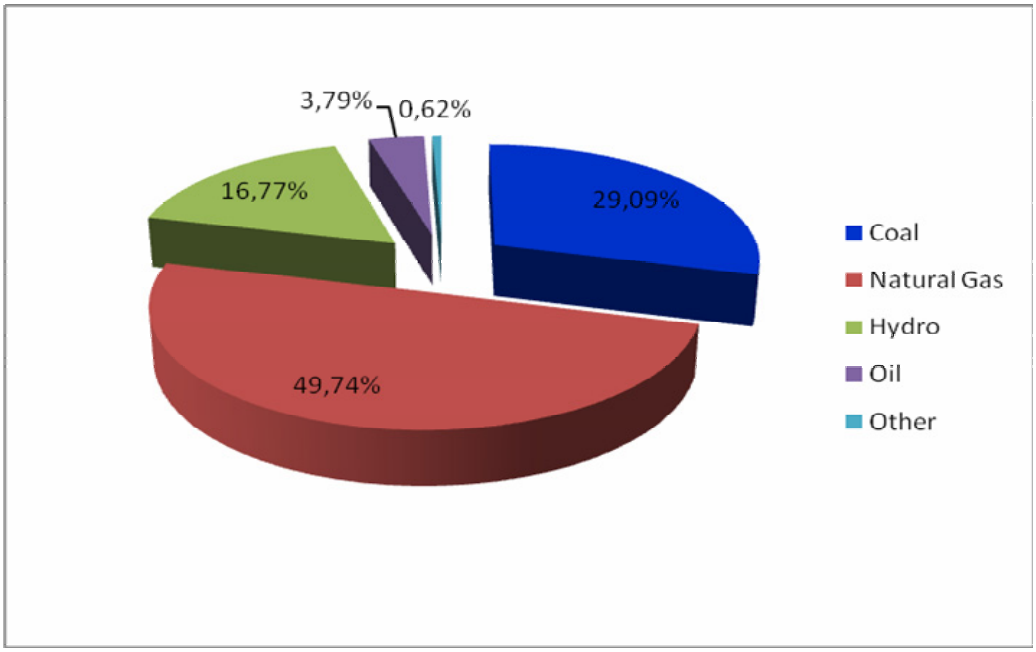
Source: International Energy Agency (IEA) - 2010 Key World Energy Statistics

Figure 1-2 shows distribution of Turkish electricity production for 2008 by resources. When compared with the distribution in the world, our country is seen as more dependent on the natural gas. Share of the natural gas in the electricity production in Turkey is more than two times its share in the world electricity production and share of the coal is below the world in average. Share of the hydraulic resources in the production is almost at the same level.

Of the electricity produced in 2008, 41.7% was consumed by industry, 1.6% by transportation and the remaining 56.7% by agriculture, business services, public service, houses and other fields. While the biggest electricity producer was United States of America (USA) with 4344 TWh, the biggest electricity exporter was France with 48 TWh and the biggest importer Brazil with 42 TWh.

Again in 2008, the biggest three nuclear electrical energy producers were USA, France and Japan with 838 TWh, 439 TWh and 258 TWh, respectively. Among them, France produced 77.1% of the electricity from the nuclear power plants. Ukraine ranks second and Sweden the third in producing electricity from nuclear power plants, respectively 46.7% and 42.6%.

Figure 1-2: Turkish Electricity Production by Resources in2006



Source: International Energy Agency (UEA) - 2010 key World Energy Statistics

When the electricity prices of USA, the biggest electricity producer the electricity prices, except tax, for the industry in the years 2007, 2008, and 2009 were 6,28 ¢/kWh, 7,02 ¢/kWh and 6,84 ¢/kWh, respectively. For the residential consumers, these prices were 10,27 ¢/kWh, 11,35 ¢/kWh and 11,55 ¢/kWh.

1.1.2 ENERGY CONSUMPTION PER CAPITA

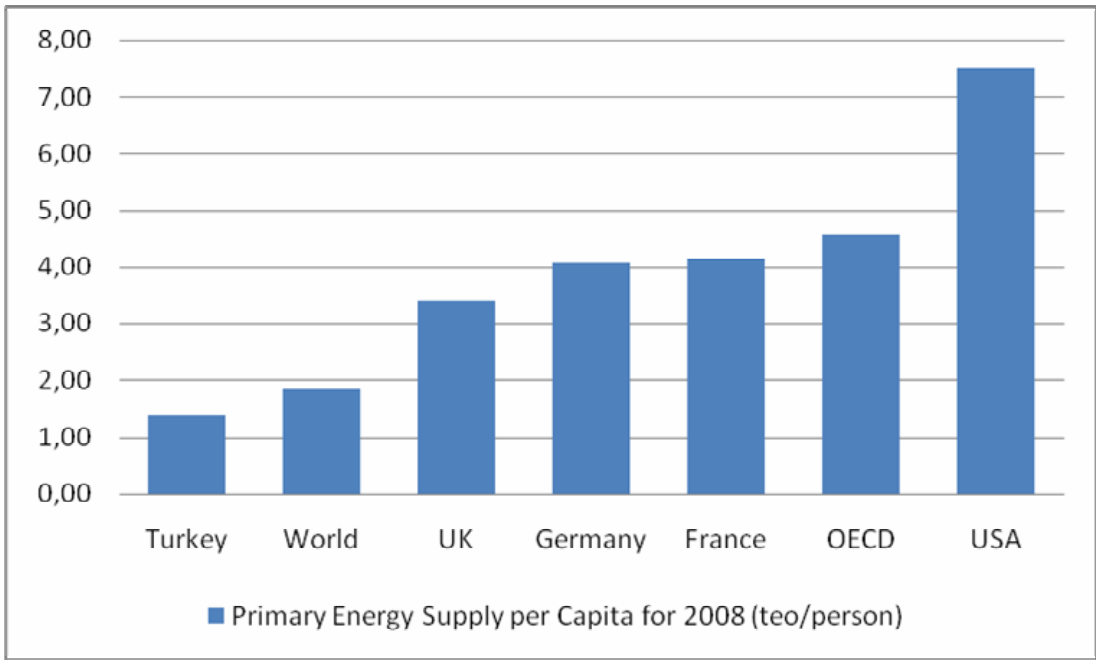
While, as shown in Table 1-1, according to the data for the year 2008, the primary energy supply per capita in Turkey was below that of the world in average, it was about one third of the average in OCED-member countries. This situation signifies a potential increase area for the primary energy supply in our country in the subsequent years. Primary energy supply per capita was as follow:

Table 1-1: Energy Supply Per Capita (Teo/Person)

	2006	2007	2008
Worldwide	1,80	1,82	1,83
OECD	4,70	4,64	4,56
USA	7,78	7,75	7,50
Germany	4,23	4,03	4,08
France	4,31	4,15	4,16
United Kingdom	3,82	3,48	3,40
Turkey	1,29	1,35	1,39

Source: International Energy Agency (UEA) - Key World Energy Statistics (2008, 2009 and 2010)

Figure 1-3: Primary Energy Supply per Capita for 2008 (teo/person)



**teo: tonne of equivalent oil (1 teo=10 Gcal=10,63 MWh)*

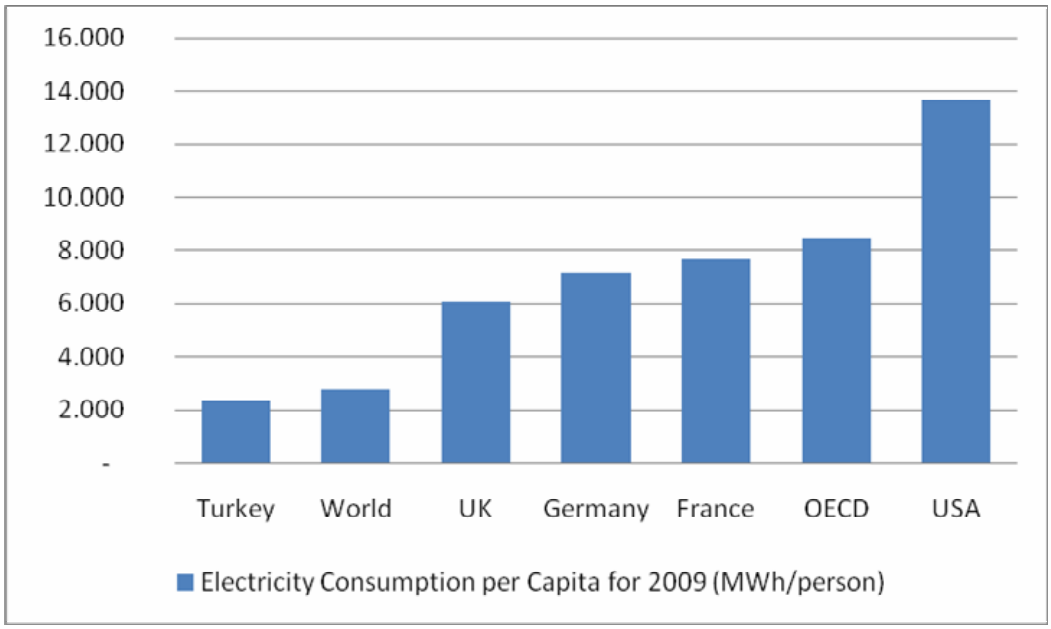
When OECD data is studied by years, we see an increase in the electricity consumption per capita, which is seen as a development indicator. However, the following figure shows that Turkey should take a long road in terms of the same indicator. Electricity consumption per capita is shown in Table 1-2:

Table 1-2: Electricity Consumption Per Capita (kWh/person)

	2006	2007	2008
Worldwide	2659	2752	2782
OECD	8381	8477	8486
USA	13515	13616	13647
Germany	7175	7185	7148
France	7585	7573	7703
United Kingdom	6192	6142	6067
Turkey	2053	2210	2400

Source: International Energy Agency (UEA) - Key World Energy Statistics (2008, 2009 and 2010)

Figure 1-4: Electricity Consumption per Capita for 2009 (MWh/person)

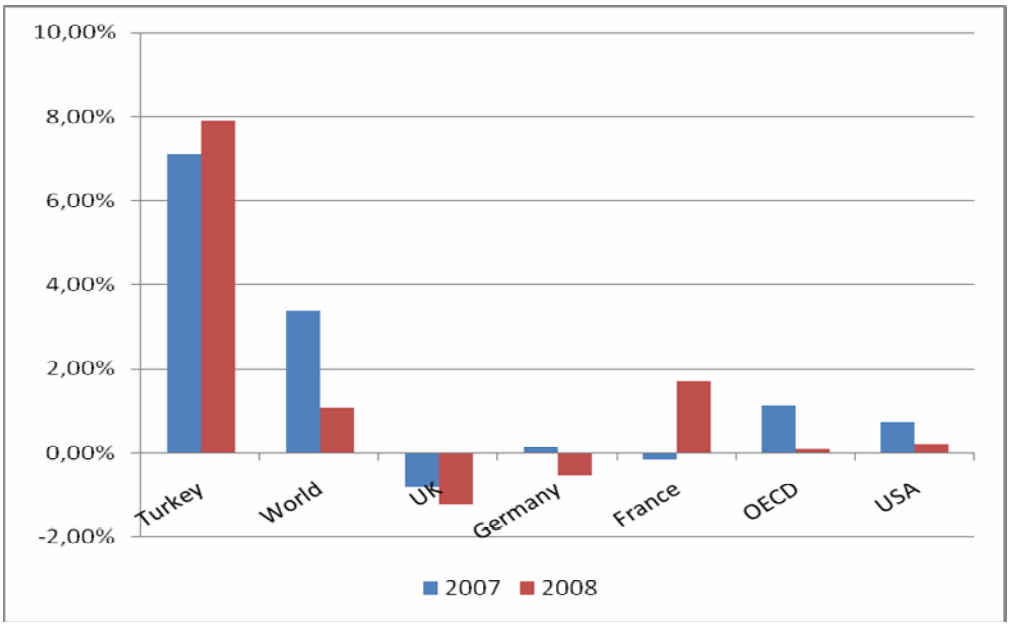


Source: OECD

As shown in Figure 1-4, the electricity consumption per capita in Turkey is below the world average. It is estimated that the situation shall change in our country in line with industrialization and urbanization. And, accordingly, as it is clearly shown in the following figure showing increase

percentages for the years 2007 and 2008, the rate of increase in the electrical energy consumption in our country is very high compared to the developed countries and world average.

Figure 1-5: Rate of Increase in the Electricity Consumption Per Capita



Source: International Energy Agency (UEA) - Key World Energy Statistics (2009 and 2010)

1.2 ELECTRICITY MARKETS IN THE EUROPEAN UNION

Electricity markets in the European Union may be examined under four headings, namely, electricity internal market, renewable energy, electricity supply security and electricity prices.

1.2.1 ELECTRICITY INTERNAL MARKET

The first electricity directive published by the European Union is Directive 96/92/EC concerning Common Rules for Internal Electricity Market. This Directive regulates the common rules for generation, transmission and distribution of electricity. Furthermore, it establishes general principles related to organization and operation the electricity sector, access to the market as well as criteria and procedures applicable in the tenders. As per the Directive, the electricity companies operating in more than one field are required to maintain separate account for each market activity such as generation, transmission and distribution and keep such accounts transparent.

The Directive 2003/54/EC concerning Common Rules for Internal Electricity Market, published in the later period, deals with the issues specified in the Directive 96/92/EC in more detail. In this framework, the distinguishing provisions were taken a step further, aiming at establishing a competitive, reliable and environmentally sustainable electricity market. According to the Directive, the member countries shall fulfil public service liabilities for security of supply to the companies activating in the electricity market, supply quality, price and preservation of the environment. Necessary measures should be taken in order that the houses and small-scale enterprises may have access to electricity of certain quality in a reasonable and transparent prices and protection of the end users. Furthermore, member countries will allow the owners of the transmission or distribution system to engage transmission and distribution operator for a period to be determined by the member countries. In order to avoid of discrimination, cross-subventions and unfair competition, the vertical integrated electricity companies shall keep separate account for each market activity. As per the Directive, in order to make the operators of transmission or distribution system independent, the following criteria should be implemented:

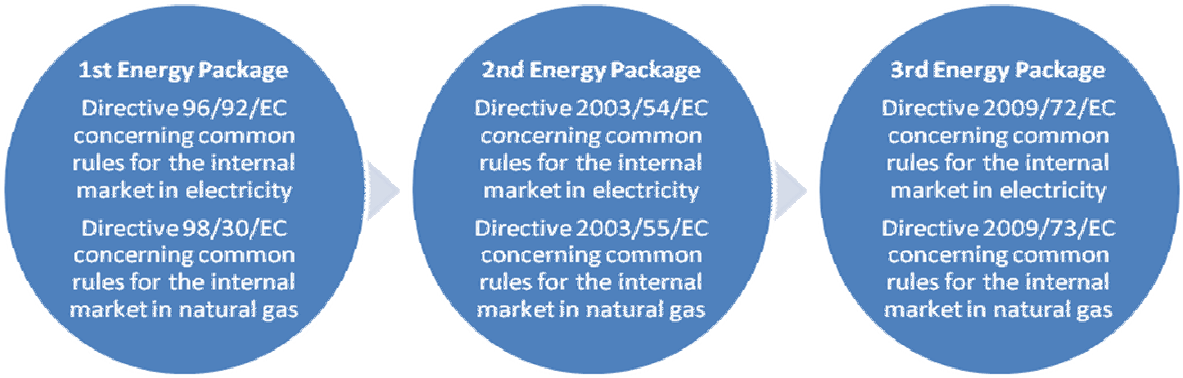
- Transmission and distribution system operators may not be directly or indirectly engaged in the vertical integrated electricity organizations, which are responsible for daily production, transmission and supply of the electricity.

- Distribution system operators should take measures to ensure the persons under their management to execute their tasks independently, by taking into consideration the professional rights of such persons.

- Transmission and distribution system operators, independent of vertical integrated electricity company, should be entitled to take effective decision related to the matters necessary for network operation.

- An adaptation program should be formed, containing measures to prevent discriminatory treatment, and the program should be monitored properly.

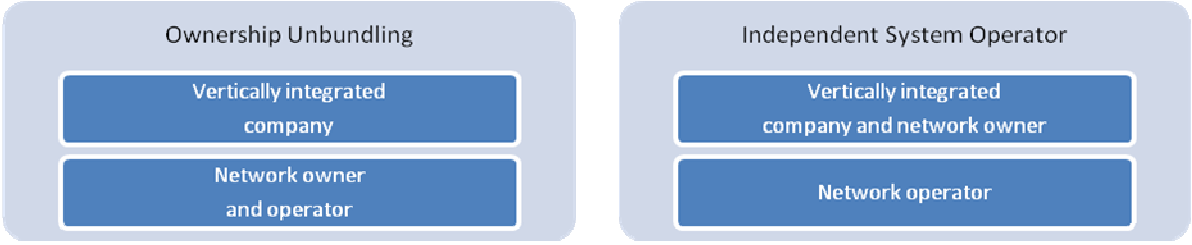
With the electricity directive published in 1996, the natural gas directive published in 1998 was renamed as the first energy package. When these directives proved to be insufficient for liberalization of the respective markets, new electricity and gas directives, called second energy package, were published in 2003. However, when these directives failed to maintain the desired liberal market order as well, third energy package was accepted by the European Commission on September 19, 2007.



This package brought new rules for all citizens of the European Union to benefit from advantages to be gained from a fully competitive energy market. Free selection of supplier, further fair prices, cleaner energy and security of supply constitute essence of the third package. In order to achieve these objectives, the commission has made the following proposals:

- Separation of the production and supply from the transmission network
- Facilitation of the cross border energy trade
- Making the national energy regulators more effective
- Encouragement of cross border cooperation and investments
- Increased transparency in the network operation and supply activities
- Improvement of solidarity among EU-member countries

In the third package, separation of ownership for transmission system has been adopted. Under the separation of ownership, the owner of transmission network and its operator should not be a part of the vertical integrated company. However, the Commission stated that the independent system operator may be implemented as an option as well. In case the transmission assets are owned by the vertical integrated company, the network operation should be executed by a fully independent operator.



Separation of ownership method adopted for the transmission system has not been specified for the distribution system, and, accordingly, the existing separation provisions at the distribution level

were considered proper. In other words, the distribution system operators may be a part of the vertical integrated company provided they keep their accounts separately and make legal separation.

In line with the third package, the Directive 2009/72/EC concerning Common Rules for Electricity Internal Market was enacted to be effective on March 3, 2011 instead of the Directive 2003/54/EC. While the new Directive has established universal service liability and consumer rights, it also clarified the competition matters. According to the Directive, the member countries should guarantee that all consumers may freely select their suppliers and change them within three weeks easily. Furthermore, the member countries are obliged to separate the ownership of transmission system and operation of transmission system by March 3, 2012.

By-Law 1228/2003 concerning Conditions of Access to the Network for Cross Border Electricity Trading provides rules of cross border electricity trading with a view of increasing competition in the internal market of electricity. The By-law aims at encouraging cross border electricity trading, establishing principles, concordant with each other, of establishment of a make-up mechanism for cross border electricity flows; determination of cross border transmission prices and allocation of the existing interconnection capacity among the natural transmission systems. The transmission system operators should, accordingly, establish mechanisms for exchange of information and coordination to provide security of the networks in the context of congestion management. Congestion problems should be tackled without discrimination. Market participants intending to use the allocated capacity should notify the transmission system operator within a specified period.

Instead of the By-Law No. 1228/2003, the By-Law No. 714/2009 concerning Conditions of Access to the Network for Cross Border Electricity Trading was adopted. To be effective after the date of March 3, 2011, this By-Law has two significant targets.

These are to:

- establish fair rules for cross border trade of electricity and thus increase competition in the internal market of electricity; however, this aim shall be achieved by taking into consideration the characteristic properties of the regional markets; and
- facilitate establishment of a well functioning and transparent wholesale market, which has high security of electricity supply.

For formation of a competitive internal market of electricity, ACER (Agency for the Cooperation of Energy Regulators) was established to assist the authorities governing the energy markets under the By-Law No. 713/2009 and carry out on the Union level the duties of these authorities on national

level. Having a legal person status, Agency shall start to operate on the date of March 3, 2011 and make statements in any matter related energy regulation authorities, make contribution to establishment of network rules in the electricity and gas fields and take decision concerning cross border infrastructures. The duties and responsibilities of the Agency are as follows:

- Those concerning cooperation of the transmission system operators:
    - Agency is responsible to give opinion about draft legislation, list of members and principles of the European Transmission System Operators Network for electricity and gas and will play important role in determining the frame guides the network observe. Furthermore, it will ensure the transmission system operator to carry out duties of ENTSO by following regional cooperation.
- Those concerning national energy regulatory organizations:
    - Agency is responsible to take decision on technical matter in special cases. It may make recommendations for the national regulators and market players to discuss their good applications and form a framework for cooperation of the national regulators.
    - Agency makes statement by alleging that the decree of any regulatory authority violates the rules of the Community and, if such allegation is not taken into consideration, warn the European Commission and European Union Council in this regard.
    - Agency shall, in special cases, responsible for determining rules related to the operational security of the electricity and gas infrastructures connecting minimum two member countries and access to these infrastructures.

Those concerning cross border infrastructures:

- If the national regulators fail to agree within six months or if they themselves desire so, the Agency shall determine conditions of having access to the infrastructure.
- Agency shall be responsible for monitoring the prices in the internal market of electricity and gas and, especially, retail prices of electricity and gas.

1.2.2 RENEWABLE ENERGY

In order to reduce dependency on both fossil fuels and greenhouse gas emission, the European Union gives great important to renewable energy. The European Union concentrates its efforts on the biofuels, heating and cooling sectors in order to ensure that the renewable energy accounts for 20% of the overall energy portfolio by the year 2020.

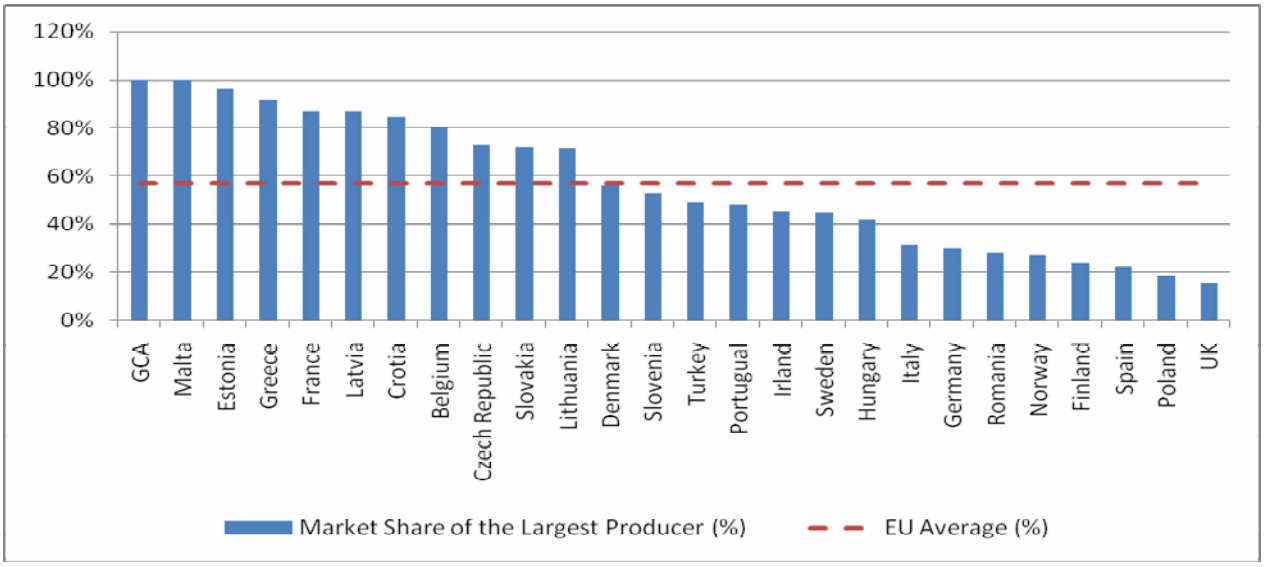
Directive 2001/77/EC concerning Encouragement of Electricity Production from Renewable Energy Resources in the Internal Market of Electricity aims at producing 22.1% of the electricity consumed by in the Union-member countries from the renewable energy resources. Furthermore, the Directive provides for special measures for origin of electricity, connection to network and administrative measures. According to the Directive No. 2009/28/EC, which will replace, and is more comprehensive than, the Directive No. 2001/77/EC after the date of January 1, 2012, each member country shall set a target for the rate of renewable resources to be used by it in the electricity generation and heading in 2020. This Directive establishes a common frame for use of renewable energy to reduce green house releases and encourage a cleaner transportation sector and sets up national action plans to achieve these targets.

1.2.3 SECURITY OF ELECTRICITY SUPPLY

Directive No. 2005/89/EC concerning Measures to Safeguard Security of Electricity Supply and Infrastructure Investments imposes new liabilities to the member countries for proper operation of the internal market of electricity, establishment of sufficient interconnection capacity among the member countries and provision of security of electricity supply to increase the production capacity. And the Directive targets serious investments in the electricity networks.

As to the share of the biggest producer in the electricity production, Germany, Spain, Italy, Poland, Romania, Finland, Norway and United Kingdom are among the countries having the lowest market intensity of the European Union. That the biggest producer has high market share is an obstacle for development of competition in the market and may cause the market prices depart fromcompetitive price levels. However, market power and exercise of market power are different concepts and the existence of the market power does not necessarily mean that the market is manipulated.

Figure 1-6: Market Share of the Biggest Producer in EU-member Countries by 2008

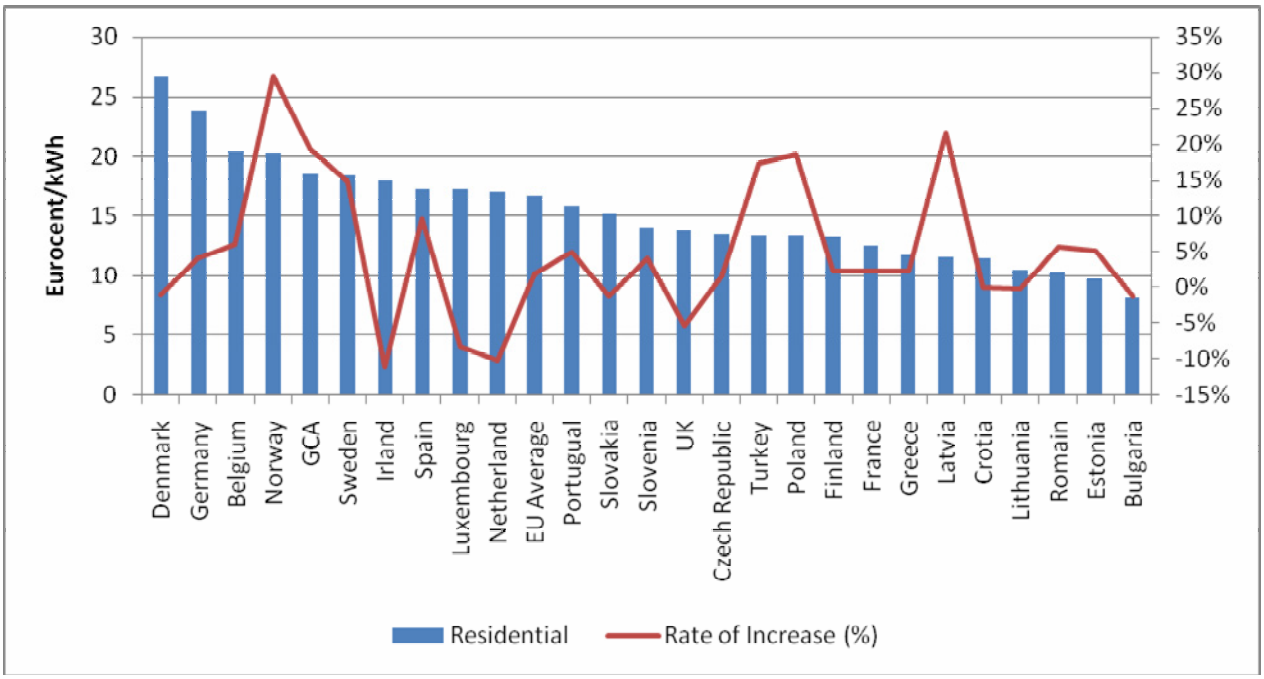


Source: EUROSTAT

1.2.4 EUROPEAN UNION AND TURKISH ELECTRICITY MARKETS IN TERMS OF PRICES

With new methodology adopted in 2007, the residential consumer is defined as consumers with annual consumption varying between 2500-5000 kWh, and, accordingly, the periodical electricity prices for the houses and price increase rates from the second period of 2009 to the first period of 2010 are shown below.

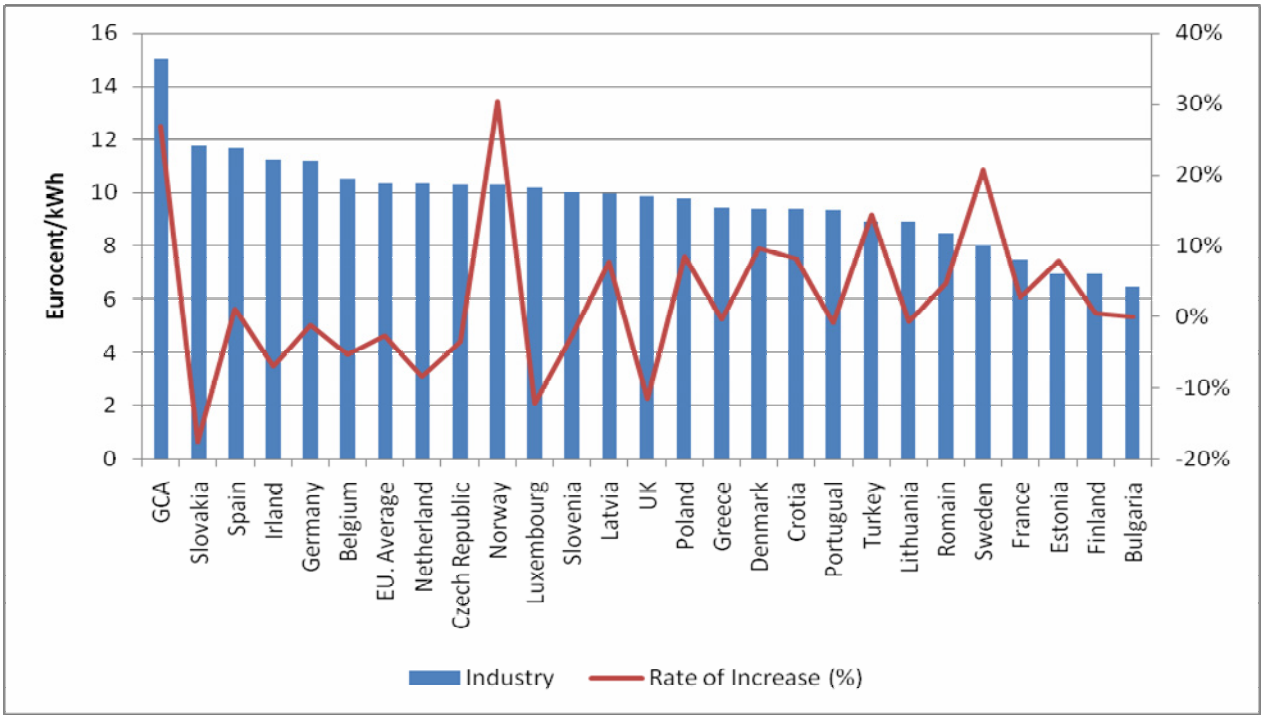
Figure 1-7: Electricity Prices for Residential Consumers in EU (€¢/kWh)



Source: EUROSTAT

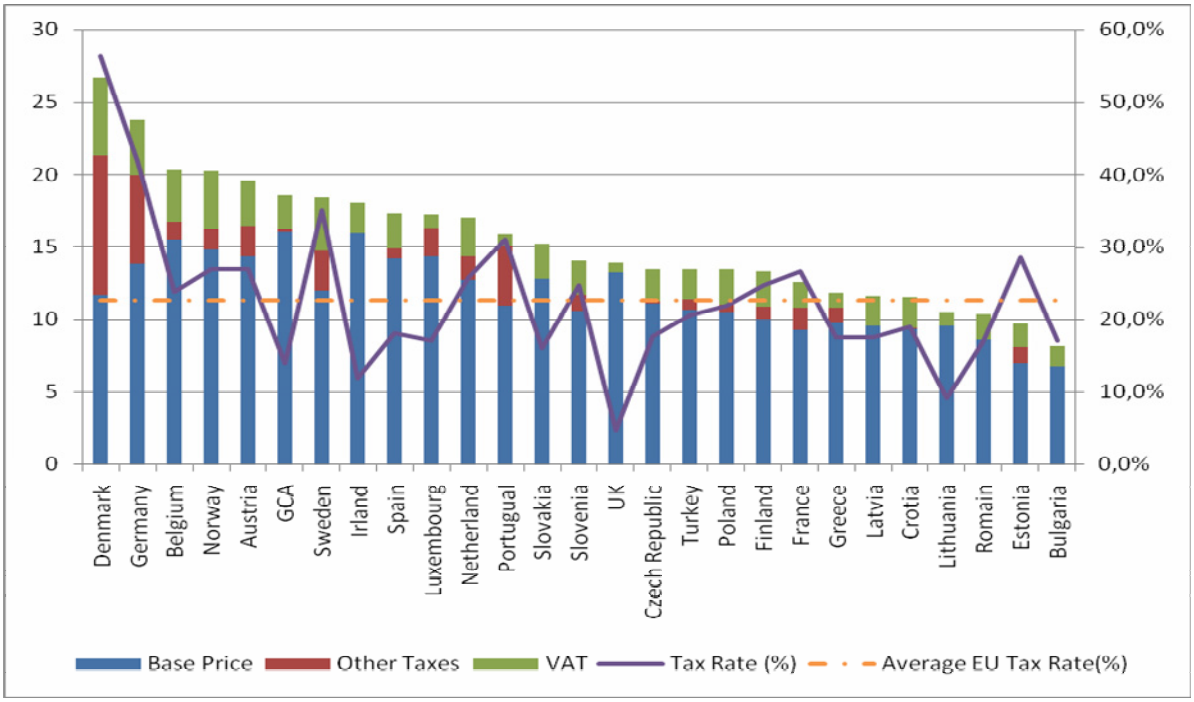
As shown in the figure above, the residential consumption prices in Turkey are below the EU average. On the other hand, it is seen that the increase rate of the residential consumption prices in Turkey is higher than those of the EUaverage. According to the EU legislation, the consumers with annual electricity consumption in the range of 500-2000 MWh are considered as industrial consumers. Electricity prices for the industrial consumers are shown in the Figure 1-8.

Figure 1-8: Electricity Prices for Industrial Consumers in EU (€¢/kWh)



Source: EUROSTAT

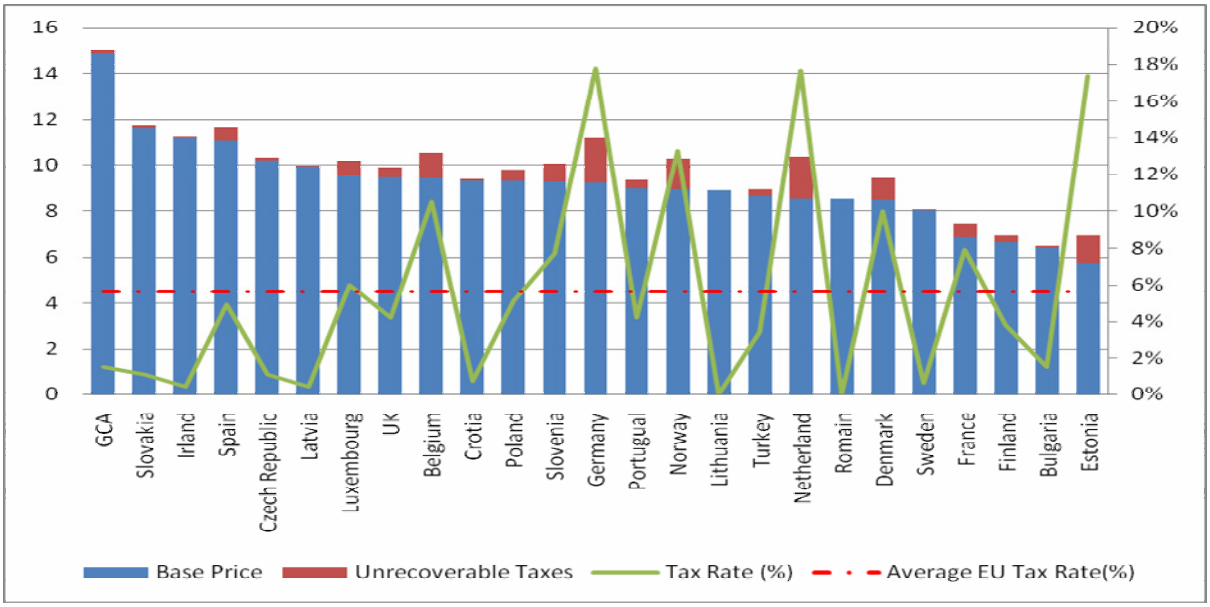
Figure 1-9: Electricity Prices and Tax Rates for Residential Consumers in EU (€¢/kWh)



Source: EUROSTAT

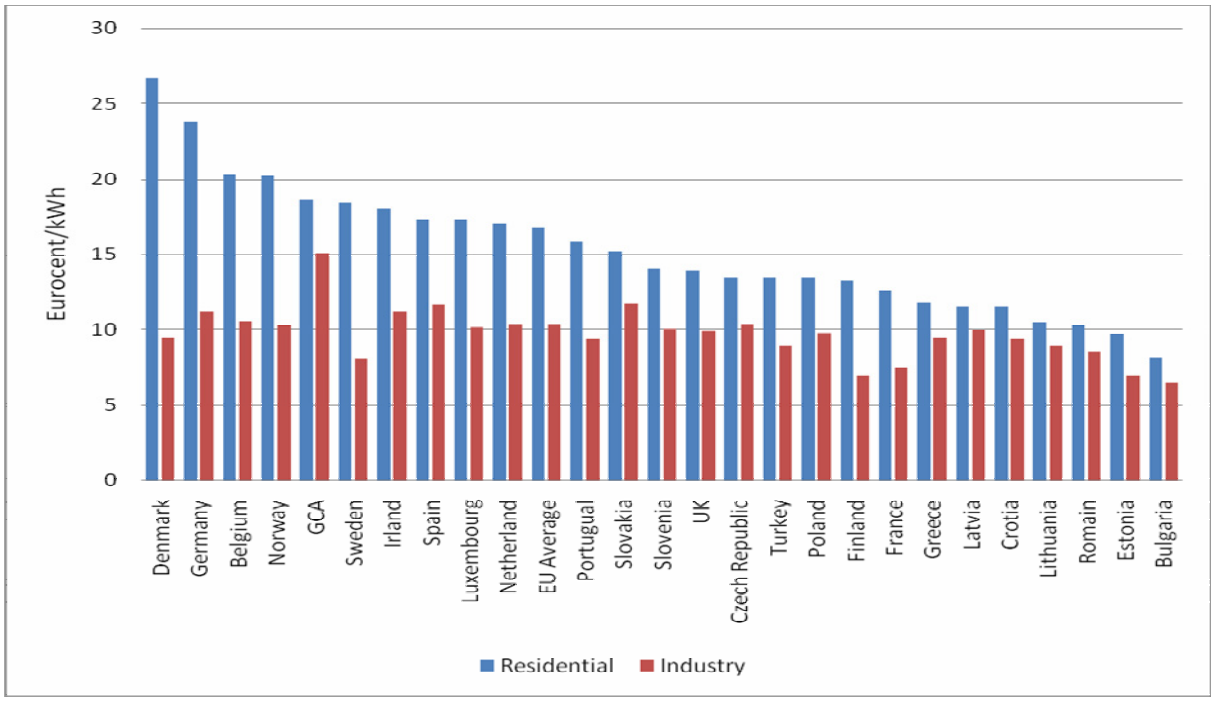
Industrial prices in Turkey remain under those of the EU in average. However, when compared, it shows relatively a higher increase rate. However, as shown by the figure, the electricity prices reduce in many countries. However, it is considered that, although there is restriction in the electrical energy demand in many countries of the European Union, this situation may stem from high rate of demand increase in our country. As of the first period of the year 2010, the situation related to the electricity base price and taxes imposed to the residential consumers is shown in the figure 1-9. As shown in the figure, the tax rates applicable for the residential consumers in our country are lower than those of EU in average. Values for the industry are shown in Figure 1-10, and the residential prices are likewise below those of EU in average.

Figure 1-10: Electricity Prices and Tax Rates for Industrial Consumers in EU (€¢/kWh)



Source: EUROSTAT

Figure 1-11: Residential and Industrial Prices (€¢/kWh)



Source: EUROSTAT

Finally, Figure 1-11 shows the residential and industrial prices together. As shown in the figure, while the difference between the prices is high in many EU-member countries with a developed competitive market structure, this difference is relatively lower in the countries where the free market structure is developing.

1.2.5 TURKISH ELECTRICITY MARKET IN THE EU PROGRESS REPORTS

The European Union has regularly issued reports on improvements of Turkey in the path of membership since 1998. The energy sections of those reports which have been issued in the last three years contain the following observations related to the electricity sector.

2008

A legislative package aiming at strengthening the security of supply and expediting energy infrastructure investments was enacted. According to the New Law, the government may, if required, generate electricity along with the private sector.

Eligible Consumer limit was reduced to 1,2 GWh and the market was opened about 41%. In July 2008, cost-based pricing mechanism entered into force. This mechanism allows the Public Economic Enterprises (PEEs) to reflect the changes in their production/input costs to their sale prices. It is expected that the mechanism shall contribute to better and sustainable pricing in the energy markets and development of the financial status of PEEs. However, cross-subsidizations continue in the electricity sector and off-cost factors such as TRT continue to be included in the electricity bills. Privatization process has completed for four electricity distribution region. Privatization High Board and Energy Market Regulatory Authority have not approved the processes yet. Amount of energy t that the autoproducers may sell in the electricity market has been increased from 30% to 50%. As of the end of 2007, 48.3 of the electricity was produced by PEEs. Although loss-theft ratio in the electricity was reduced to 15%, it is still is about two times that of EU in average.

2009

Significant development has occurred in the field of electricity with respect to the internal market of energy. Turkey has successfully entered into a process of a comprehensive reform and gradual opening of the market to competition. Turkey has taken a big step in the path of providing a sound economic and financial foundation in the electricity sector by creating a cost-based pricing mechanism for the public energy companies. A regulation concerning ancillary services for the electricity sector and a balancing and settlement regulation were enacted. However, new balancing and settlement regulation has not been put into implementation yet. Eligible Consumer limit was reduced to 480.000 kWh and 11 power plants with total installed capacity of 140 MW were privatized in the reporting period. Privatization continued by use of the method of block sale of the distribution assets and stocks by 100%, and privatization of two of the regional distribution plants completed. This process has come to the last stage for the other two regions. Loss-theft- ratio in the electricity has been around 14%.

Six geothermal fields suitable for production of electricity power were privatized. As of the end of 2008, Turkey was producing 17% of electricity from the renewable energy resources. Revised document of strategy for the electricity sector has set the targets to meet 25% of the total national production from renewable resources and establishment of wind power of 20.000 MW.

2010

Positive progress has been recorded in the field of electricity with respect to the energy internal market. With new investments of the private sector, the installed capacity of Turkey increased by 2800 MW and private investments in the electricity sector was 3.1 billion Euro (€) in 2009. Upon

implementation of new balancing and settlement regulation, the trading procedures of modern electricity market were started. Sales made through the Balancing and Settlement Mechanism account for 75% of the total electricity sale volume. That the Electricity Market License Regulation is changed and the completion of evaluation procedure of environmental effect has become as the prerequisite for grant of generationgeneration license. Eligible Consumer limit was reduced to 100.000 kWh, corresponding a market opening by 63%. Privatization continued by use of the method of block sale of the distribution assets and stocks by 100%. Three private companies started to operate in the electricity distribution sector. Privatization process of five distribution regions has completed, but the assets have not been transferred to their new owners. According to the revised document of strategy, the government plans to complete privatization of the distribution assets by 2010. Private sector established renewable power of about 1000 MW in 2009. Turkey produced 19.6% of its electricity from the renewable energy resources by the end of 2009. According to the revised document of strategy about the electricity market and security of supply, Turkey plans that 5% of the installed capacity should be nuclear power by 2023.

As mentioned above, the European Union monitors and makes criticism on the electricity sector of Turkey. Off-cost factors such as cross-subsidizations and share of TRT in the electricity sector were reflected in the reports.[1]. Furthermore, EU also gives importance to the matters such as privatizations, eligible consumer limit, loss&theft ratio in the electricity and generation of electricity from the renewable resources, referring to them in its reports.

[1] In the meeting of the Energy Market Board held on February 1, 2011; it was resolved that the consumers shall not pay TRT share from cost of the transmission, distribution, meter reading and illegal use of electricity as per the Law No. 5784 of July 9, 2008 and regulation made in the Turkish Radio-Television Revenues Law No. 3093, article 4, paragraph (c) and Board Resolution No. 2999 of December 28, 2010.

2. AMENDMENTS MADE İN THE LEGISLATION IN 2010 AND INSIGHT ON THE FOLLOWING YEARS

2.1 AMENDMENTS MADE IN THE LEGISLATION IN 2010

Some amendments and new regulations were made in the primary and secondary legislation concerning the electricity market in 2010 that have affected the implementationsignificantly. In this framework, amendments were made in the Law concerning Use of the Renewable Energy Resources for Generation of Electricity Energy; Regulation concerning Electricity Market Customer Services; Electricity Market Balancing and Settlement Regulation; Electricity Market Ancillary Services Regulation; Electricity Market Tariffs Regulation and related Communiqués and Communiqué on Connection to the Transmission and Distribution Systems and System Use in the Electricity Market, and a regulation was enacted under the name of Regulation concerning Unlicensed Electricity Generation in the Electricity Market.

2.1.1 AMENDMEND MADE IN THE LAW ONUTILIZATION OF RENEWABLE ENERGY RESOURCES FOR THE PROPOSE OF GENERATING ELECTRICAL ENERGY

With the Law No. 6094 of 29.12.2010 concerning Utilization of Renewable Energy Resources for the Propose of GeneratingElectrical Energy, significant amendments were made in the Law on Utilization of Renewable Energy Resources for the Propose of GeneratingElectrical Energy (“Law”). The said amendments provides new regulations related to the sale price and incentive mechanism of the electrical energy generated by the license holders that generate electricity power from the renewable energy resources subject to the law.

The Law provides price incentives based on resource types, for the electrical energy generated in the energy plants based on the renewable energy resources. Furthermore, if the mechanical and/or electro-mechanical parts used in the power plants generating electricity from the renewable energy resources are manufactured in the local market, this factor shall provide further price incentive. On the other hand, for encouragement of the plants producing from the renewable energy resources, wit is provided that priority should be given to the production plants basing on the renewable energy resources in the process of deciding on connection when the licence applications are made.

According to the Law, sale of the electrical energy generated from the renewable energy resources depends on the condition of contribution to the newly founded Renewable Energy Resources (RER) Support Mechanism. Accordingly, the producers that desire to take advantage of the price incentives specified in the Law are obliged to participate in RER Support Mechanism to be organized annually. In the framework of this mechanism, the electrical energy generated from the renewable energy resources shall be purchased at the prices laid down in the Law by the suppliers in proportion with their shares in the sale market. Contribution to RER Support Mechanism is not mandatory and the producers that do not want to participate in the mechanism may sell the energy they produced by bilateral agreements or in the balancing and settlement market.

And the Law also brought some provisions related to authorization of EMRA to audit the electricity production and distribution plants. Accordingly, EMRA may audit the electricity production and distribution plants by itself or may engage audit companies to do so. Procedures and principles related to this practice shall be governed by a regulation to be issued by EMRA.

2.1.2 REGULATION ON UNLICENSED GENERATION OF ELECTRICITY IN THE ELECTRICITY MARKET

'Regulation Concerning Unlicensed Generation of Electricity in the Electricity Market' entered into effect after it was published in the Official Journal No. 27774 of 03.12.2010. However, amendments should be made in some articles of the said Regulation in accordance with the provisions in the Law No. 6094 concerning Modification in the Law on Utilization of Renewable Energy Resources for the Propose of GeneratingElectrical Energy that was enacted after publication of this Regulation.

Objective of the Regulation is to establish procedures and principles allowing the real and legal persons engage with generation of electricity without having to establish company and obtain license from EMRA.

According to the Regulation, the real and legal persons may engage with generation of electricity without obtaining license and establishing company under the following three conditions:

a) Setting up cogeneration plant in order to meet only its own need with such efficiency that is above the value specified in the Regulation Concerning Improvement of Energy Resources and Efficiency in Use of Energy;

b) Installation of micro cogeneration plant;

c) Installation of generation plant based on renewable energy resources with maximum installed capacity of 500 kW.

Under the regulation, only one micro cogeneration plant may be established for each consumption facility. There is no limit for the number of plants based on renewable energy resources that may be set up for one consumption plant; however, total installed capacities of these plants should not exceed 500 kW. The Regulation does not provide any limit as to in what quantity and capacity of cogeneration plant may be established for a consumption facility.

While the plants allowed to be installed under the Regulation may be set up at the same place with the consumption facilities, they may also be installed any other place than that of the consumption facility provided it remains in the same distribution region of the consumption facility. Real and legal persons that desire to generate electricity by this way are required to apply to the distribution company in their respective regions or, if the plant to be installed shall remain within the borders of the Organized Industrial Zone (OIZ), to the legal person of OIZ holding the distribution license before they start to set up the production plant. Application to be made together with necessary documents is examined as to connectability of the project under the application to the system. If it is possible to make connection to the selected point of connection, the connection and system use agreements are made between the real or legal persons making application and the legal person holding distribution license. After execution of the connection and use of system agreements, the construction, commissioning and operation of the generation plant is under responsibility of the real or legal person making the application.

It is essential that the generation plants to be set up by the real and legal persons without licenses should be established only to meet their own need of electrical energy. However, the micro cogeneration plants as well as the plants based on renewable energy resources may be established to such an extent to produce electricity that exceeds need of the persons establishing them. However, cogeneration plants may be established at such capacity to meet need of the electrical energy of the founding persons only.

In case the redundant electrical energy generated in the plants based on the renewable energy resources that are established by the real or legal persons is given to the distribution system, this energy is purchased by the distribution company at the prices indicated in the Law No. 5346 on Utilization of the Renewable Energy Resources for the Propose of GeneratingElectricity Energy. In case the redundant electricity generated in the micro cogeneration plants established by the legal persons is given to the system, the distribution company shall make payment on the current Turkish Average Electricity Wholesale Price. However, no payment is made for the redundant electricity generated in the micro cogeneration plants established by the real persons. With respect to the cogeneration plants, as all energy generated at these plants is required to be used at the consumption plants owned by the real or legal persons that have established them, it is not possible to sell the energy generated at these plants to other persons. Even if all of the energy generated by these plants could not be consumed by the founding real and legal persons completely, no payment is made to these persons.

2.1.3 AMENDMENTS MADE IN THE ELECTRICITY MARKET CUSTOMER SERVICES REGULATION

Under the Amendment Regulation published in the Official Journal No. 27696 of 08.09.2010, a series of comprehensive amendments were made in the Electricity Market Customer Services Regulation. Significant amendments made in the Regulation are listed below:

- With the amendments made in the Article 2, paragraph two of the Regulation, a new regulation was made with respect to the area covered by the Regulation. With the said regulation, the eligible consumers meeting their need of electricity by means of bilateral agreements are kept subject to the provisions of this Regulation as limited to the points related to the retail sail services.
- With the amendment made in the Article 8 of the Regulation, the matter of transfer of the branch lines to the distribution companies was regulated again. According to the new regulation, transfer of the branch lines to be opened to common use to the distribution company by consent of the beneficiaries shall be preferred. If the beneficiaries do not consent to transfer of the branch line to the distribution company, the said lines then shall be expropriated. Related expropriation costs may be met through tariffs provided consent of the Authority is obtained duly. With respect to this article, a regulation has been made under

the Temporary Article 9 supplemented to the Regulation with respect to the path to be followed until the article 8 of the Regulation will become actually applicable.

- A new regulation has been made with respect to the dismounting and mounting costs of meters under the second paragraph of the article 16 and the last paragraph of the article 18 under the Regulation. With this amendment, the "dismounting and mounting costs of meters" previously regulated under the Law of Measurements and Settings and specified by the Ministry of Industry and Trade shall be determined by EMRA from now on. EMRA shall determine the mounting and dismounting costs of meters every year in accordance with proposals to be received from the distribution companies.
- With the amendments made in the Articles 19 and 20 of the Regulation, the paths to be followed have been regulated again in case the customer meters have not recorded any consumption or recorded short or excessive consumption. Another important innovation brought by these provisions is that if the meter of a customer that consumes electrical energy under bilateral agreements does not record consumption at all or does not record it correctly, the consumption of that customer in the previous periods shall be calculated by the legal person holding distribution license and it will be notified to TEIAS.
- With the amendment made in the article 24, paragraph 3 of the Regulation, it is provided that the default interest specified in the retail sale contract shall be applied from the last payment date of the bill.
- With the amendment made in the temporary article 4 of the Regulation, it is provided that if the eligible consumers leave their distribution companies as their current suppliers and desire to purchase energy from another supplier, even if these consumers have not signed connection agreements with the distribution company, this situation shall not bring up any obstacle for their right of selecting supplier.

2.1.4 AMENDMENTS MADE IN THE ELECTRICITY MARKET BALANCING AND SETTLEMENT REGULATION

With the Amendment Regulation published in the Official Journal No. 27751 of 06.11.2010, significant amendments have been made in the Electricity Market Balancing and Settlement Regulation (BSR). With the said amendment, the matters of guarantee, recording the injection-withdrawal units as basis for settlement, automatic meter reading system (AMRS) and zero balance adjustment amount (ZBAA) have been regulated again.

Although the principles related to the regulations on the existing guarantee which already take place in BSR concerning the regulations concerning the guarantees were maintained in the amendment of the regulation, important changes have been made by taking into consideration the following factors:

- Engagement of a central settlement bank to execute the transactions related to guarantee and payments between the market participants or intermediary banks acting for them and the market operator;
- Introduction of a daily advance payment system where the payment resulting from the day-ahead balancing transactions is calculated on the following day of such transaction and set off from the next bill of the respective market participant;
- Execution of an agreement with ISE Settlement and Custody Bank Inc. (ISE SCBI) to execute the transactions mentioned above,
- Arrangement of part of the guarantees in cash;
- Evaluation by ISE SCBI of cash and off-cash guarantees given by the market participants, making them subject to accretion and payment of such accretion to the market participants holding the guarantee.

Another important amendment made by the new regulation is related to the path to be followed in the scope of BSR in case the eligible consumers desire to change their suppliers. With the amendment, the procedures concerning the process of change of supplier by the eligible consumers shall be realized via Market Management System. Thus, it is provided the former suppliers of the eligible consumers should also be notified of their movements.

Another regulation made by means of the amendment in the regulation is related to AMRS. In this context, a regulation has been made to the effect that “Procedures and Principles for Determination of the Scope of the Automatic Meter Reading Systems and Meter Prices “in order to determine duties and responsibilities of the parties as to which of the meters to be installed by the distribution companies in their respective regions shall be taken into the scope of AMRS, reading frequency of these meters, determination of an estimated monthly consumption value for the meters which are not required to be read on basis of bill period and connection of the meters to AMRS.

Another amendment made in BSR is related to ZBAA. Amendment was made in the provision regulating distribution of the calculated ZBAA among the market participants and, accordingly, it was regulated that all ZBAA should be distributed to the withdrawal units instead of half-and-half distribution among the withdrawal units specified in the current version of the regulation.

2.1.5 AMENDMENTS MADE IN THE ELECTRICITY MARKET ANCILLARY SERVICES REGULATION

With the regulation published in the Official Journal No. 27580 of 15.05.2010, comprehensive amendments and novelties were made in the Electricity Market Ancillary Services Regulation. With the amended regulation, "the regional capacity lease service" has also been included in the types of ancillary services. Regional capacity lease methods aims at maintaining the security of supply in case the transmission system is divided into regions du to constraints and it is detected that the peak demand to occur in these regions cannot be met sufficiently. If the reliability of the system cannot be maintained due to lack of sufficient capacity in a region, TEIAS may request for procurement concerning regional capacity lease tenders in accordance with the procedures and principles laid down in the Regulation in order to meet system requirements in the region. Capacity lease cost to arise from such procurement shall be met by reflection of it on the system operation price.

2.1.6 AMENDMENTS MADE IN THE REGULATION CONCERNING TARIFF IN THE ELECTRICITY MARKET AND RELATED COMMUNIQUES

With the regulation published in the Official Journal No. 27802 of 31.12.2010, a series of key amendments were made in the Electricity Market Tariffs Regulation. Along with these amendments made in the Regulation, other necessary amendments were also made in the Communiqué related to implementation of the Regulation. In this context, some regulations and amendments were made in the Regulation and Communiqués to the effect that:

- Loss/theft energy amount shall be provided by the distribution company holding retail sale license;
- System Day-Ahead Price (SDAP) shall be applied when the purchase/sale in the balancing power market is reflected on the tariffs;
- Retail sale service prices shall be determined as fixed and/or variable price on basis of subscriber groups and/or voltage levels individually;
- With respect to the eligible consumers that take place or not take place in the actual four-period energy balance sheet before two previous periods, but exit/enter the portfolio of the legal person holding retail sale licenses in the later periods, the updated energy balance sheet of them shall be taken into consideration based on their consumption quantity;

- Implementation of quality factor shall start on 01.01.2013;
- The component loss/theft discontinues as a factor of distribution reference revenue;
- Transmission fee to be applied by the legal persons holding distribution license shall be calculated based on the provisions of the Communiqué on Regulation of the Distribution System Revenue.

2.1.7 AMENDMENTS MADE IN THE COMMUNIQUE ON CONNECTION TO THE TRANSMISSION AND DISTRIBUTION SYSTEMS IN THE ELECTRICITY MARKET AND USE OF SYSTEM

With the regulation published in the Official Journal No. 27537 of 30.03.2010, some amendments were made in the Communiqué on Connection to Transmission and Distribution systems in the Electricity Market and Use of System. With the said regulation, the provision concerning the liabilities of the production companies to sign connection and system use agreements and repayment of transmission investments made under the Temporary Article 14 of the Electricity Market were amended.

With the first amendment made in the Communiqué, it has been made mandatory that the connection and use of system agreements to be made by the production companies with the transmission and distribution companies should be executed before expiration of the pre-construction period indicated in the generation license. Thus, the aim is that the connection and use of system agreements to be made between the production companies and the transmission and distribution companies are made by the parties as soon as possible in order to prevent in advance any possible disputes that may arise concerning connection to the system in future.

Another important amendment made in the Communiqué is, under the Temporary Article 14 of the Electricity Market Law, construction or finance of the transmission facilities necessary for connection of the production plant to the transmission system by the production company that applies for connection. In the Communiqué, amendment was made in the regulation concerning how the cost of the transmission plants that are constructed or financed by the production companies shall be reimbursed to these production companies. According to the amendment, it is provided that procedures concerning reimbursement should be regulated by the methodology which is drawn up by TEIAS and enter into effect after approved by the Board. The Board approved and published the said methodology by its decree No. 2536 of 26.04.2010.

2.2 STUDIES MADE CONCERNING THE LEGISLATION IN 2011

Some studies are made on the legislation related to the electricity market with respect to the amendments made in the Law and things required by the implementation in order to realize them in 2011. In this context, there are some studies for making amendments in the Electricity Market Balancing and Settlement Regulation, Electricity Market Import and Export Regulation, Electricity Market Eligible Consumer Regulation, Electricity Market License Regulation and Electricity Market Distribution Regulation and a preparatory study is conducted for implementation of the Law concerning Utilization of Renewable Energy Resources for Generation of Electricity.

2.2.1 ELECTRICITY MARKET BALANCING AND SETTLEMENT REGULATION

Some amendments were made in BSR with the regulation published in the Official Journal No. 27852 of 20.02.2011. As a result of amendment made in the Electricity Market Tariffs Regulation and related communiqués, it is required that the distribution loss&theft quantities that occur in the distribution system is given to the responsibility of the distribution companies holding retail sale license and the cost arising from loss&theft illegal is reflected on all consumers and that BRS should be adapted to this regulation. With the amendment made, switching to Day-Ahead Market and implementation of the guarantee mechanism shall be simultaneously started on the date of December 1, 2011.

On the other hand, with the new amended regulation, it is provided that transactions for elimination of the constraints in the stage of Day-Ahead Planning shall be made only in the Balancing Power Market until switching to the Day-Ahead Market in order to avoid any abuses that may occur during their performance of them day ahead.

2.2.2 ELECTRICITY MARKET IMPORT AND EXPORT REGULATION

Synchronous parallel connection of the Turkish national electricity system operated by TEIAS to ENTSO-E Continental Synchronous Regional Network of Europe was performed on September 18, 2010 for trial purpose. In near future, Turkish national electricity network shall allow international trading of the electrical energy in a synchronous parallel connection with the Greek and Bulgarian

national networks. Making the national electricity network synchronous with other networks requires making amendments in the electricity market legislation with respect to international trading of electricity. In this context, a revision is planned in the Electricity Market Import and Export Regulation.

With the regulation to be made, comprehensive amendments shall be made especially concerning import and export activities in the synchronous parallel connections. Some important amendments are intended in the new regulation with respect to use of interconnection lines and allocation of these lines.

2.2.3 ELECTRICITY MARKET ELIGIBLE CONSUMER REGULATION

With the amendment Regulation published in the Official Journal No. 27840 of 08.02.2011, new amendments and regulations were made in the Electricity Market Eligible Consumer Regulation. Major novelties and amendments made in the Regulation are as follows:

- With the amendment in the Regulation, the liability of the distribution companies to notify the consumers that have gained quality of eligible consumer depending on their consumption quantity in the previous that have exceeded the eligible consumer limit is abolished; instead, it has become mandatory to post list of such consumers in the website of the distribution company in a constant and updated way.
- With the regulation, it is provided that with respect to the consumers of legal person status which gained quality of eligible consumer by unification of demand, the certificate indicating that they have status of eligible consumer shall be given to them by the distribution company operating in the city where the tax registration of the said consumers of legal person status are present.
- With the amendment, the suppliers providing electrical energy to the eligible consumers under bilateral agreements are required to notify the Authority of the total sale amount they made to the eligible consumers in the last one year and weighted average sale price of such sale in November each year.
- With an amendment made in the Regulation it is provided that requests concerning change of supplier made by the consumers purchasing electricity from the distribution companies holding retail sale license shall be put into implementation on the dates of January 1, April 1, July 1 and October 1 in the year.

2.2.4 ELECTRICITY MARKET LICENSE REGULATION

A series of amendments are planned in the Electricity Market License Regulation. In this context, the matters such as liability of obtaining license, license application, examination and evaluation of license applications, capital amounts that the license applicants in legal person status should hold shall be revised as required in practice.

2.2.5 DRAFT REGULATION CONCERNING DOCUMENTATION AND SUPPORT OF RENEWABLE ENERGY RESOURCES

As per the Law No. 5346 Concerning Use of the Renewable Energy Resources for Generation of Electricity , amended by the Law No. 6094 on the date of 29.12.2010, it is intended to draw up Regulation concerning Documentation and Support of the Renewable Energy Resources in order to establish procedures and principles for grant of Certificate of Renewable Energy Resource (RER) by the Authority to the legal persons holding generation license for the production plants basing on the renewable energy resources as well as operation of RER Support Mechanism.

The Regulation contains detailed provisions concerning RER Certificate that ensures determination and follow-up of the resource type of the electricity generated from the renewable energy resources as well as RER Support Mechanism to be formed to take advantage of the price incentives in the respective Law. In this context, matter such as regulation of the payments related to RER Support Mechanism rate and amount of payment liability of the suppliers and guarantee obligations are regulated.

2.2.6 REGULATION CONCERNING ELECTRIC VEHICLES

In the Electricity Market Distribution Regulation, an amendment is specified to allow the fast, medium fast and slow charging units to be installed to charge the electrical vehicles are connected to the system.

3 DEVELOPMENT OF ELECTRICITY PRODUCTION AND CONSUMPTION IN TURKEY

The primary duty of EMRA related to the production level of the market is the licensing activity. In this context, EMRA has given total 1495 licenses from the year 2003 to the end of 2010. Types of the licenses given are shown in the following table by years.

Table 3-1: Numbers of Licenses Granted by EMRA by Types

Type of License	License Date (Number)								
	2003	2004	2005	2006	2007	2008	2009	2010	Toplam
Transmission License	1	-	-	-	-	-	-	-	1
Distribution License	-	-	-	19	-	1	1	1	22
Retail Sale License	-	-	-	19	-	1	1	1	22
Wholesale License	6	10	4	4	3	6	8	48	89
OIZ Distribution License	-	-	-	-	57	49	13	8	127
Generation License	137	52	55	86	185	222	168	119	1024
Autoproducer License	105	14	18	18	10	22	8	16	211
Total	**249**	**76**	**77**	**146**	**255**	**301**	**199**	**192**	**1495**

Source: EMRA

As it may be seen from the table above, a significant increase occurred especially in the wholesale licenses given by the Authority in 2010. On the other hand, while the number of autoproducer license given by the Authority has increased in the production area, the number of generation license has decreased compared to the previous year.

Table 3-2: Distribution of Production and Autoproducer Licenses by Types of Fuel

Type of Plant	2010		Total	
	Number	Installed Capacity (MW)	Number	Installed Capacity (MW)
HEPP	94	1.944	736	27.956
Coal	1	100	36	18.844
Natural Gas	7	420	78	16.486
WPP	6	220	91	3.500
Other	0	-	14	510
Mobile	-	-	2	263
JES	4	63	11	227
Landfill Gas	-	-	4	39
Biomass	3	15	4	20
Biogass	4	7	7	13
Fuel Oil	-	-	1	11
Total	**119**	**2.769**	**984**	**67.869**

Source:EMRA

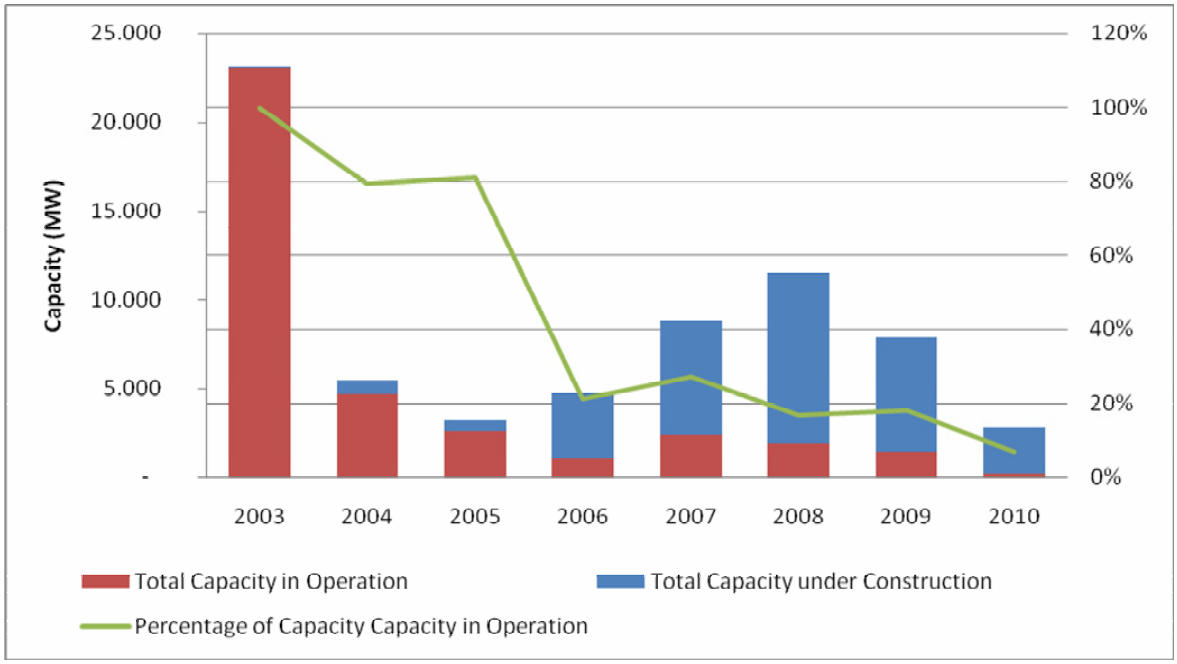
When the licenses given are considered in terms of power, totally 984 production and autoproducer licenses with total capacity of 67.869 MW have been given by EMRA by the end of 2010.

119 licenses of the said licenses, with total installed capacity of 2769 MW were given in 2010. Although hydroelectric power plants account for major part of the licenses given, a significant number of licenses were also given to the natural gas and wind power plants. The total installed capacity of the licenses given to these resources reached to 640 MW. Furthermore, we see increase in the number of licenses given to the renewable energy resources and in the total installed capacity in the year 2010.

3.1 DEVELOPMENT OF LICENSED CAPACITY

When considered with respect to putting into operation of the licensed capacity, we observed that percentage of putting into operation has reduced over years as shown below. Licensing process started by the end of 2002 and almost all of the applications made in 2003 was made by the capacity in operation. For this reason, a greater part of the capacity licensed in 2003 is consisted of the existing generation plants and the percentage of putting into operation is very high. While 79% of the capacity received license in 2003 has started to operate by the end of 2010, only 7% of the capacity licensed in 2010 was put into operation.

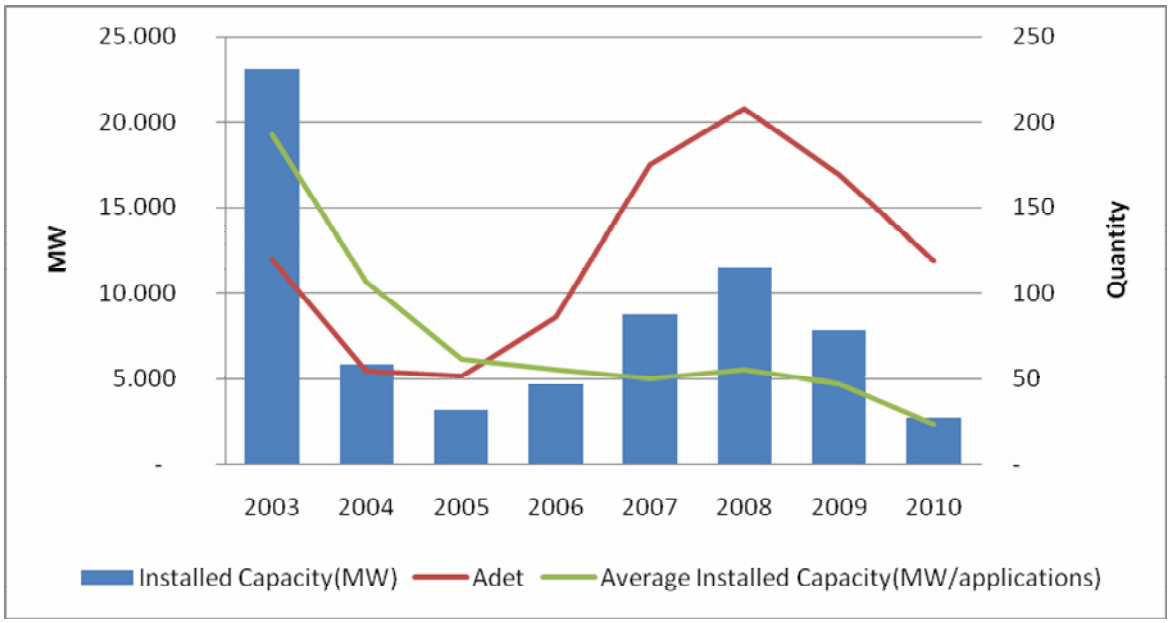
Figure 3-1: Development of the Capacity Licensed by EMRA by years (MW)



Source:EMRA

Quantity, total and average capacity of the licenses taken from EMRA is shown in the Figure 3-2. Except for the year 2003 when the existing capacity was licensed, number and capacity of licenses taken in 2008 reached to a high level. On the other hand, a tendency of reduction is seen in the average capacity of the licenses taken. As it is, we deduct that average capacity of the power plants operating in the market reduces.

Figure 3-2: Number and Capacity of the Applications made to EMRA



Source:EMRA

3.2 CAPACITY IN OPERATION

By the end of 2010, the total installed capacity in Turkey was 49.562 MW; and when the breakdown of the installed capacity in operation is examined by enterprises, we see the public has a dominant concentration in the market. Capacity under the public control, namely, EÜAŞ, Subsidiaries of EÜAŞ, İHD, BO, BOT account for about two thirds of the total installed capacity.

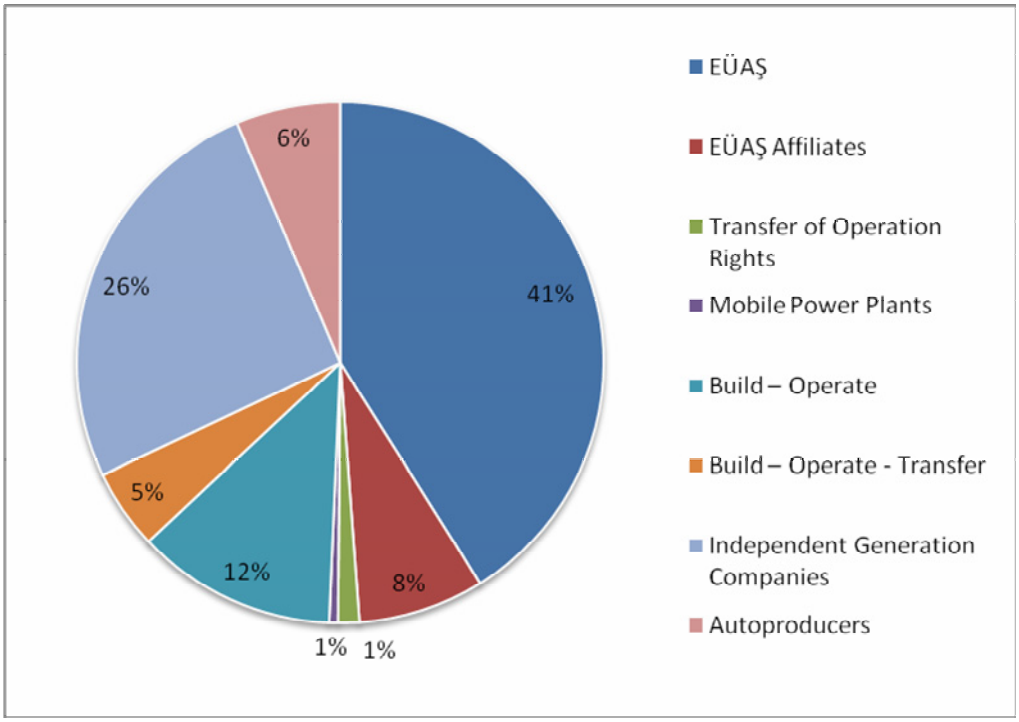
Table 3-3: Installed Capacity of Turkish Electricity Energy (2010)

Company	Type	Number of Plants	Installed Capacity (MW)	Total Power (MW)
EÜAŞ	Thermal	15	8.691	**20.369**
	Hydro	104	11.678	
EÜAŞ Affiliates	Thermal	5	3.834	**3.834**
Transfer of Operation Rights	Thermal	1	620	**650**
	Hydro	1	30	
Mobile Power Plants	Thermal	2	263	**263**
Build – Operate	Thermal	5	6.102	**6.102**

Build – Operate - Transfer	Thermal	4	1.450	**2.439**
	Hydro	17	972	
	Wind	2	17	
Independent Generation Companies	Thermal	88	8.722	**12.724**
	Hydro	134	2.607	
	Geothermal	6	94	
	Wind	36	1.302	
Autoproducers	Thermal	144	2.636	**3.181**
	Hydro	4	544	
	Wind	1	1	
Total	**Thermal**	**264**	**32.317**	**49.562**
	Hydro	**260**	**15.831**	
	Geothermal	**6**	**94**	
	Wind	**39**	**1.320**	

Source: TEİAŞ

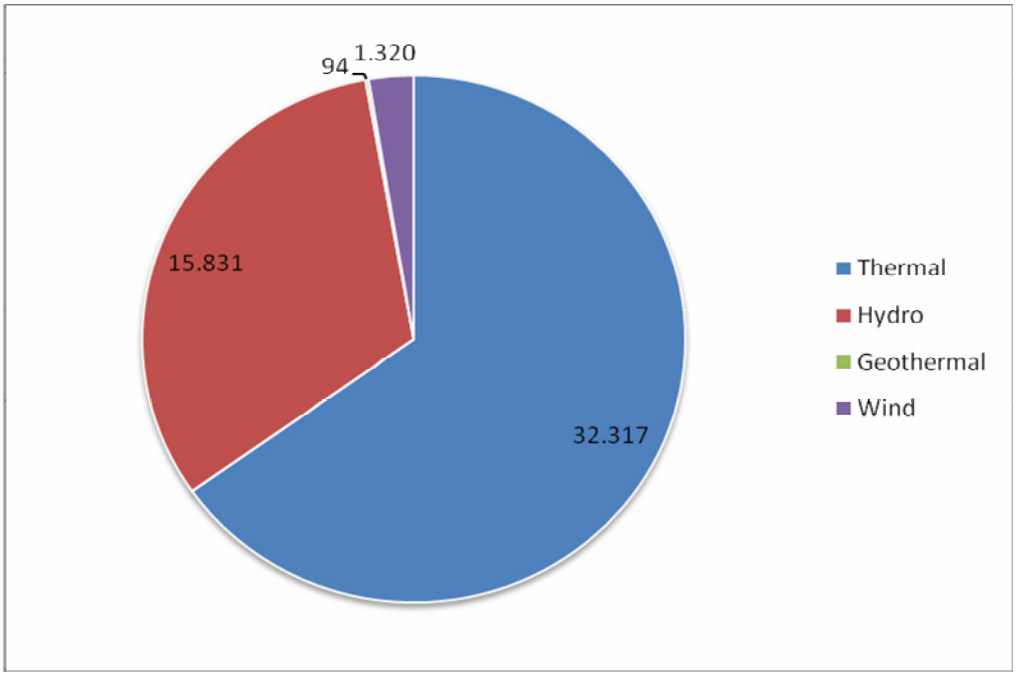
Figure 3-3: Installed Capacity in Operation by Enterprises as of the end of 2010



Source:TEİAŞ

On the other hand, when the breakdown of the installed capacity by resources is examined, about two thirds of the installed capacity belongs to the thermal power plants. Hydro capacity is 32% and wind 3%.

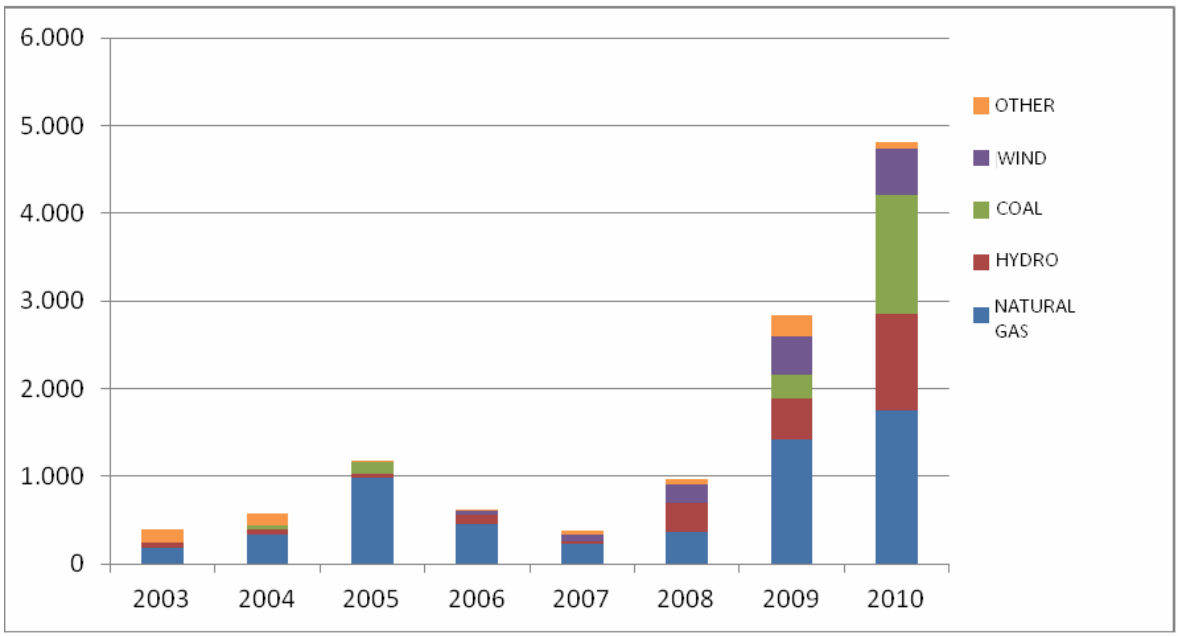
Figure 3-4: Installed Capacity in Turkey by Resources (MW)



Source: TEİAŞ

The following figure shows the installed capacity of the power plants which has provisional acceptance by Ministry has been completed. As shown in the Figure 3-6, investment made by the private sector in the lignite-resourced production plant is very limited. Major part of the installed capacity owned by the private sector is consisted of natural gas plants.

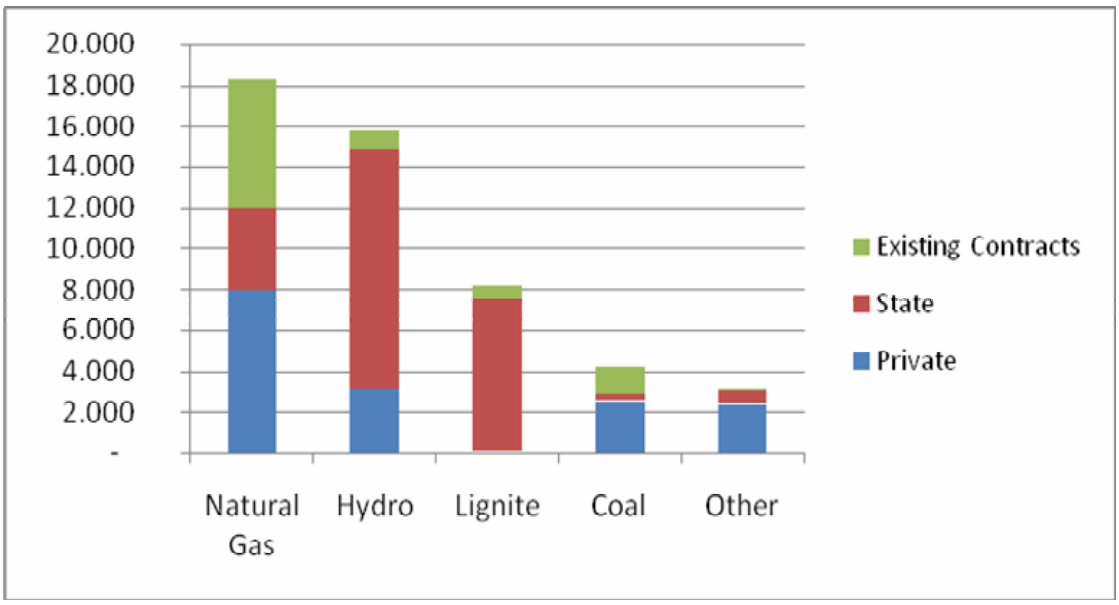
Figure 3-5: Capacity with Completed Provisional Acceptance by Years(MW)



Source: MENR

As shown in the figure, while the capacity put into operation from the year 2003 to 2007 has reduced, capacity put into operation since 2007 has significantly increased. Another thing which attracts attention in the figure is that share of natural gas has reduced over time.

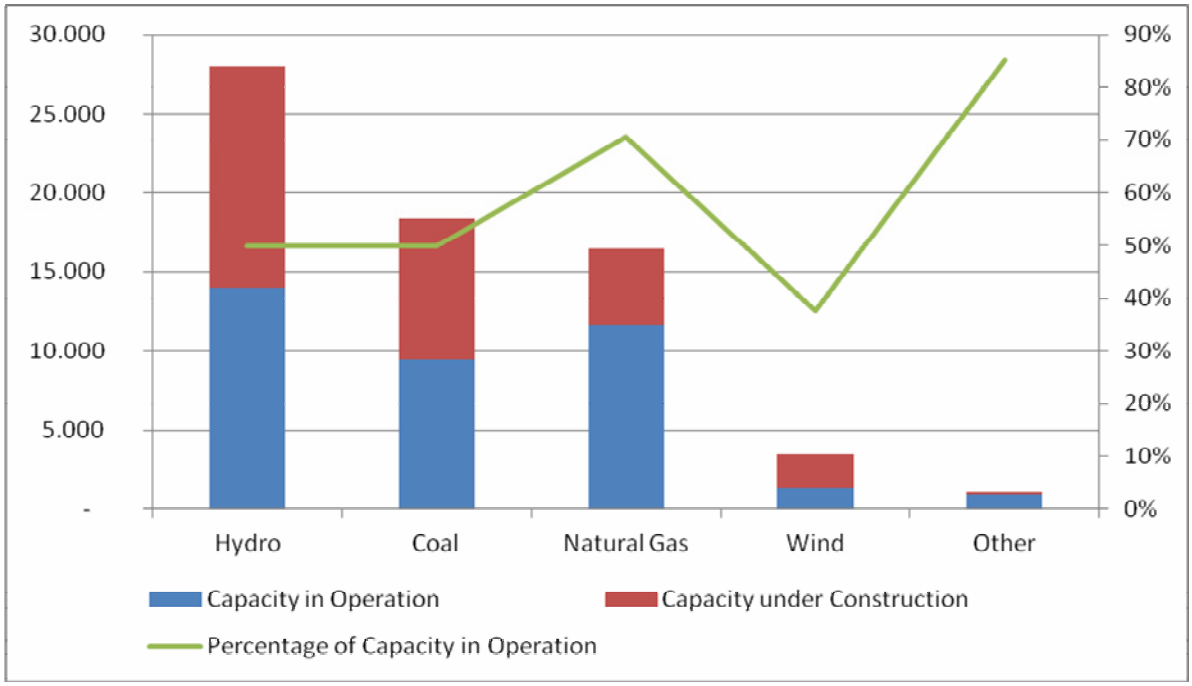
Figure 3-6: Capacity Put into Operation by Fuels (MW)



Source:EMRA

Breakdown of the said capacity on basis of types of fuels is shown below. As indicated in the Figure 3-7, major part of the licensed capacity is consisted of hydroelectric, coal and natural gas power stations, respectively. While half of the applications for licensed HEPP and coal-fuelled power plants with a longer construction time, were put into operation, the rate of starting operation for the applications for licensed natural gas which require a shorter construction term is 70%.

Figure 3-7: Capacity Licensed by EMRA by Types of Fuel (MW)

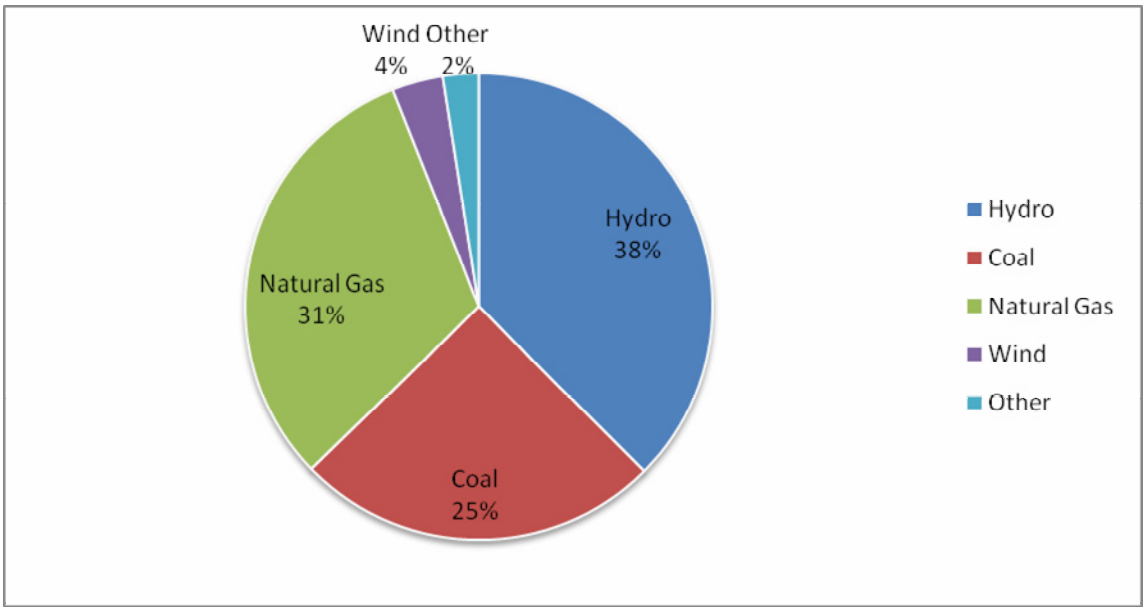


Source:EMRA

When we examine the distribution of the capacity[2] that received license from EMRA by types of fuel, we see that the highest share goes to hydroelectric, natural gas and coal power plants, respectively.

[2] With respect to the power plants operating on basis of build-operate, build-operate-transfer and transfer of operation rights under the existing contracts, they are not included in the tables and figures as they have not obtained license from EMRA.

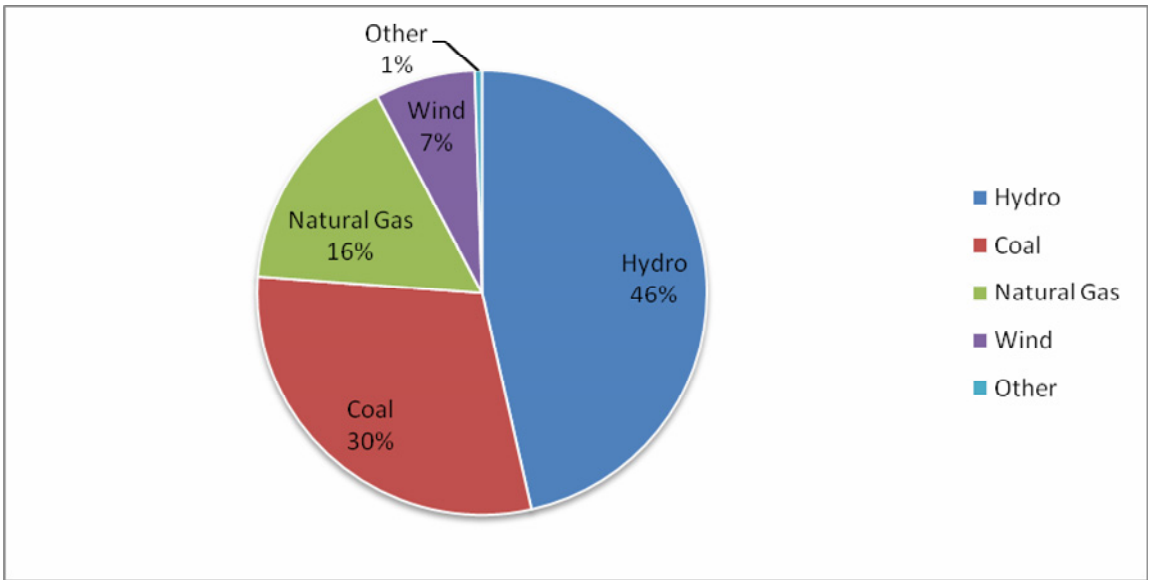
Figure 3-8: Capacity in Operation as Licensed by EMRA by Types of Fuels



Source: EMRA

When the said data is considered along with the licensed capacity under construction, these three types of power plants again have the greatest share, although in a different order. As it is, while it is expected that the share of the hydroelectric and coal plants in the installed capacity shall increase once the capacity under constructions is put into operation, the share of natural gas will reduced. Likewise, it is supposed that share of the wind capacity in the total installed capacity will increase.

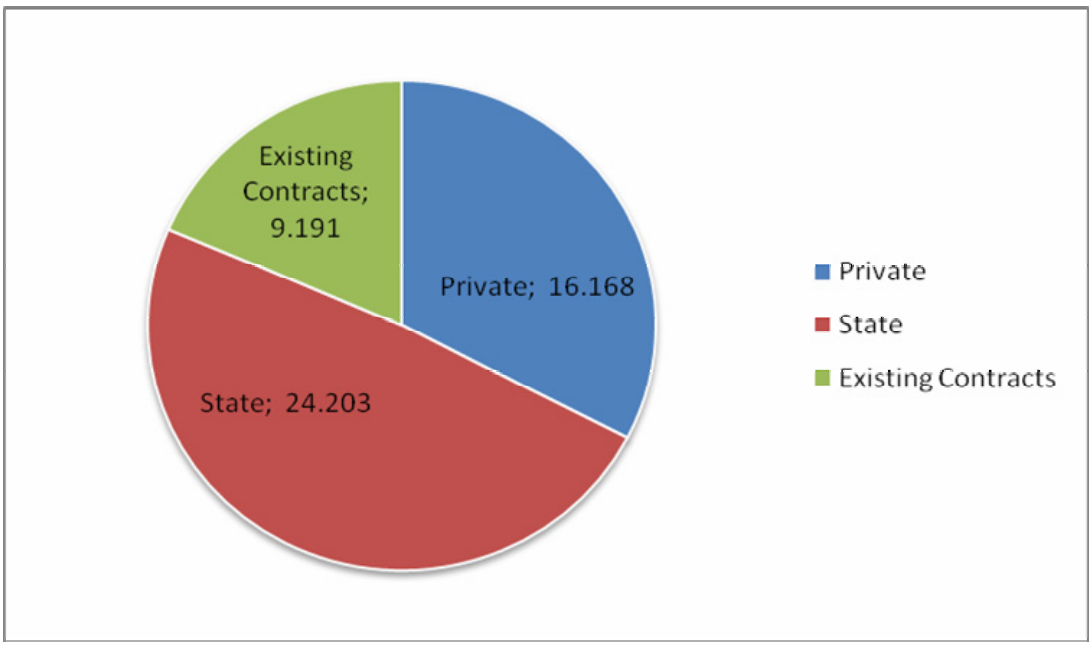
Figure 3-9: Capacity under Construction Licensed by EMRA as of Types of Fuels



Source: EMRA

As a variety of laws have entered into force concerning generation of electrical energy since 1980s, there are production companies operating under different regulations in the electricity market. The following figure shows distribution of the installed capacity in operation by enterprises.

Figure 3-10: Distribution of Licensing Process by Enterprises



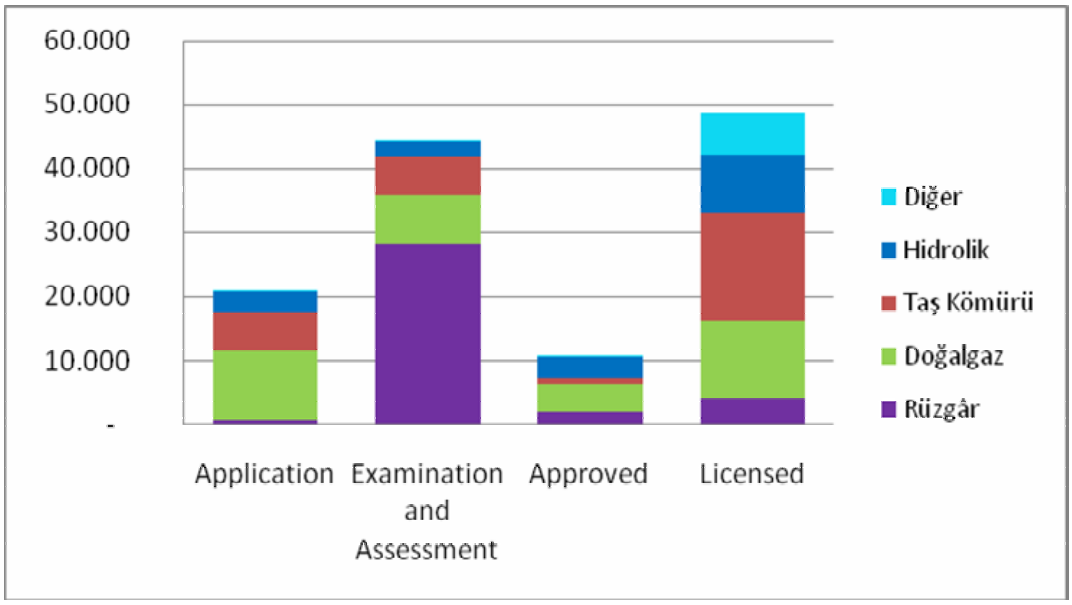
Source:EMRA

As it is seen from the figure above, almost half of the existing capacity belongs to the public and one third of it belongs to the private companies. The public sector controls about two thirds of the installed capacity in operation in the market under the existing contracts.

3.3 CAPACITY IN THE LICENSING PROCESS

Total licensed capacity of the public power plants is about to reach to 50.000 MWA as of 2010. Besides, there is capacity over 76.000 MW in the process of licensing. More than half of the capacity in the process of licensing is consisted of those more than 10.000 MW of which is in process of assent, the last stage of the licensing process. It seems the capacity in the process of licensing is very high compared to the current licensed capacity.

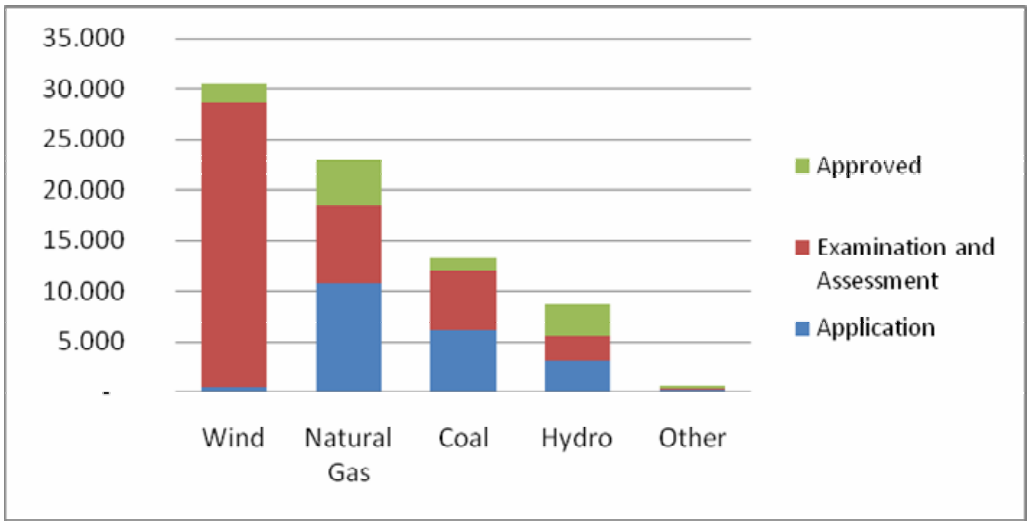
Figure 3-11: Licensing Process on Basis of Types of Fuels (MW)



Source:EMRA

Another noticeable point related to the licensing process is that although there is relatively a balanced distribution for all other types of fuels, almost all of the wind applications are in the stage of Examination-Evaluation. About two thirds of the capacity in the stage of Examination-Evaluation is consisted of wind applications. This situation is seen in the following figure where the licensing process is shown by types of fuels.

Figure 3-12: Licensing Process by Fuels (MW)



Source:EMRA

3.4 ACTIVITIES FOR ESTABLISHMENT OF NUCLEAR POWER PLANTS IN TURKEY

While today there are 441 nuclear power plants which are operative in 30 countries and meets about 14% of the world electrical energy (376 GWe) and there are 63 nuclear power plants under construction in 15 countries (65 GWe), there is no nuclear power plant in our country, in operation or under construction. The idea of establishment of nuclear power plant came out in Turkey in 1960's. Electrical Power Resources Survey and Development Administration, the organization then responsible for the electricity affairs) set out to establish a nuclear power plant of 400 MWe, but no result has been obtained.

And another effort to establish nuclear power plant has come again in 1970's and TEK Nuclear Plants Department established, but operations of setting up nuclear power plant have been abolished once more. In 1983, in the third effort to establish nuclear plant, the aim was to set up two units in Akkuyu, Mersin and one unit in Sinop. However, this effort has ended as the Treasury guarantee has not been found proper by the government.

With an amendment made in 1993, TEK divided into two, namely, TEAS and TEDAS; and Nuclear Power Plants Department was set up in the body of TEAS. In the framework of the fourth effort for establishment of nuclear power plant, although evaluation of the offers has completed, it was stated in the meeting of Council of Minister in 2000 that the Nuclear Program of Turkey was cancelled until more appropriate conditions will arise for establishment of nuclear power plant.

Ministry of Energy and Natural Resources (MENR) organized a "Nuclear Summit" on April 13, 206 with attendance of the leading firms of the private sector and stated that the government is of the opinion that nuclear power plants should be established by the private sector. Law No. 5710 concerning Establishment and Operation of Nuclear Power Plants was published in the Official Journal of November 21, 2007 and operations for specifications regarding to the competition to be organized by TETAS for Nuclear Power Plant to be installed under the Law and issue of energy purchase contract were started in November 2007. As a result of the legal and administrative regulations made, the competition date was announced as September 24, 2008.

On-going evaluation studies under the competition documents were interrupted after the decree taken by the Council of State on stay of execution for some articles of the regulation. The Ministry of Energy and Natural Resources did not appeal and returned to TETAS the report related to the result of the tender. "Competition" made on September 24, 2008 for determination of the company, which will establish and operate Nuclear Power Plant and sell electrical energy to TETAS was cancelled as

per the Article 31 of the Specifications prepared to this effect, and thus the fifth big project of our country for establishment of nuclear power plant has remained inconclusive.

Law to the effect that approval of the "Agreement for Cooperation between the government of Turkey and Government of Russian Federation for Installation of a Nuclear Power Plant in Akkuyu Field in Turkey" signed in Ankara on May 12, 2010 was published in the Official Journal. Akkuyu NGS Electricity Generation Corporation was founded on December 14, 2010.

It may be required that local experts should be trained and experienced and expert professional are brought from abroad especially in the early periods of the nuclear energy programs. Now, majority of professional personnel experienced in this field works in the body of Turkish Atomic Energy Agency (TAEA).

The countries that most expediently increased local contribution rate on basis of their nuclear energy policy are China and South Korea. In these countries, there are nuclear power plant fuel facilities to produce their own fuels. The basic factor underlying the achievement of these countries is long-term national plans and strict implementation of them without any deviation. Turkey should get a good lesson from this example. Anyway, nuclear energy is a type of energy which is used widespread in the developed countries, meeting the environmental adaptability, one of the most important criteria of the sustainable development.

International agreements such as "Nuclear Security Contrary" to which our country entered as a party on December 15, 1994, international general approaches and legislation of the European Union (EU) makes it mandatory that the regulatory organization in the field of nuclear should be independent of the users of the nuclear power plants and rectors. As it has been performed by some countries that own nuclear power station (e.g. Korea), there are opinions that it would be more appropriate to set up such an independent "nuclear regulatory authority" as mentioned above after starting to use nuclear energy. A law concerning licensing, organization and audit operations as well as implementation, research and development in the field of nuclear should be enacted. Local contribution to the nuclear power plants to be set up in our country should be maximized and licensing should be made as per the appropriate standards.

After the agreements enter into effect, negotiations on "road map" started between the Russian delegation and Turkish side on January 17, 2011 in MENR. Information about "road map" has been given to the representatives of the public enterprises and organizations. A meeting was held to inform top executives of the public enterprises and organizations and the respective company was

introduced. In the following days, efforts should be started to raise public awareness. The following works are required to be performed in this respect in the order given below:

a) Application as founder to TAEA,

b) As site license was given to TEK in 1976, execution of a protocol between EÜAŞ and Company to immediately start operations at Akkuyu,

c) Application to the concerned Authorities for the Environment Impact Assessment Report,

d) Application to TAEA for site license,

e) Application to EMRA for license.

3.5 DEVELOPMENT OF ELECTRICITY DEMAND

Turkey, as a developing country, has a very high rate of increase in demand. By 2010, the peak demand reached to 33.392 MW by an increase of 11.8%, and energy demand to 209 TWh by 7.9%). Thus, the average increase for the peak demand and energy demand in the last ten years realized as 5.4% and 5.4%, respectively.

Table 3-4: Development of Energy and Peak Demand[3]

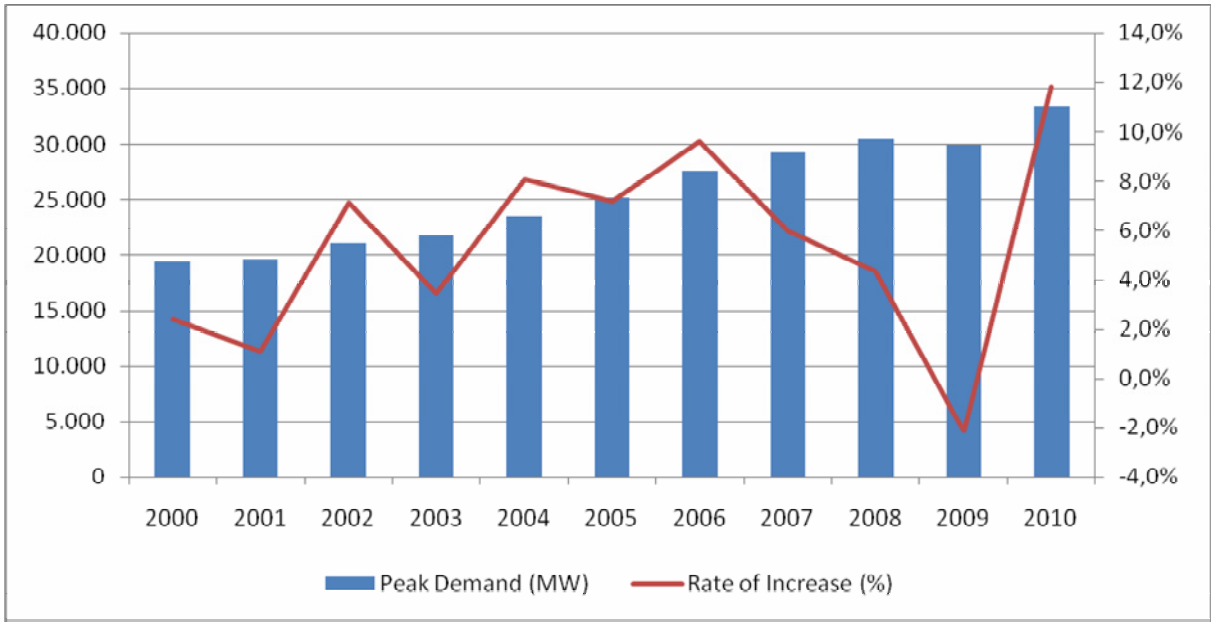
Year	Peak Demand (MW)	Rate of Increase (%)	Energy Demand (GWh)	Rate of Increase (%)
2000	19.390	2,4%	128.276	8,3%
2001	19.612	1,1%	126.871	-1,1%
2002	21.006	7,1%	132.553	4,5%
2003	21.729	3,4%	141.151	6,5%
2004	23.485	8,1%	150.018	6,3%
2005	25.174	7,2%	160.794	7,2%
2006	27.594	9,6%	174.637	8,6%
2007	29.249	6,0%	190.000	8,8%
2008	30.517	4,3%	198.085	4,2%
2009	29.870	-2,1%	194.079	-2,0%
2010	33.392	11,8%	209.390	7,9%
Average		5,4%		5,4%

Source:TEİAŞ

[3] Data on 2010 is not certain yet.

Development of the peak demand over years is shown in the following figure. A reduction has been observed in the peak demand due to effect of the economic crisis in 2009; however, the increase rate realized in 2010 was the highest of the last ten years and thus it entered into an economical recovery.

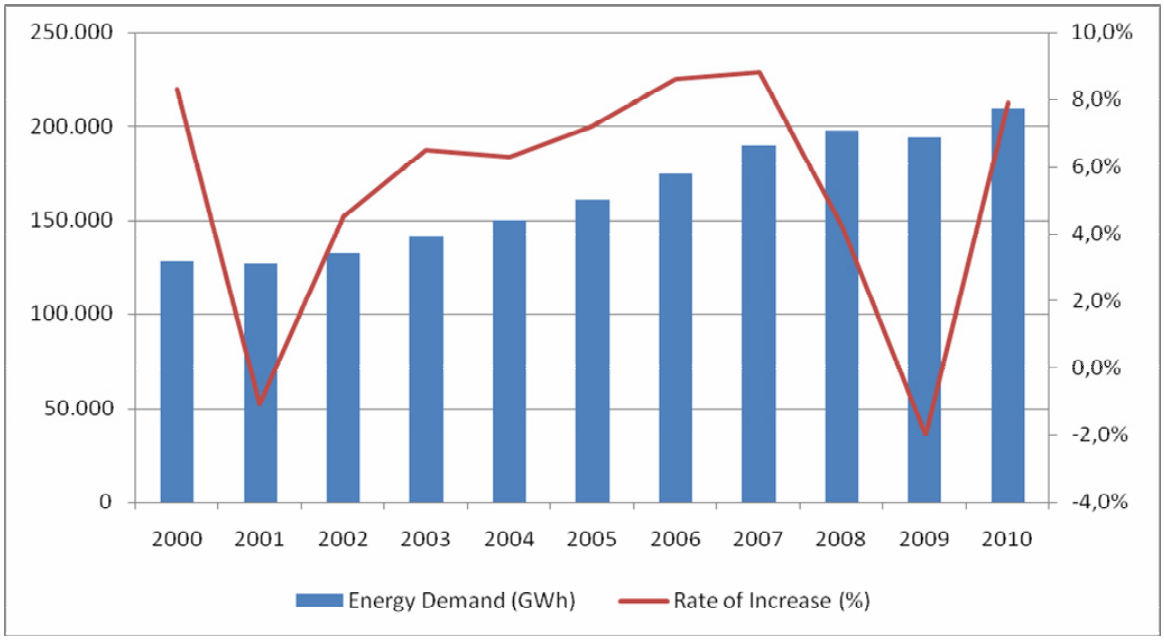
Figure 3-13: Development of the Peak Demand by Years (MW)



Source:TEİAŞ

As to the energy demand, we see a tendency similar to the change in the peak demand. As shown in the following figure, while a reduction occurred in the energy demand by 2009, the electrical energy demand in the last year has been one of the highest one in recent years.

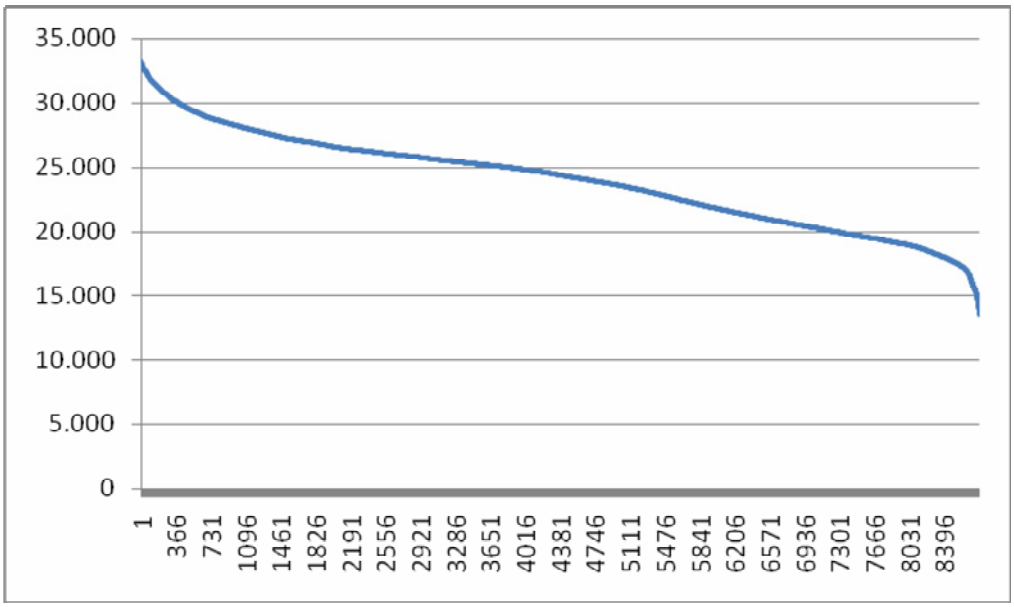
Figure 3-14: Development of Electricity Energy Demand by Years (GWh)



Source:TEİAŞ

The following figure shows load duration curve. As shown in the figure, the demand varies between the base load of 13.513 MW and peak demand of 33.392 MW.

Figure 3-15: Load Duration Curve (MW)[5]



Source:TEİAŞ

[5] Horizontal axis shown total annual hours (8760).

3.6 SECURITY OF SUPPLY

As per the Electricity Market Law No. 4628, MENR is responsible for monitoring security of supply for electrical energy and taking measures related to the security of supply. TEIAS determines and informs the Ministry and Authority each year about realizations as per Long Term Electrical Energy Generation Development Plan so as to cover the subsequent 5 years as well as short- and medium-term supply-demand balance.

Generation capacity projection made by TEIAS based on the demand estimations prepared by the distribution companies enters into effect after it is approved by the Authority. Based on the results of the Electricity Market Development Report prepared by the Authority, MENR prepares and presents to the Council of Ministers the Electrical Energy Supply Security Report by taking into consideration the demand-supply balance, diversity of resources, transmission and distribution and status of the generation facilities. The report covers evaluations concerning development and operation of the electricity market and findings, problems and solutions proposal with respect to security of supply.

On basis of the generation capacity projection made concerning the security of supply as a result of evaluations made in the framework of the Law above, the demand series in 2010-2011 was created after a reduction in 2009 due to economic crisis followed up by a recovery in the first 6 months of 2010. Subsequently, a growth of 7.5% in average was anticipated for the high demand scenario; and 6.7% in average for the low demand scenario; accordingly, the peak demand and energy demand for the period till the year 2019 is shown in the Table 3-5.

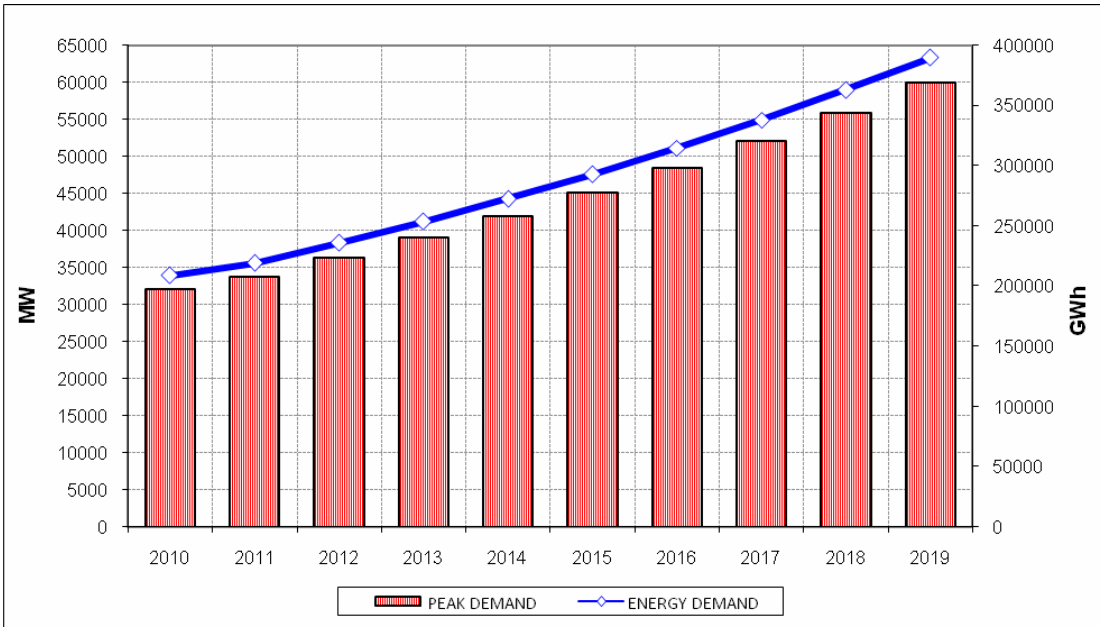
Table 3-5: Estimated Peak Demand and Energy Demand According to the High and Low Scenarios

YEAR	High Demand				Low Demand			
	Peak Demand		Energy Demand		Peak Demand		Energy Demand	
	MW	Increase (%)	GWh	Increase (%)	MW	Increase (%)	GWh	Increase (%)
2010	32170	7,7	209000	7,7	32170	7,7	209000	7,7
2011	33780	5,0	219478	5,0	33780	5,0	219478	5,0
2012	36314	7,5	235939	7,5	36043	6,7	234183	6,7
2013	39037	7,5	253634	7,5	38458	6,7	249873	6,7
2014	41965	7,5	272657	7,5	41035	6,7	266615	6,7
2015	45112	7,5	293106	7,5	43784	6,7	284478	6,7
2016	48450	7,4	314796	7,4	46674	6,6	303254	6,6
2017	52036	7,4	338091	7,4	49754	6,6	323268	6,6
2018	55886	7,4	363110	7,4	53038	6,6	344604	6,6
2019	60022	7,4	389980	7,4	56539	6,6	367348	6,6

Source: Generation Capacity Projection

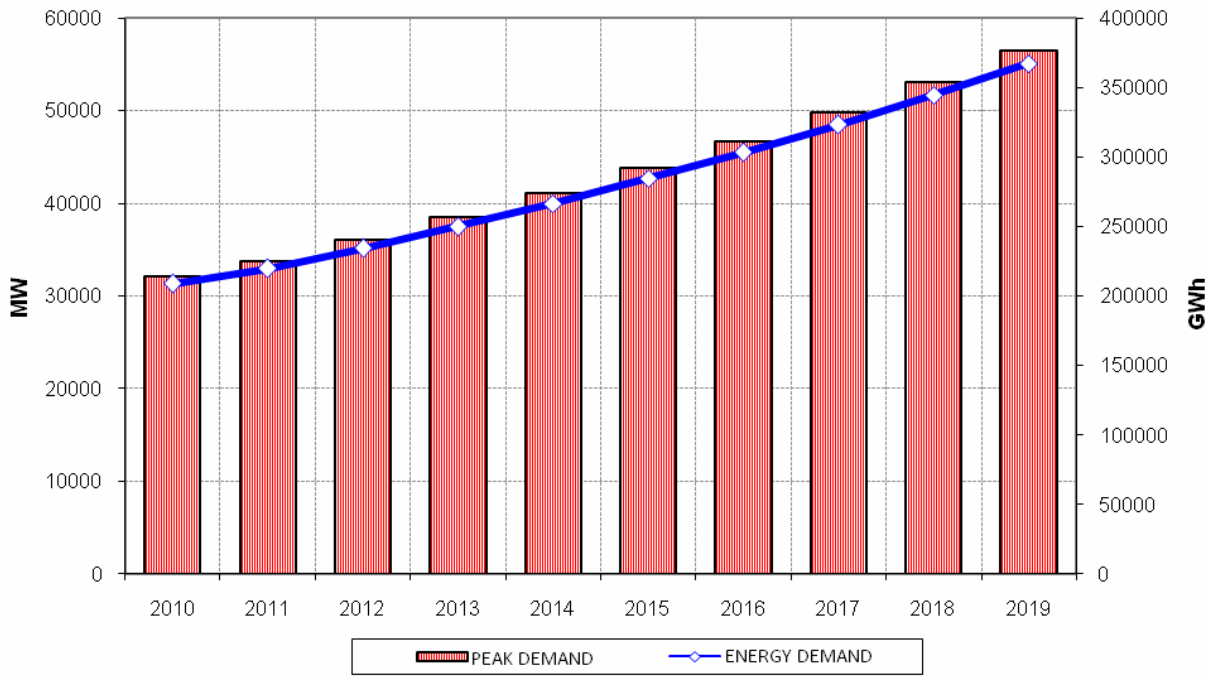
In line with the data above, the peak and energy demand for the high and low scenarios are shown in the Figures 3-16 and 3-17.

Figure 3-16: High Peak Demand and Energy Demand Scenario



Source: Generation Capacity Projection

Figure 3-17: Low Peak and Energy Demand Scenario



Source: Generation Capacity Projection

Apart these series of demand, as per two different scenarios (Scenarios 1-2) made by taking into consideration the production facilities which are present, obtained license, under construction and expected to put in operation on the specified dates as per the progress reports for the period January 2010 as presented to EMRA, the installed capacity and development of project and reliable production amount are shown in the Table 3-5 and Table 3-6.

Table 3-6: Reliable and Project Generations for Scenarios 1 - 2 (GWH)

Years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Scenario 1 – Reliable Production	233.021	247.578	262.009	284.040	292.192	299.367	305.599	304.900	305.740	305.515
Scenario 1 – Project Generation	270.998	287.173	304.215	325.119	331.819	339.445	346.388	345.168	346.017	345.791
Scenario 2 – Reliable Production	232.455	245.697	255.699	275.614	287.058	295.963	302.195	301.497	302.336	302.111
Scenario 2 – Project Generation	270.083	284.313	296.751	315.424	324.867	333.893	340.836	339.616	340.465	340.239

Source: Generation Capacity Projection

Table 3-7: Development of the Installed Capacity for Scenarios 1 – 2 (MW)

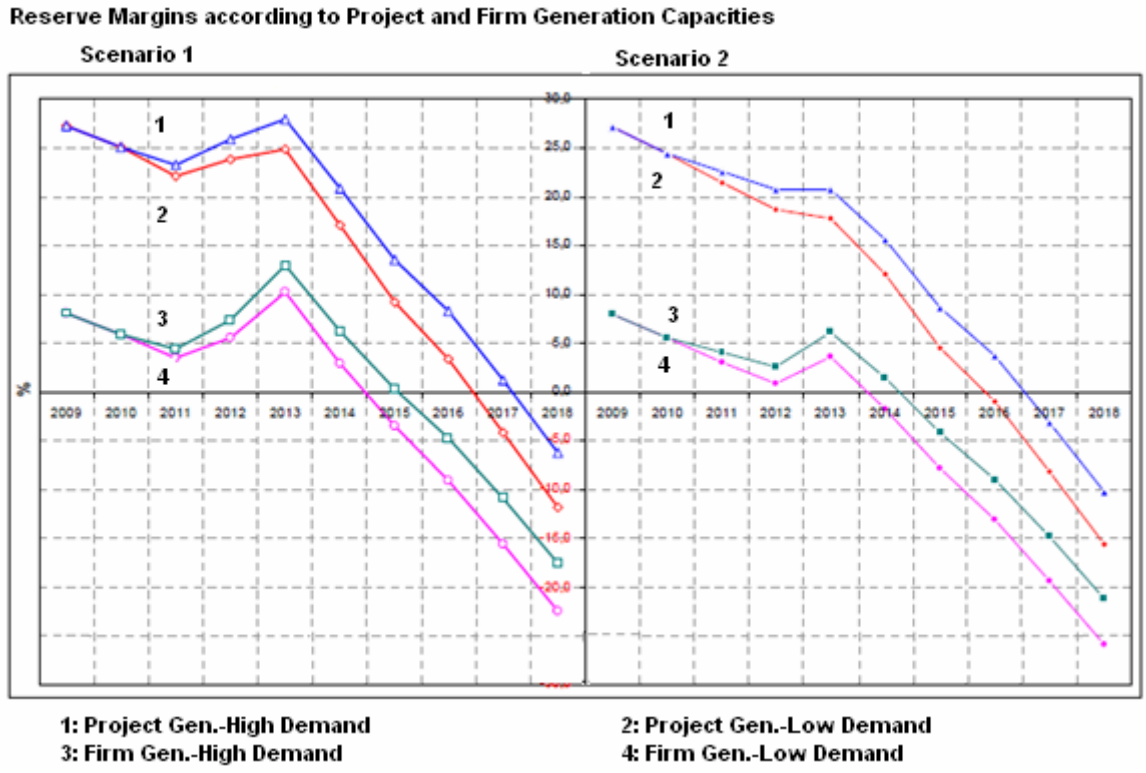
Years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Scenario 1 – Installed Capacity	49.087	51.807	55.415	58.172	59.700	60.900	61.700	61.700	61.700	61.700
Scenario 2 – Installed Capacity	48.545	50.664	53.386	56.497	58.062	59.262	60.062	60.062	60.062	60.062

Source: Generation Capacity Projection

According to this estimation, as shown in the Figure 3-18, energy deficit is expected:

- Under the Scenario 1:
  - In the year 2018 according to the project generation capacity and high demand series and in the year 2019 according to the low demand series;
  - In the year 2016 according to the reliable production capacity and high demand series and in 2017 according to the low demand series;
- Under the Scenario 2:
  - In the year 2018 according to the project generation capacity and high and low demand series;
  - In the year 2016 according to the reliable production capacity and high and low demand series.

Figure 3-18: Reserve Margins for the Scenarios 1 and 2

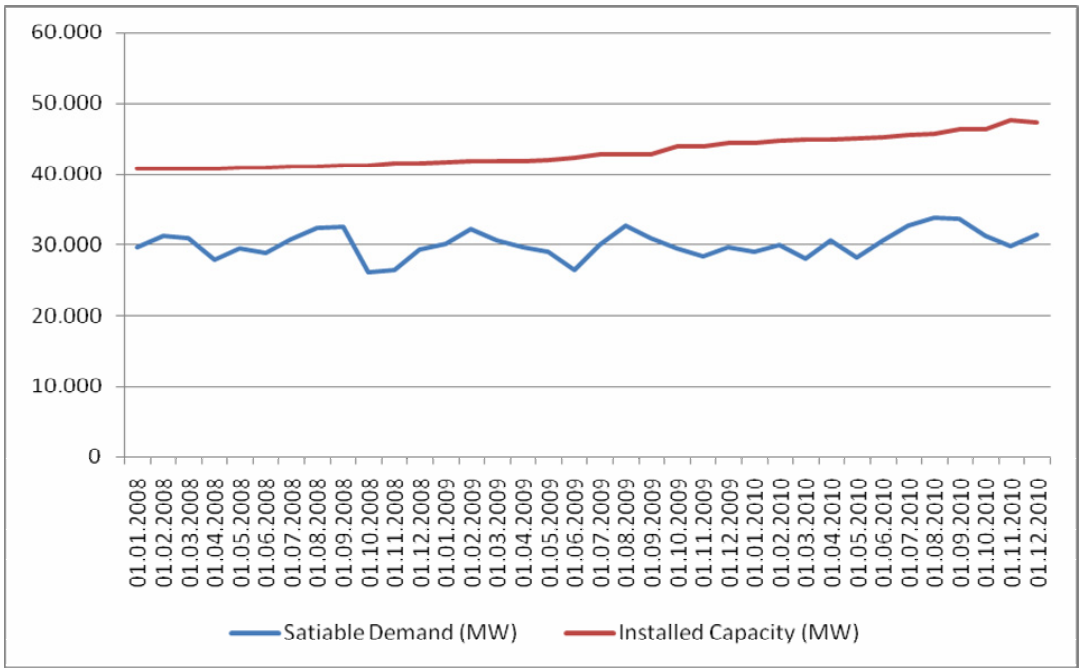


Source: Generation Capacity Projection

In this context, the electrical energy supply will not meet the increasing electrical energy demand in 2016 at the earliest and in 2019 at the latest. However, it should be duly considered that this evaluation has been made by taking into consideration the present production facilities and projects which obtained licenses and are under construction. The reason is that, change will occur in the estimation of the supply-demand balance when the facilities, which obtained, but not started to be constructed yet, as well as the projects which have not been licensed yet and have a significant installed capacity will put into operation in the course of time. With an optimistic consideration, if majority of the license applications made to EMRA to establish production plan results positively and the related plants are put into operation, it is likely not to encounter any problem in meeting the increasing demand in near future. However, it should also be taken into account that there may cause unexpected developments that may hurt the demand-supply balance, especially such as increase of the demand by much higher rate and reduction of water revenues of hydroelectric power plants.

Furthermore, when the existing capacity is compared with the coverable power, we see a significant difference between them. In other words, major part of the existing capacity cannot be used in covering the peak demand. It is considered that this difference stems from the old power plants with low available capacity and power plants generating energy based on the renewable energy resources.

Figure 3-19: Installed Capacity and Satiable Demand (MW)



Source: TEİAŞ

When the coverable demand in question is compared with the peak demand, it is seen that the actual reserve is much lower than the value calculated by the installed capacity. Considering the fact that the peak demand increased by 11.8% last year, it is likely that there will be serious problems in covering especially the peak demand. This situation may cause that the wholesale market prices may exceed the annual average value much and load-shedding especially in the summer period during which there is a peak demand.

In this context, short- and medium- term measures should be urgently taken for security of the supply. With the Law No. 5784 of 09/07/2008, the security of the supply has been included in the responsibility sphere of EMRA. Under the said law, it is accepted as a preferential approach that a capacity mechanism should be developed to make certain amount of capacity available in the electricity system. However, In case the electricity production investments prove to be insufficient in meeting the electrical energy demand and/or it is determined that the peak demand cannot be met by a certain reserve, some other solutions such as competition to be organized by the Ministry or establishment of new facilities by the public companies to provide new capacity have also been included.

4 DEVELOPMENT OF WHOLESALE MARKET STRUCTURE AND INSIGHTS

4.1 DEVELOPMENT OF THE ELECTRICITY MARKET CONCEPT

With the models that have been implemented since 1980s, it has been recognized by many country worldwide that a competitive market structure may be established where the electricity shall be treated as a commercial commodity. Similar to all other commodity markets, the supply-demand relation is the determinant of the electricity price in the electricity markets. However, the physical structure of the electricity requires it is treated differently from other commodities. At the base of these differences, there is the fact that the electrical energy cannot be stored. For this reason production and consumption should be spontaneously equalized all the time. Otherwise, a process starts which first appears as deviation of the electricity frequency and voltage level from the values established in the electricity system and may result in failure of the entire system. In this context, all electricity systems should procure a group of services, so called ancillary services, and keep a reserve capacity at a certain rate.

Looking at the historical development of the electricity system, we see different approaches and processes in Europe and USA. While operation of the electricity sector has been performed by the private sector subject to regulation since the invention of electricity, the activities of electricity sector have been considered as public service and performed by hand of the state in Europe. In general, the prices are determined below the actual cost and used as a medium for economic and social policies.

However, from the 1980s on, along with the advancements in the turbine technology and development of the information sector, the idea that competition is possible and economically efficient at the production has been adopted widespread. Finally, it has been recognized that the traditional vertical integrated structure of the sector can me separated and competition may be established at the production level to set up a structure where the network activities may be arranged Electricity market reforms put into implementation in many countries worldwide, particularly in USA, United Kingdom and South America.

4.2 DEVELOPMENT OF TURKISH ELECTRICITY MARKET MODEL

Along with the widespread trend of liberalization especially from the end of 1980s, the vertical integrated public companies of monopolistic nature in many countries were separated and the production and wholesale activities and, subsequently, retail sale activities started to be open to competition. A similar process occurred in our country as well. In this framework, in order to attract great amount of investment required in the field of electrical energy production, liberalization process was started at the production level. As the first step, in line with single purchaser/single seller model, establishment of power plants on the basis of Build-Operate-Transfer (BOT) and later on build-Operate (BO) was started. Turkish Electricity Administration (TEA) in the beginning and TEAS which was formed upon separation of TEA subsequently, as the single purchaser in the sector signed long-term purchase agreements with BOT and BO power plants.

A this model was far away from being a competitive structure and failed to reduce the costs sufficiently, in the process following the BOT and BO applications of the first period, TEA, vertical integrated public company, has been divided into two companies, (TEAS) as responsible for production and transmission and TETAS as responsible for distribution by taking into consideration the international application as well. However, necessary complementary steps could not be taken in order to form a competitive market structure and necessary privatization of the production could not be performed especially by separating transmission and distribution in order to prevent these two activities from being under the same public authority. And no significant development has occurred for formation of a legal and corporate structure to allow a fully competitive market structure in our country in the following period.

In line with the recommendations of the international organizations and in compliant with the applications worldwide, the Electricity Market Law (“Law”) No. 4628 was enacted in 2001 and, in this context, production, transmission and trading activities were legally separated from each other through re-structuring TEIAS especially for re-arranging and, subsequently, privatization of the sector. Meanwhile, Energy Market Regulatory Authority (EMRA) was formed in order to arrange the transmission and distribution activities, which have natural monopolistic quality, and establishment of a non-discriminatory access regime for the investors with respect to the transmission and distribution network.

As provided in the Law, preparations were started to establish a wholesale market for formation of infrastructure allowing competition in the market, especially in the fields of production and wholesale. In line with the developments worldwide, a gradual market design was formed in this process, as inspired from other applications worldwide. It is possible to examine development of the energy market specified by law in two stages.

4.3 PERIOD OF COMMUNIQUE ON PROCEDURES AND PRINCIPLES FOR FINANCIAL SETTLEMENT IN THE ELECTRICITY MARKET

Entered into effect on the date of 30.3.2003, the Communiqué on Procedures and Principles Concerning Financial Settlement in the Electricity Market ("Communiqué") was revised in line with the experience gained during the virtual application process of eight months, and started to be actually applied in December 2003. In line with it, Market Financial Settlement Center (MFSC), undertaking the task of market operation) was re-structured as an independent department in the body of TEIAS on the date of 20.07.2003. The financial settlement applications under the Communiqué, which formed the first step of the efforts in establishing the electricity market, covers the period December 2003 – July 2006. In the scope of these applications:

- Only the private sector organizations were subject to the Communiqué.
- Notices of bilateral agreements containing amount of electrical energy sale to the consumers and meter information about the consumers for the respective month are sent to MFSC by the participant companies at the beginning of each month.
- At the end of the month, meter reading information of the producers and consumers as notified to MFSC by TEIAS and distribution companies have been compared with the notices of the bilateral agreements.
- TETAS has charged for the deficient amounts as calculated by obligations of a market participant resulting from their contracts by the consumers based on the up-regulation tariffs approved by EMRA:

- up-regulationAnd to the producers giving excess energy, TETAS has made payment on the up-regulation tariffs approved by the Authority.

4.4 ELECTRICITY MARKET BALANCING AND SETTLEMENT REGULATION (BSR) PERIOD

We may divide the period in which the Balancing and Settlement Regulation in the Turkish electricity market entered into force under two headings, namely, Temporary BSR period ad Final BSR period.

4.4.1 TEMPORARIY BSR PERIOD (T-BSR)

During the market applications under the Communiqué, as per "the Balancing and Settlement Regulation: to be prepared by the Turkish Electricity Transmission Corporation as well as the retailed procedures and principles for real-time balancing of the electrical energy and/or capacity purchase-sale and performance of the financial settlement under the agreements made between the parties operating in the market pursuant to the provisions of the transmission license" and in accordance with the mission of preparation of the said regulation given to TEIAS and mission of approval to the Authority, TEIAS started its efforts to prepare BSR early in 2004. As a result of the first part of these efforts, the first main version (T-BSR) of BSR was prepared and published in the Official Journal No. 25632 of November 3, 2004 and entered into force.

Although T-BSR, which is considered as a stage in the path of the final market structure and related legislation, entered into effect at the end of 2004 and related metering and data process infrastructure has been ready, it could put into implementation in august 2006, with a delay of 1.5 years with all its cash factors. Start of this process could have been possible as a result of the partial failure of the system in the night of 0107.2006. The said situation stemmed from the fact that the private sector companies could not cover their costs under the procedures of Communiqué and avoided to carry out production.

T-BSR has been prepared by taking into consideration the Electricity Energy Sector Reform, Privatization Strategy Document and the market system infrastructure and preparatory status of the participants as of the date of its issue. However, certain market characteristics were left to the final BSR. Under the T-BSR lies the principle of treatment and settlement of the results of the instructions of the balancing mechanism with the quantities of the bilateral agreements made by the participants. In the framework of these regulations:

- Production facilities have prepared their own Daily Production Programs;

- Production facilities have presented their price offers for up-regulation and down-regulation to operate at a load above or below the load value specified in their own schedules;

- Up-regulation and down-regulation offers were accepted by National Load Despatch Center (NLDC) in order to ensure the production facilities to operate at load above or below the one they specified in their own schedules and, thus, keep the system in balance;

- Contractual values (the accepted offers of up-regulation and down-regulation are considered as one contract individually) and imbalances between the actual injection-withdrawal values (energy deficit or energy surplus) as well as payments related to the accepted offers of up-regulation and down-regulation were settled by Market Financial Settlement Center (MFSC) by the end of the month;

- System imbalances (energy deficit or surplus) have been settled at a singular system imbalance price for each settlement period.

Accordingly, real-time imbalances are eliminated by taking into consideration the down-regulation and up-regulation price offers, technical parameters and system constraints, and they were monthly settled at the system imbalance prices (SIP/there are three SIPs for three periods, namely, Night, Day and Peak) which are calculated with the average of the system hourly marginal prices occurred for up-regulation and down-regulation.

4.4.2 FINAL BSR PERIOD (F-BSK)

Upon publication of T-BSR, studies were started for final BSR (F-BSR). Among the studies made for F-BSR, the necessary preparations during the effective period of T-BSR were completed and studies were conducted to form infrastructure to achieve the following achievements and, meanwhile, preparations have been made for operation of participation process necessary for preparation of a new BSR process. In this process, a draft was drawn up as a result of meetings made with the market participants and the said draft then was discussed with all market participants to prepare the final version of the draft. New BSR approved by the Board was published in the Official

Journal of 14.04.2009 and actual implementation started as a result of virtual implementation made till 01.12.2009.

It is considered that F-BSR has created the model which will provide the most appropriate environment to have a market structure for achievement of full competition as specified in the Electricity Market Law No. 4628. The model, formed in accordance with the market rules established in the framework of F-BSR, has the following most important characteristics:

a. Day-ahead balancing and real-time balancing stages were separated from each other:

Day-ahead balancing shall be executed first in the scope of the Day-Ahead Market following of the Day-Ahead Planning and then upon completion of necessary preparations. That date when Day-Ahead Market shall start to operate has been fixed by the Board Decree as 01.05.2011. Day-Ahead Market shall bear quality of an organized electricity market where the existing demand and supply in the country is traded. At the intersection point of the supply and demand curves formed by the purchase and sale offers given in this market, a market price shall occur reflecting real value of the electricity and it will be announced countrywide.

It is expected that the prices to occur in the Day-Ahead Market shall ensure use of the current capacity in short term in the most efficient way and will indicate the investors the most accurate signals with respect to investment of production facilities in the long term. It is considered that such price shall also be a reference price for physical and financial agreements. In the framework of the Day-Ahead Market, the consumers shall also find opportunity to participate in the Day-Ahead Market through their suppliers. In this way, it is anticipated that at the hours when the price of the Day-Ahead Market price shall rise, the consumers shall offer to the market the energy they had previously purchased, thus resulting price flexibility on the demand side. And it is considered that this will change low flexibility of price, which is characteristically seen as weak side of the electricity markets.

The concept of balancing responsibility has been brought in order to prevent the market participants from falling into imbalance real-time and have a balanced purchase/production-sale/withdrawal balance by the closing hour of the Day-Ahead Market. And this encourages execution of long-term bilateral agreements between the producers and suppliers, which is expected to create the main factor of the market.

b. Opportunity of given offer on the portfolios: :

In the Day-Ahead Market, provided the market participants fulfil their own responsibilities of balancing, they are granted with right of free trading and thus have the opportunity of optimization for their physical portfolios consisting of production and consumption. Likewise, the market participants may come together and create a group responsible for the balancing and, in this way, they may reduce total imbalances on group basis.

Finally, along with the basic changes mentioned above, opportunity is given to the system operator to deal with the system constraints at the stage of day-ahead balancing to tackle possible system constraints in real-time.

4.4.2.1 BALANCING

Balancing activities are consisted of “Day-Ahead Balancing” and “Real Time Balancing”. Day ahead balancing is performed in accordance with Day-Ahead Market, and the real-time balancing is performed in accordance with the Balancing Power Market and rules defined in this market.

Real –time balancing is activities performed by NLDC to simultaneously keep in balance supply and demand of the system’s active electrical energy. These activities include increase of the productions of the balancing units through acceptance of the up-regulation offers; reduction of the productions of the balancing units through acceptance of the down-regulation offers; provision of the tertiary reserve necessary for frequency control and provision of the primary and secondary frequency control services meeting the technical characteristics in the Electricity Market Network Regulation in accordance with the Electricity Market Ancillary Services Regulation.

Participants of the balancing power market are consisted of legal persons. Participating engaging with the production activity should have minimum one balancing unit registered for its name in order that it may become participant of the balancing system. The following production facilities are exempt from being balancing unit.

a) Hydroelectric production facilities of channel or river type,

b) Production facilities basing on wind energy,

c) Production facilities basing on solar energy,

d) Production facilities basing on wave energy,

e) Production facilities basing of tidal energy,

f) Cogeneration facilities,

g) Geothermal production facilities.

However, these production facilities may participate in the balancing activity if it is requested by the participant and found proper by TEİAŞ-NLDC.

4.4.2.2 ANCILLARY SERVICES

Ancillary services have been regulated and put into effect as per the Electricity Market Ancillary Services Regulation published by our Authority. Ancillary services have an important role in all designs of the electricity market as they are integrated and interactive with the energy market. As it is known, because of the specific qualities of the electricity, production and consumption should be balanced spontaneously in the electricity system. In this context, the power plants operated in the scope of the ancillary services give the first response in case of any imbalance in the system. In the event of any deviation in the production and consumption balance, the automatic control systems shall activate firstly the primary frequency control reserve which is kept ready in the system to be engaged at any moment, and then the secondary frequency control reserve in order to restore the balance.

While the ancillary services are procured from the system users in many countries compulsorily and without having to pay any fee, the principle recognized in our country is to pay a fee to the supplier for each ancillary service provided to the system operator in accordance with the accepted principles of ancillary service supply. Accordingly, it has been adopted that, in consideration of the primary frequency control reserve provided, a cost of opportunity basing on average of the system prices in the previous period and offers given should be covered; and, as to the secondary frequency control reserve service, a payment should be made to the supplier on the actual cost of opportunity.

Supply method of the primary and secondary frequency control reserves, which are mostly relevant with the balancing mechanism among the ancillary services does not require a separate market or tender for these services and it is required that the offers already given by these suppliers

to the balancing power market should be used. As it is, it can hardly be said that there is a market or competitive structure for provision of the primary and secondary frequency control reserves. The exemption of it is that transfer of liability is allowed between the producers that are liable to provide primary frequency control reserve under the legislation. Thus, a basis is provided for formation of a bilateral contract price between the producers that reflects the actual value of the frequency control reserve. In such case, the said price gives its value formed upon intersection of the actual supply and demand, thus providing price signal to the investors and consumers, which is considered as one of the most important factors expected from a market.

Besides the primary and secondary frequency control reserve, Electricity Market Ancillary Services Regulation allows TEIAS as system operator to make a tender for purpose of standby reserves and regional capacity lease. These ancillary services have not started to be used by TEIAS yet.

5 WHOLESALE MARKET

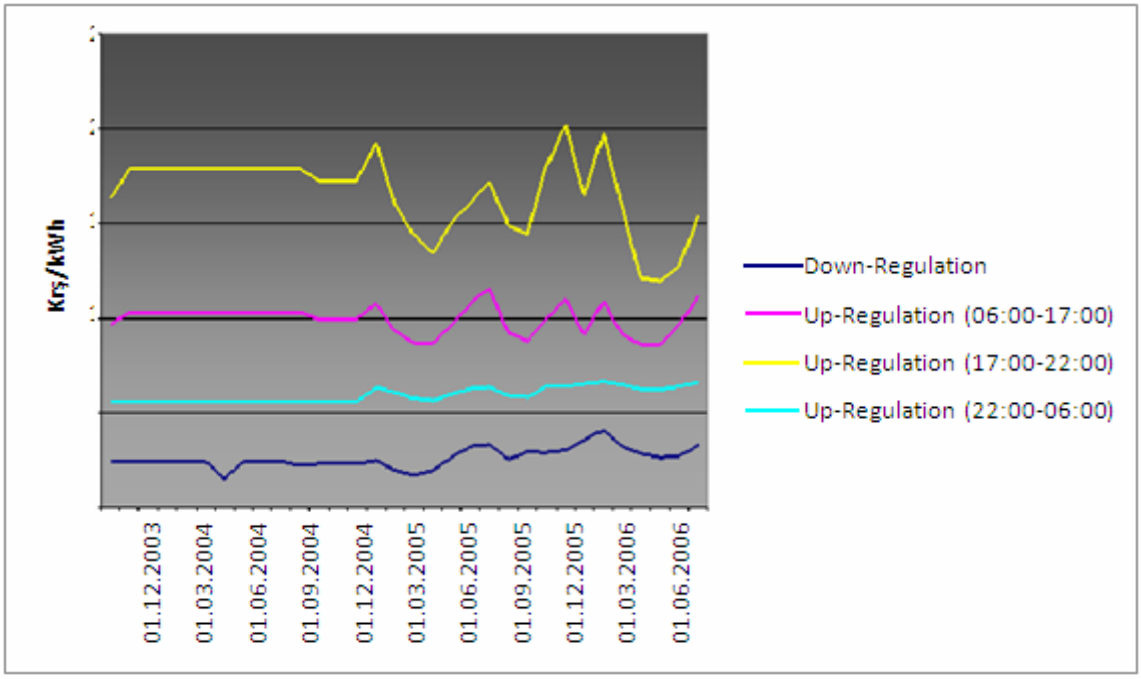
This section discloses, via official data, the results obtained for the periods during which the Communiqué concerning Procedures and Principles for Financial Settlement in the Electricity Market and BSR are applicable. Process of the wholesale market after introduction of the Electricity Market Law is studied under the main heading of the communiqué period and BRS period.

5.1 IMPLEMENTATION IN THE SCOPE OF COMMUNIQUE

The first financial settlement practice as per the provisions of the communiqué was performed (by MFSC) for December 2003. Total 32 months, starting from this date to August 1, 2006, on which it entered into force of the "Communiqué for Revocation of the Communiqué on Procedures and Principles for Financial Settlement in the Electricity Market" after published in the Official Journal No. 26240 of July 26, 2006, including the latest period of July 2006, were subject to financial settlement under the Communiqué.

Up-regulation and down-regulation prices for this period as approved by the Board are shown below.

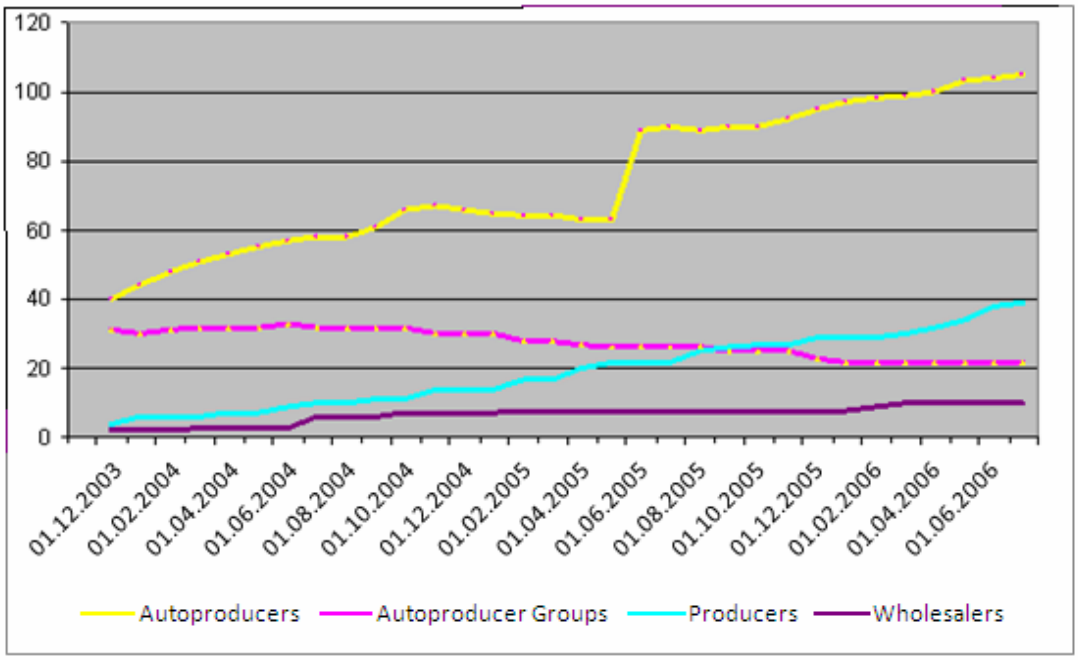
Figure 5-1: TETAŞ,Up-regulation and Down-regulation Prices



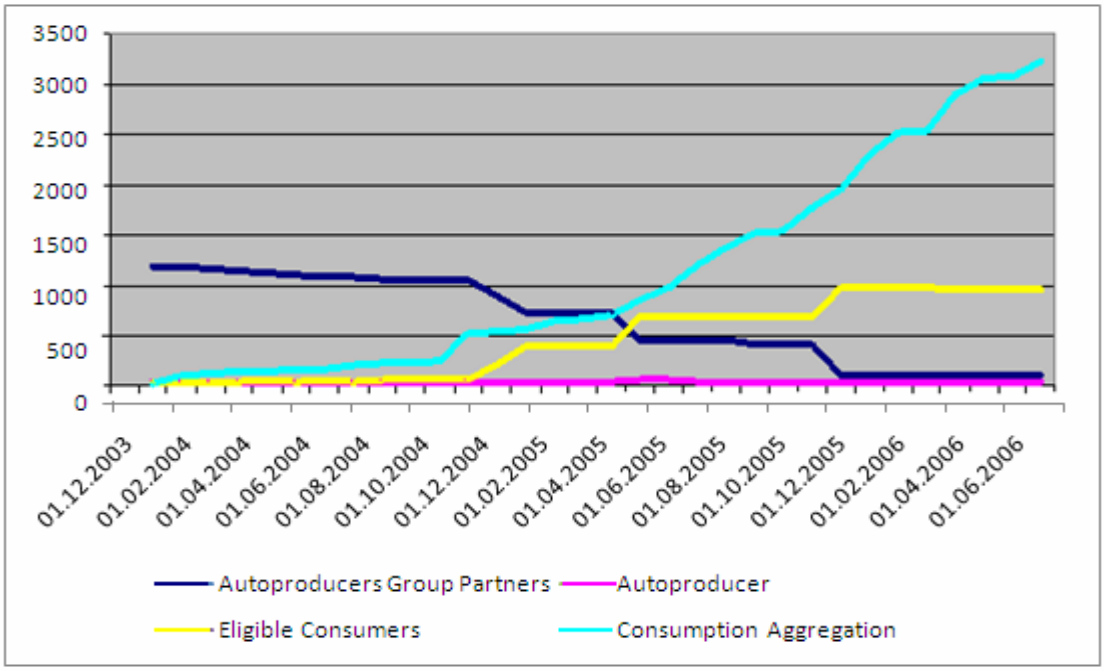
Source: EMRA

Persons to be accepted as participants under the article 6 of the Communiqué include legal persons having license to engage with production activity and legal persons having retail and wholesale license to make sale to the eligible consumers. In this context, while number of legal and real persons registered with MFSC was 77 and consumers 1290 in number in the period of December 2003, it reached to 176 and 4324 in July 2006 (including consumers unifying demand), respectively.

Figure 5-2: Number of Real and Legal Persons Registered with MFSC in the Communiqué Period



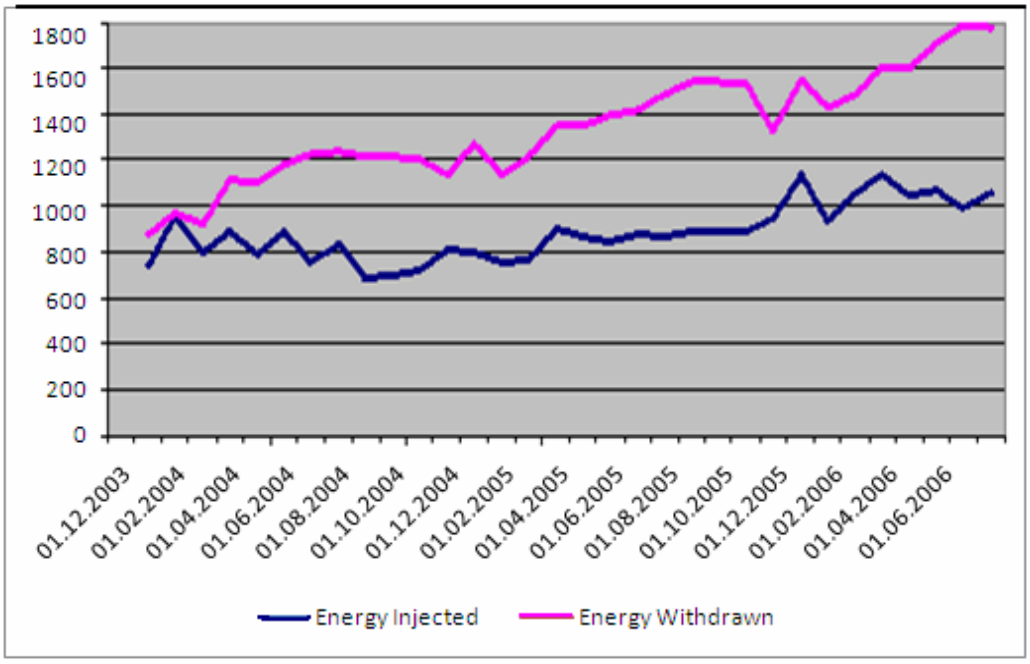
Source: MFSC data



Source: MFSC data

Total electrical energy given to the system in one month at the production facilities registered with MFSC was about 750 million kWh, reaching to 1 billion kWh at the end of the period; on the other hand, electrical energy withdrawn from the system was about 900 million kWh, reaching to 1.8 billion kWh at the end of the period.

Figure 5-3: Energy Amount Injected to and Withdrawn from the Electricity System (GWh)



Source: MFSC data

5.2 IMPLEMENTATION IN THE CONTEXT OF BALANCING AND SETTLEMENT REGULATION

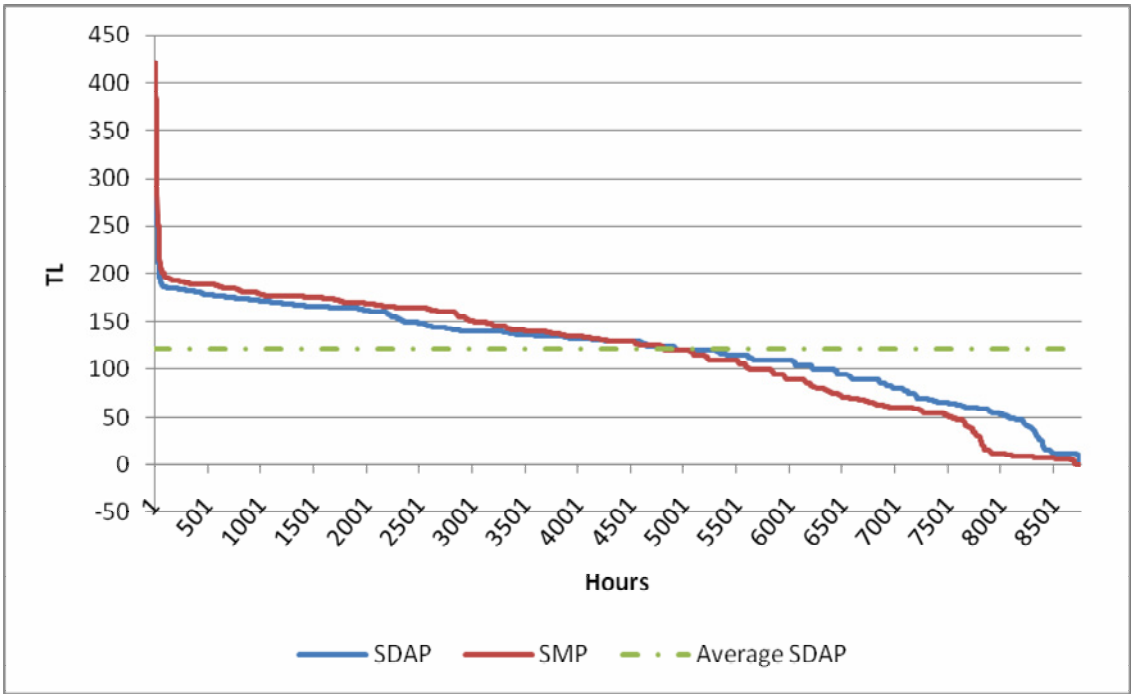
5.2.1 FINAL BSR PERIOD (F-BSK)

F-BSK practice is consisted of two markets, namely, Day-Ahead Planning (DAP) and Balancing Power Market (BPM). Regulations about these two practices take place in BSR. IN the year 2011, the Day-Ahead Planning shall become with Day-Ahead Market upon a variety of changes to be made.

5.2.1.1 PRICES

In 2010, the price curves indicating prices evolved as DAP and BPM are shown below. As it is indicated in the following shape, both market price rose above 400 TL/MWh and went down to 0 TL/MWh. However, number of hours when System Marginal Price (SMP) and System Day-Ahead Price (SDAP) rose above 200 TL/MWh is not high, corresponding to a very limited range within the scale of annual time. In other words, the price was above 200 TL /MWh in a very limited range of time. And in about 8000 hours in the year, price has realized between 50 TL /MWh and 200 TL /MWh. As shown below it is seen that the market prices is distributed evenly.

Figure 5-4: Price Curves for DAP and BPM in 2010 (TL/MWh)



Source: TEİAŞ

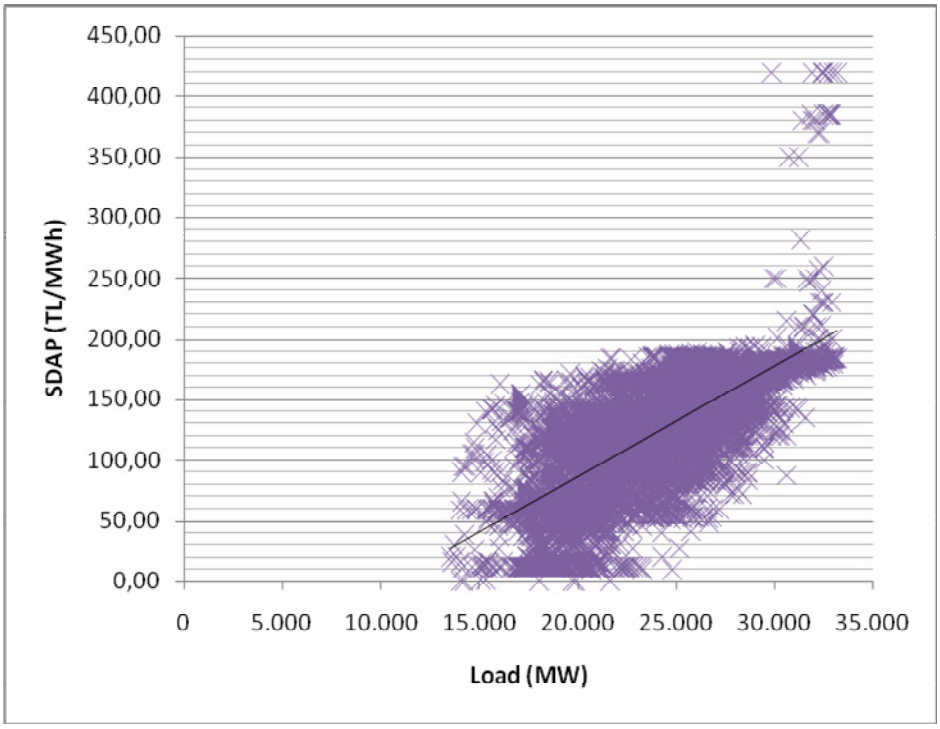
What is noticeable in the figure above is that SMP curve has a higher curve than that of SDAP. It is considered that it stems from structure of DAP and BPM. Basic purpose of DAP is to eliminate day-ahead predictable imbalances of the market participants, allowing participation of all plants as per the current legislature. On the other hand, basic objective of BPM is instantaneous balancing of the system close to the real time; and certain types of plants which will not render balancing service and the plants that cannot perform down-regulation and up-regulation of 10 MWh within 15 minutes have not been allowed. For this reason, supply curve evolved in BPM has a greater curve. The figure

also includes average price realized in DAP. Average price realized as 121,6 TL /MWh and number of hours during which SDAP has realized around 4800 hours above.

When compared with load duration curve in the Figure 3-15, the price curves shown in the Figure 5-4 show a much sharper rise in the end points of the figure. It is considered that it stems from the fact that when the demand increases very high, the reserve capacity reduces and thus expensive plants are also engaged. However, this behaviour of the prices gives information to the market about capacity constraints, giving signal for new investments.

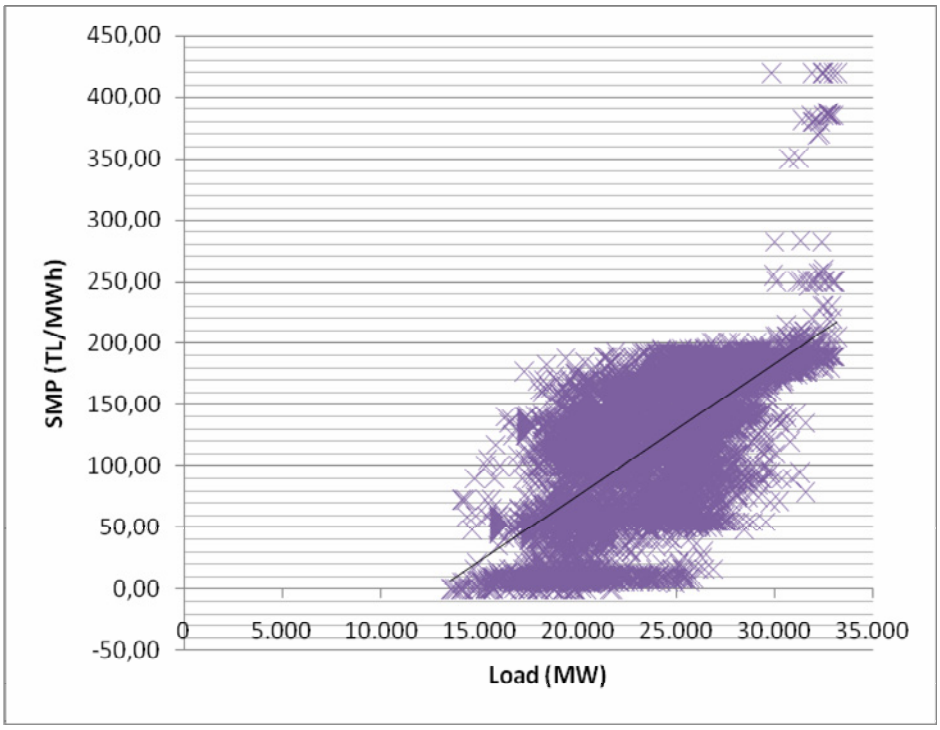
In the following figures, relations of SDAP and SMP with the hourly load are shown. As shown in the figure, both prices rise together with the load. Market produces healthy price signals, that is, basing on supply/demand relation. And accordingly, the highest price in both markets, 420 TL /MWh, occurred in the time range during which the annual peak demand has occurred when the load was highest.

Figure 5-5: Relation of SDAP with Hourly Load (TL/MWh)



Source: TEİAŞ - MFSC data

Figure 5-6: Relation of SMP with Hourly Load (TL/MWh)

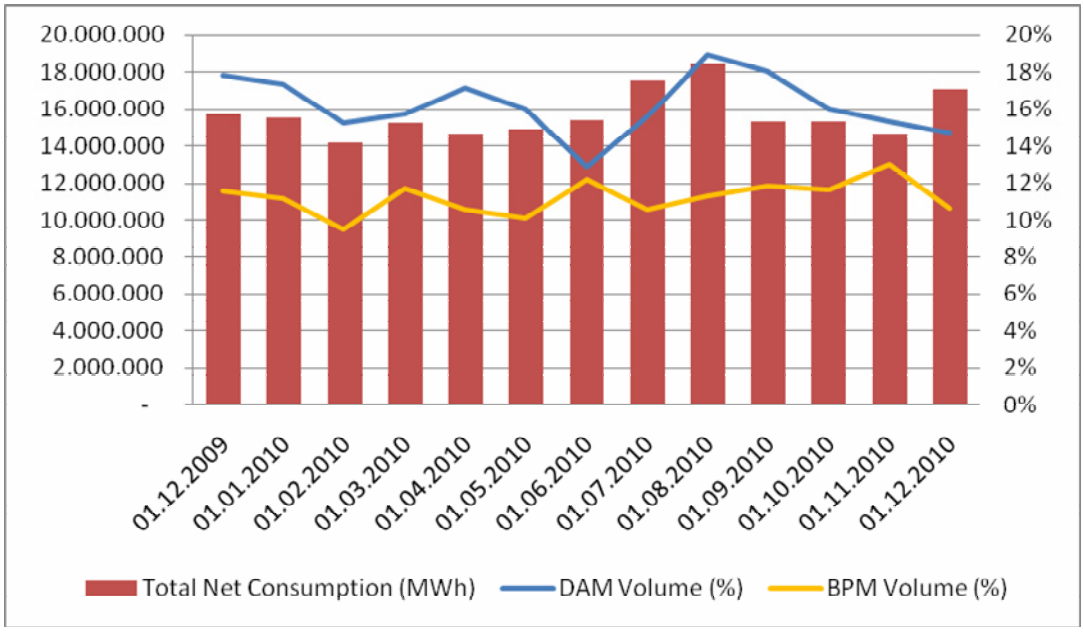


Source: TEİAŞ- MFSC data

5.2.1.2 TRANSACTION VOLUME

One of the significant characteristics of a market operating properly is availability of sufficient market volume. Availability of sufficient volume in the market is important for healthy price formation and generation of price signal for wholesale market. Although there is no clear criterion in this respect, it is considered that the total electricity market volume should en general be minimum in the range of 5% and 15% of DAP volume in a healthy electricity market.

Figure 5-7: DAM and BPM Volumes (MWh)



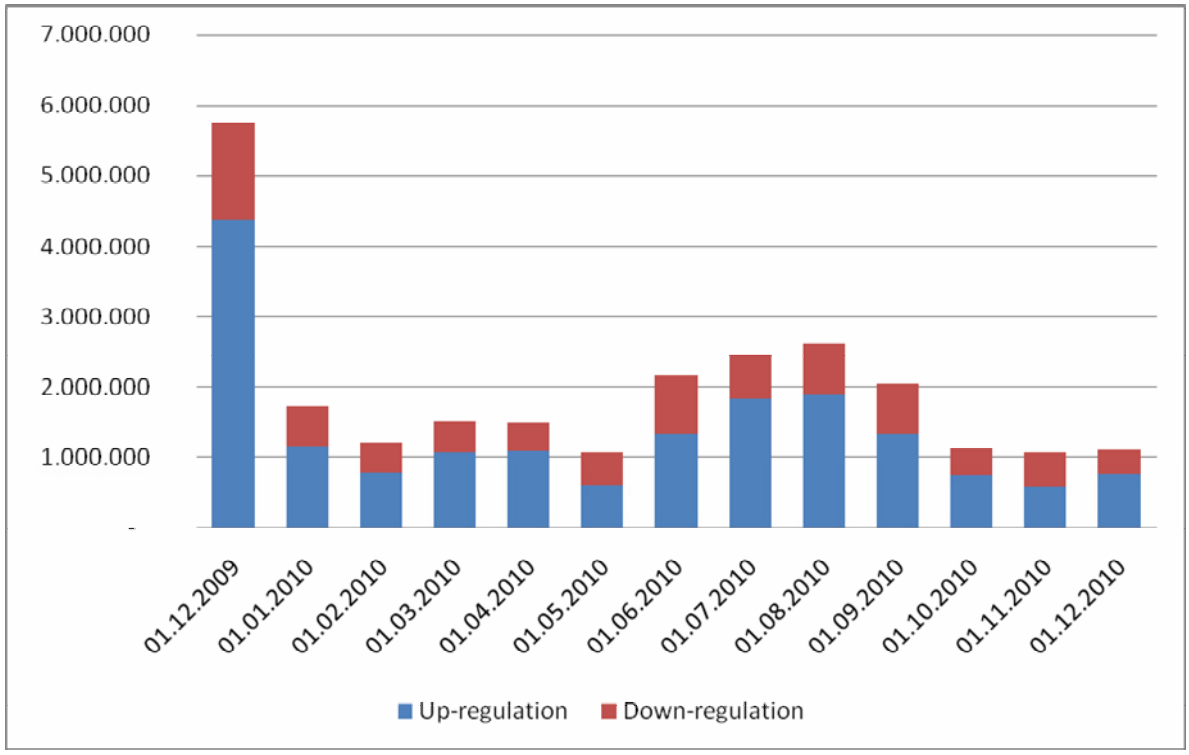
Source: TEİAŞ- MFSC data

In the figure above, DAP and BPM volumes are shown together with Quantity of Settlement Withdrawal (QSW). As shown in the figure, the market volume traded in DAP is above BPM. With the change in the tariff mechanism made in early 2011, it is anticipated that additional costs caused by imbalances of the distribution companies holding retail sale license tariff of which is subject to regulation is multiplied and, accordingly, BPM volume will reduce and DAP volume will increase in the future period. Both market volumes are affected by QSW and this effect is more noticeable for DAP. Total volume traded in the said markets varies proportionally in the range of 20% and 30%.

5.2.1.3 OFFERS PRESENTED TO DAP AND BPM

The following figure shows total volumes of the up-regulation and down-regulation instructions generated in DAP and BPM. While the total volume realized very high in December 2009, the first month when the Day-Ahead Planning was introduced, it reduced down to about one third of it starting from early 2010 and continued at this level.

Figure 5-8: Total Volume of Up-regulation and Up-regulation Instructions in DAP and BPM (MWh)

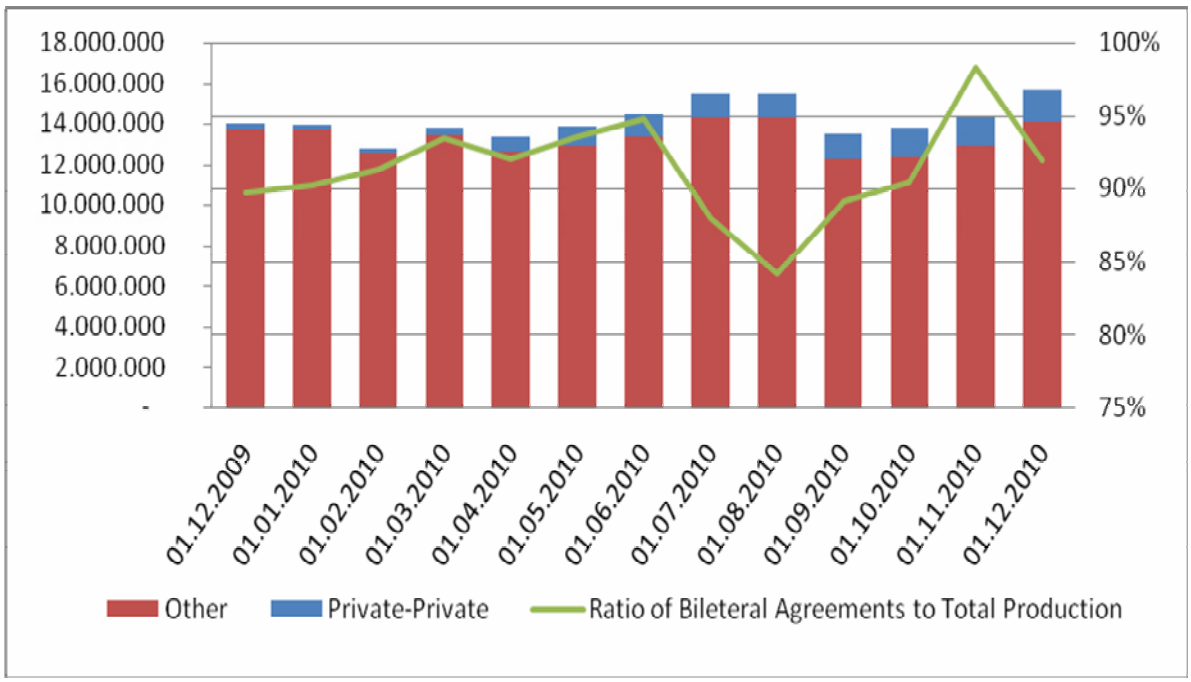


Source: TEİAŞ- MFSC data

5.2.1.4 BILATERAL AGREEMENTS MARKET

Another important factor for proper operation of a market is formation of bilateral agreements market. While bilateral agreements have a more stable price structure compared to BPM and DAP, it provides protection for the producers and consumers against variable prices. Furthermore, long-term bilateral agreements reduce market introduction risk and obstacle for new investments.

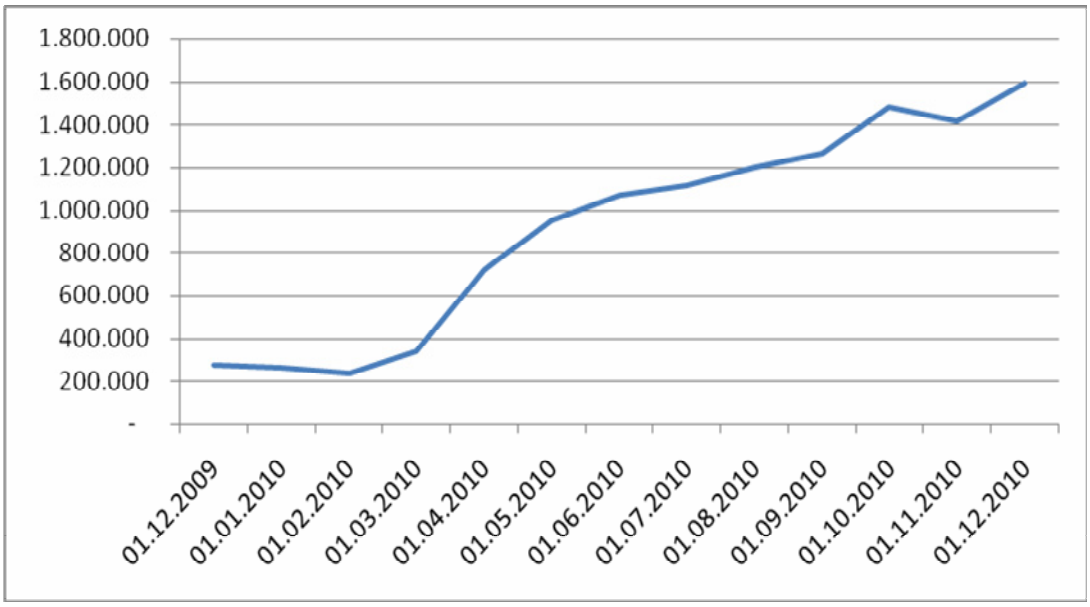
Figure 5-9: Development of Bilateral Agreement (MWh)



Source: TEİAŞ- MFSC data

The figure above shows bilateral agreement volumes in diffracted way. As it is seen, although total number of bilateral agreements in the market does not show any change, the monthly average is about 14 TWh. Very small part of this volume is consisted of bilateral agreements signed by the private parties among themselves. However, as it is shown by the figure above, this rate is gradually increasing. Ratio of the bilateral agreements to the total production reached to 400% - 500% in the high liquidity markets especially containing derivatives market due to multiple exchanges of them. This ratio hovers at a level of 84-98% in 2010.

Figure 5-10: Development of Private-Private Bilateral Agreements (MWh)

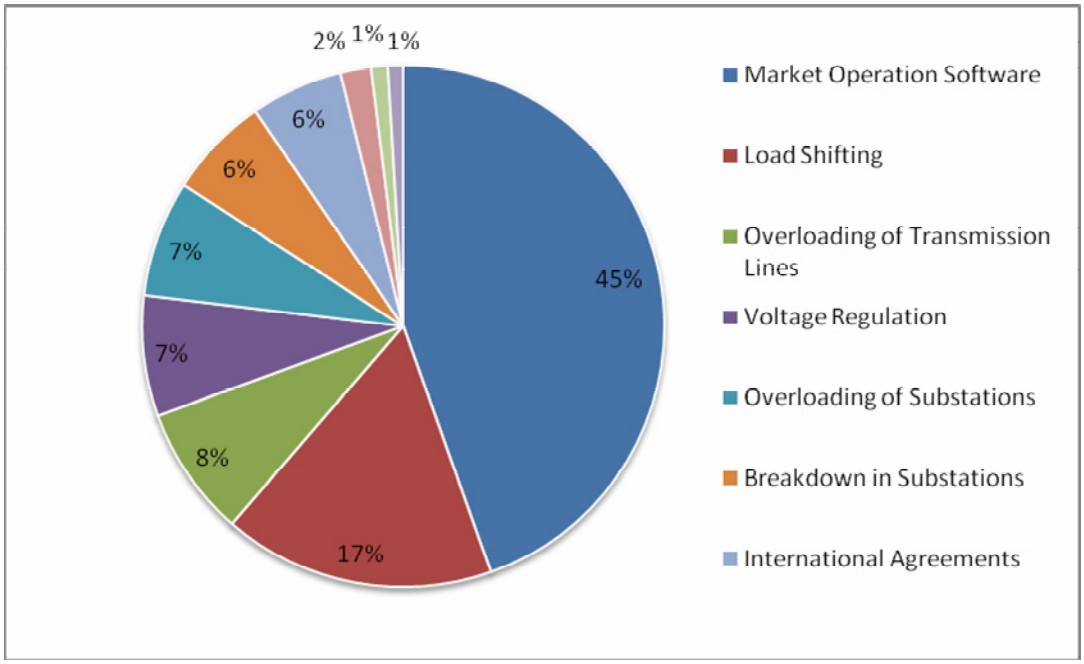


Source: TEİAŞ- MFSC data

5.2.1.5 SYSTEM CONSTRAINTS

Another important factor concerning operation of the market is constraint costs. The phrase "constraint costs" expresses extra costs caused by use of more expensive resources for energy generation due to technical constraints in the system. In our country, the constraint costs are socialized by reflecting them on all consumers in proportion with their consumption. However, in the framework of BSR, there is also a regulation allowing management of the constraints and costs of constraints by dividing them different regions of Turkish electricity market by market divisions.

Figure 5-11: Additional Costs due to System Constraints (%)

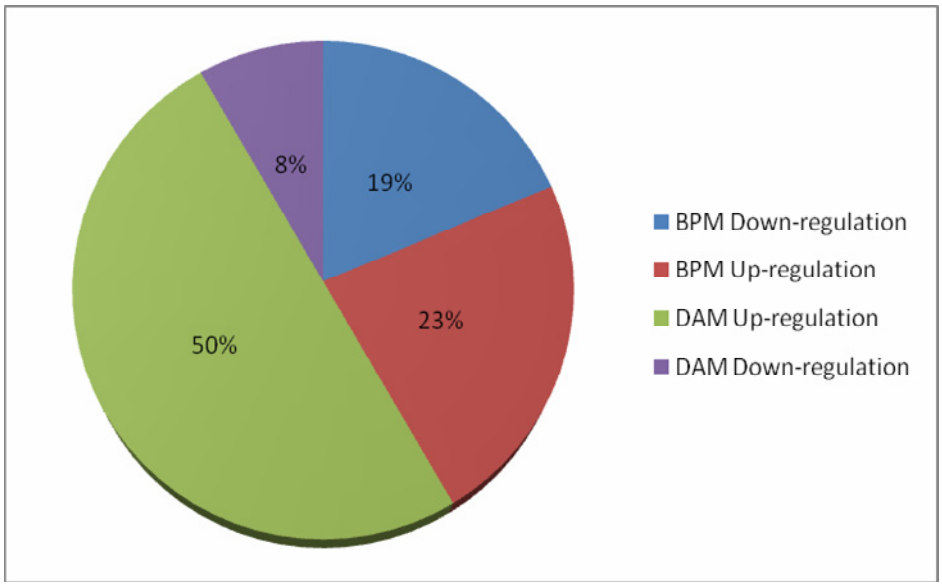


Source: TEİAŞ- MFSC data

As of the constraints by 2010, the total cost is 952 million TL. As shown in the Figure 5-11 above, the most important item of the constraint costs are consisted of instructions generated for removal of the constraints by Market Management System software that ensures market operation. This amount accounts for about half of the total constraint extra costs. It is followed by the costs concerning in-hour load switching and overload of communication line.

The Figure 5-12 below shows rates of the constraint extra costs As it is shown, 58% of the said costs is generated as a result of instructions given in DAP. On the other hand, when the costs are examined on basis of type of instructions, it is seen that 73% of the extra costs is consisted ofup-regulation instructions.

Figure 5-12: Up-regulation and Down-regulation Additional Costs Rates in BPM and DAP (%)

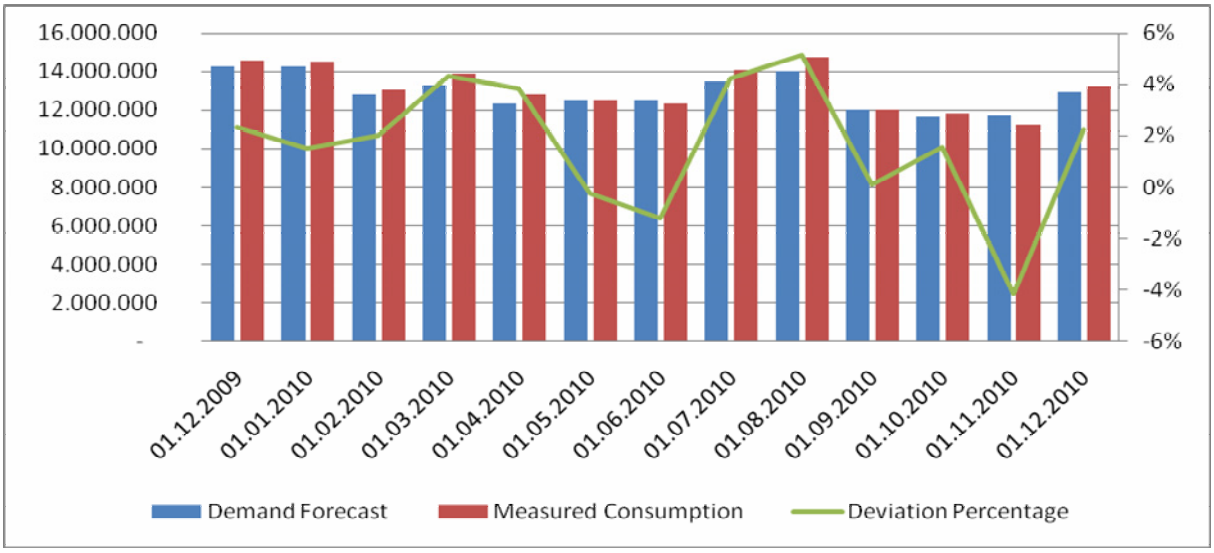


Source: TEİAŞ- MFSC data

5.2.1.6 DISTRIBUTION COMPANIES

On the consumption part, one of the most important players operating in DAP is distribution companies. The following figure shows quantity of total bilateral agreements signed by the distribution companies together with estimated consumption. As shown in the figure, quantity of bilateral agreements varies between 84% and 96% of the consumption quantity. Although there is an increasing trend in meeting of the consumption by the bilateral agreement, the said rate reduced in the summer months and rises in the winter months again.

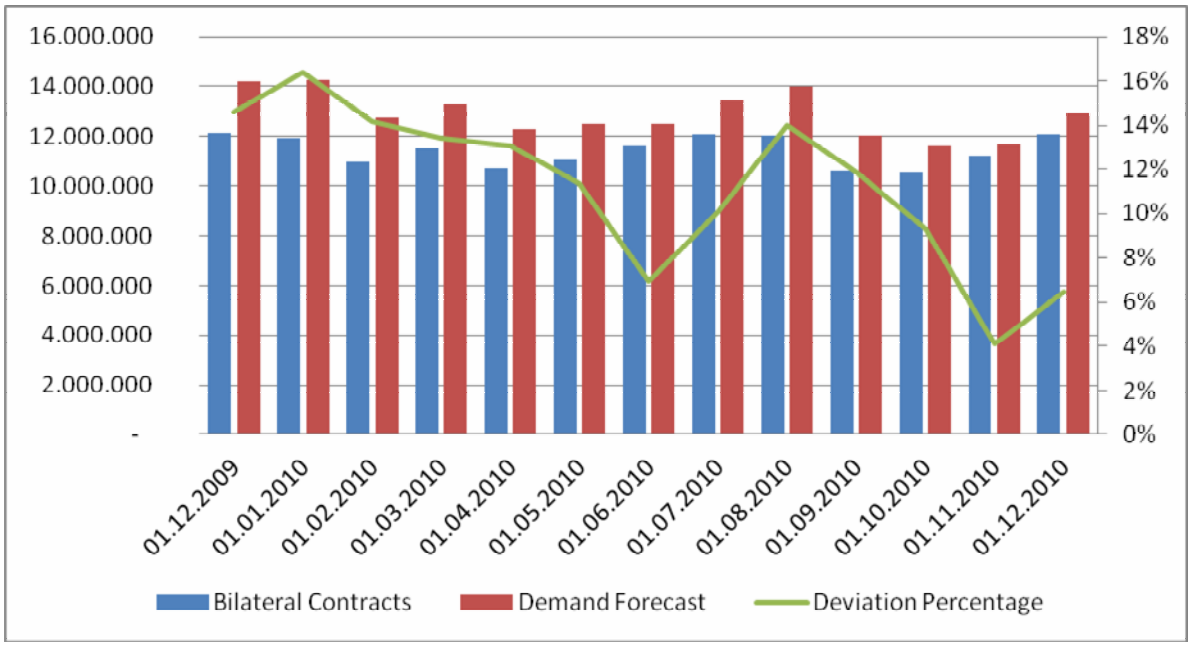
Figure 5-13: Demand Forecasts and Measured Consumption of Distribution Companies (MWh)



Source: TEİAŞ- MFSC data

The following figure shows monthly real-time total consumption and estimated consumption of the distribution companies.

Figure 5-14: Bilateral Contracts and Demand Forecasts (MWh)



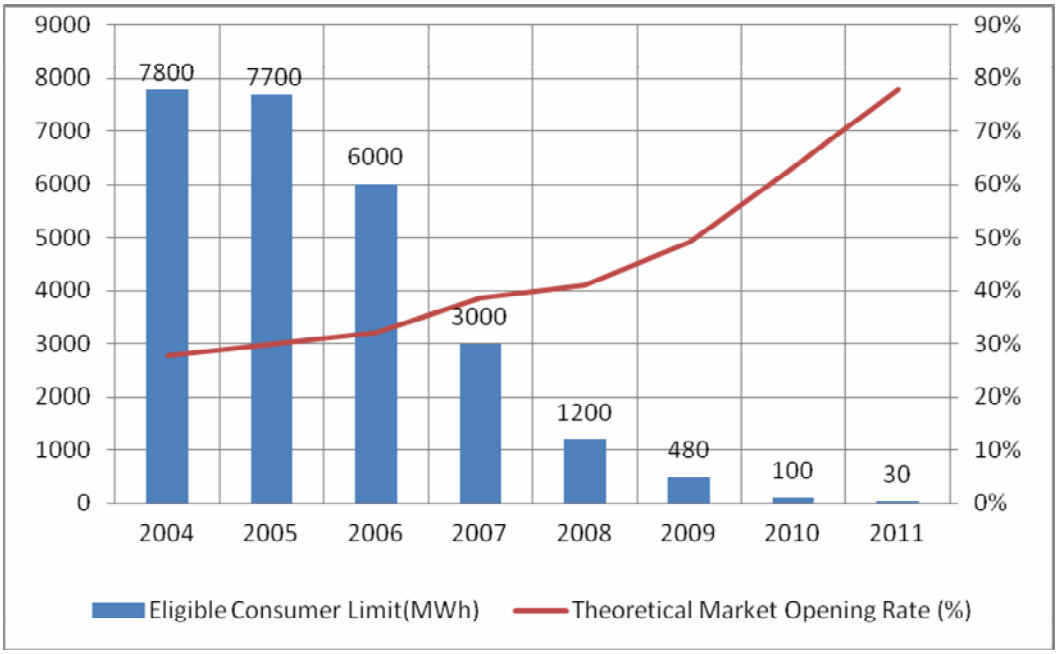
Source: TEİAŞ- MFSC data

As shown in the figure, deviation rate of consumption estimation via the monthly total values varies by ±4%.

5.3 DEVELOPMENT OF COMPETITION

The target in the Turkish electricity market constitutes a market basing on bilateral agreements and DAP, completely open to competition. For this purpose, the eligible consumer limit is reduced each year, allowing the consumers to freely determine their suppliers by bilateral agreements. Eligible Consumer limits determined for the year 2003-2005 and the corresponding theoretical market opening ratios are shown in the figure below.

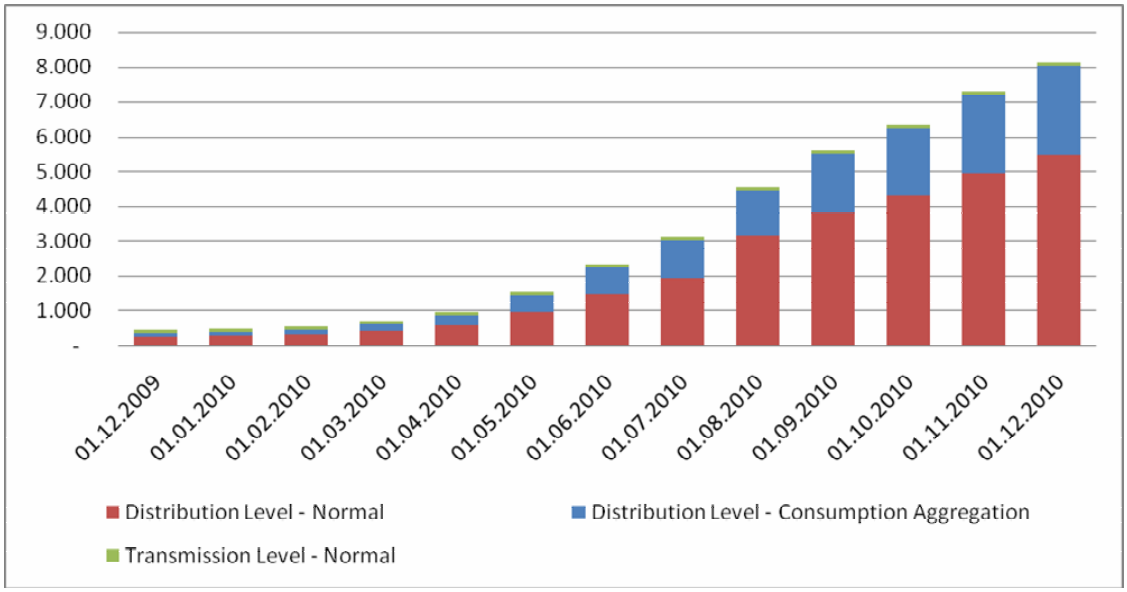
Figure 5-15: Development of Eligible Consumer Limit and Market Opening Ratio



Source: EMRA

Numerical data related to consumers that have used up their eligible consumer right generated within these limits and their meters is as follows:

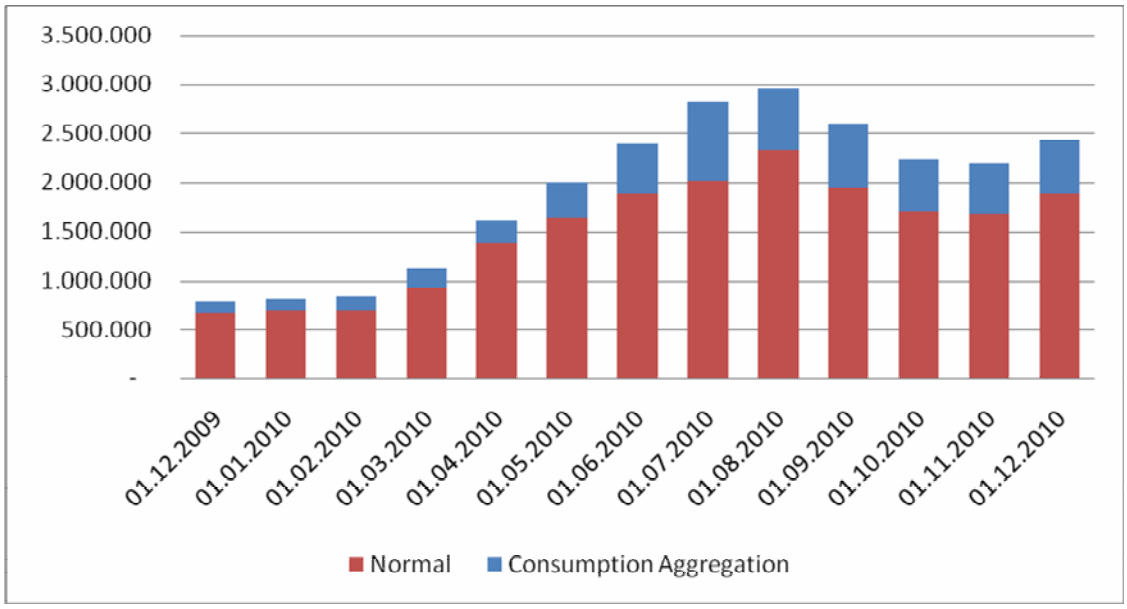
Figure 5-16: Development of Eligible Consumer Quantity



Source: TEİAŞ- MFSC data

As shown in the figure above, number of eligible consumers shows a noticeable increase since early 2010. It is considered that great reduction in the eligible consumer limit (from (480 MWh down to 100 MWh) and low BSR prices in the subsequent period have been effective. When looking at number of eligible consumers, it is seen that 372 by the end of the year 2009 quickly increased in 2010, reaching to 8013 in December 2010.

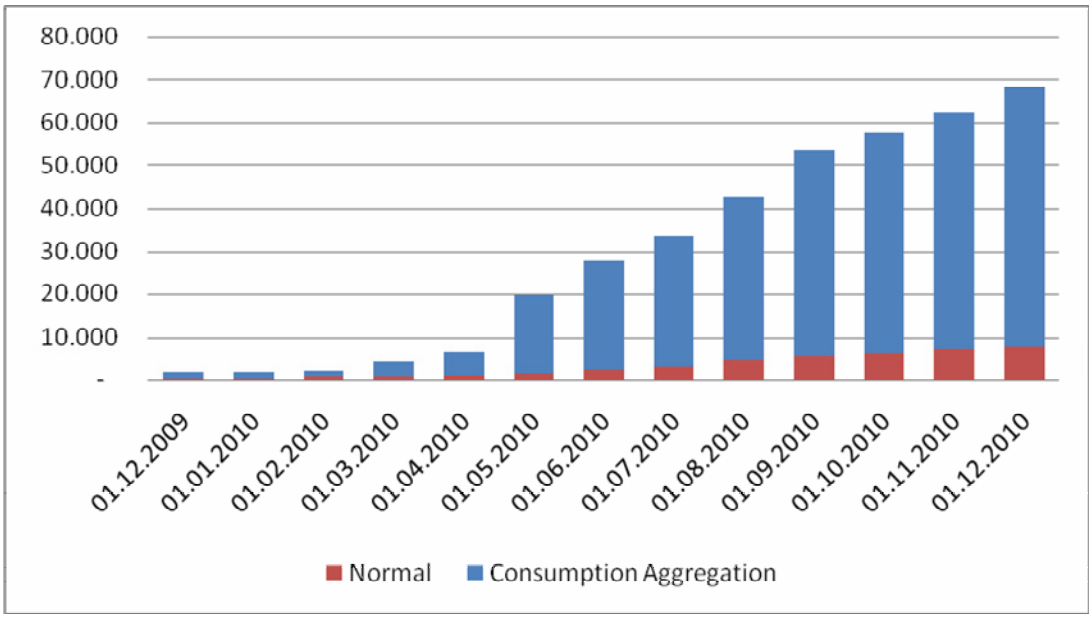
Figure 5-17: Total Consumption of Eligible Consumers (MWh)



Source: TEİAŞ- MFSC data

While there is significant increase in the total consumption of the consumers holding consumer rights, this increase is not sharp as that shown in the Figure 5-17. The reason is that when the eligible consumer limit was reduced, the smaller consumers also used eligible consumer right, that is, consumption amount per eligible consumer reduced. As it is, the consumption amount did not reduce in the same rate with the increase rate of the number. At the same time, despite of increase in the number of eligible consumer in the demand curve, it is also possible to see reduction following the change in the seasonal change. On the other hand, when compared with the Figure 5-18 and Figure 5-17 showing number of meters, speed of increase in the number of meters was much higher due to the effect of demand unification.

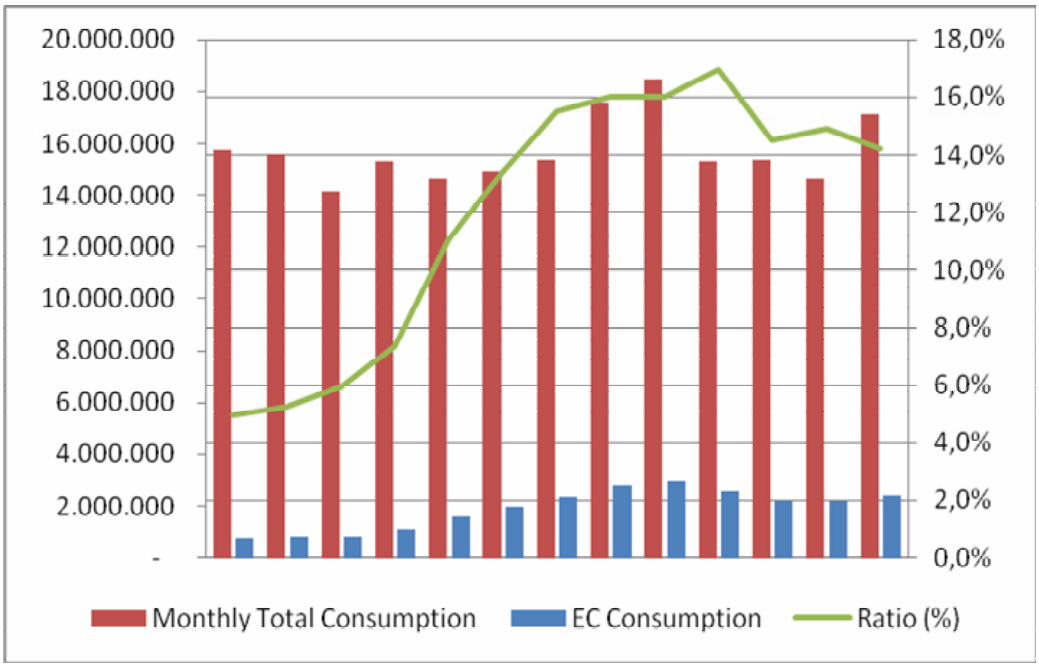
Figure 5-18: Development of Number of Eligible Consumer Meters



Source: TEİAŞ- MFSC data

Although the theoretical market opening ratio was 63.3% as calculated according to the eligible consumer limit, 100 MWh for the year 2010; that part of the electricity sector which is open to competition accounts for 30.7% of the entire electricity sector when the installed capacity on production side; and as to the consumption side, the actual market opening ratio was 17% at the highest level, considering the realized consumption of the consumers exercising eligible consumer right in 2010.

Figure 5-19: Ratio of the Eligible Consumer Consumption to Total Consumption (MWh)



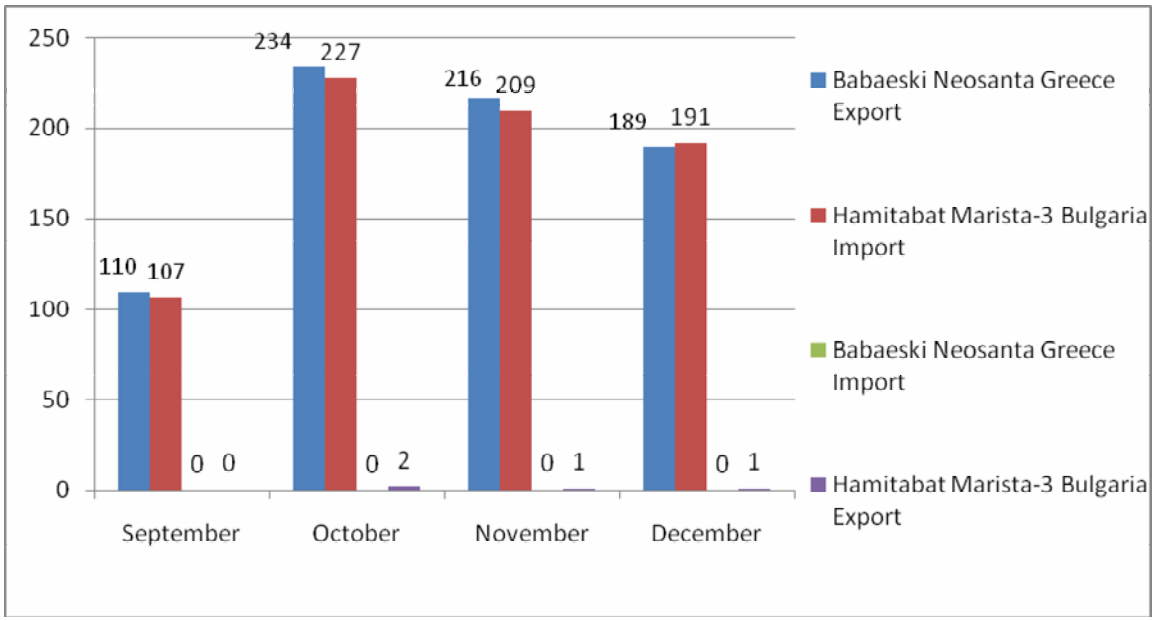
Source: TEİAŞ- MFSC data

6 IMPORT – EXPORT ACTIVITIES

For import and/or export of the electric power, first of all, connection should be established with the electric systems of the respective countries. Connection of the national electricity system, made up of the transmission and distribution systems, with an electric system of another cuntry is called interconnection. With respect to the condition of international interconnection, interconnection should be performed with the electricity system of other countries by use of one of the methods including synchronous, asynchronous parallel (DC) or unit orientation or feeding of the insulated zone to be created in the neighbouring countries. Accordingly, as per the Electricity Market Import and Export Regulation Article 5, electrical energy import and/or export to and from the countries meeting such condition of international interconnection can only be possible upon approval by the Authority. However, under the said regulation, provided export is made until the condition of international interconnection is satisfied, permission may be obtained by the Authority in accordance with the opinion of Ministry and TEİAŞ for import of electrical energy.

Turkey tries to take place in the interconnected system covering the Eastern Europe. In this context, TEAS (currently TEİASŞ) made application on March 21, 2000 for synchronous parallel connection to UCTE, which was founded in 1950 (ENTSO-E since July 1, 2009) to organize Network of European Continent Synchronous Zone. The project group immediately followed after this application carried out projects for Complementary Technical Operations for Connection and Improvement of Turkish Electric System Frequency Control Performance, and necessary tests were completed in 2010 and it came to the stage of one-year Trial Synchronous Parallel Operation by September 18, 2010 for connection of Turkish Electricity System to ENTSO-E system. Thus, Turkish Electricity System has been connected to Bulgarian Electricity System by two 400 kV transmission lines and to Greek Electricity System by one 400kV transmission line; both Bulgaria and Greece are members of ENTSO-E. In this context, total 753.21 GWh energy has been supplied and 734.24 GWh taken in character of non-commercial energy via Bulgaria and Greece in 2010.

Figure 6-1: Energy Exchange Performed in 2010 for ENTSO-E Trial Operation (GWh)



Source: TEİAŞ

See the following figure showing interconnection points in detail together with these exchanges of energy; in this process, it is seen that energy is supplied to Greece and taken from Bulgaria in general and that other exchange of energy remains at very low level. Summarized information about interconnection capacity of Turkey with the neighbouring countries is indicated in Table 6-1.

Table 6-1: Interconnection capacity of Turkey with the neighbouring countries by 18.01.2011

From	To	Allocation Period	Connection Method	NTK (MW)	TEK (MW)	KAK (MW)
Turkey	Bulgaria	Monthly	Synchronous Parallel	To be determined each month	0	To be determined each month
Bulgaria	Turkey	Monthly	Synchronous Parallel	To be determined each month	0	To be determined each month
Turkey	Greece	Monthly	Synchronous Parallel	To be determined each month	0	To be determined each month
Greece	Turkey	Monthly	Synchronous Parallel	To be determined each month	0	To be determined each month
Turkey	Georgia	Annual	Unit Orientation	150	0	150
Turkey	Georgia	Annual	Insulated Zone	150	0	150
Georgia	Turkey	Annual	Unit Orientation	150	150	0
Georgia	Turkey	Annual	Insulated Zone	150	150	0

Turkey	Armenia	-	Unit Orientation	0	0	0
Turkey	Armenia	-	Insulated Zone	0	0	0
Armenia	Turkey	-	Unit Orientation	0	0	0
Armenia	Turkey	-	Insulated Zone	0	0	0
Turkey	Azerbaijan	Annual	Unit Orientation	0	0	0
Turkey	Azerbaijan	Annual	Insulated Zone	50	0	50
Azerbaijan	Turkey	Annual	Unit Orientation	100	20	80
Azerbaijan	Turkey	Annual	Insulated Zone	30-70	20	10-50
Turkey	Iran (1)	Annual	Unit Orientation	0	0	0
Turkey	Iran (1)	Annual	Insulated Zone	To be Determined	0	To be Determined
Iran (1)	Turkey	Annual	Unit Orientation	0	0	0
Iran (1)	Turkey	Annual	Insulated Zone	40	40	0
Turkey	Iran (2)	Annual	Unit Orientation	0	0	0
Turkey	Iran (2)	Annual	Insulated Zone	0	0	0
Iran (2)	Turkey	Annual	Unit Orientation	105	80	25
Iran (2)	Turkey	Annual	Insulated Zone	150	80	70
Turkey	Iraq	Annual	Unit Orientation	0	0	0
Turkey	Iraq	Annual	Insulated Zone	200	200	0
Iraq	Turkey	Annual	Unit Orientation	0	0	0
Iraq	Turkey	Annual	Insulated Zone	To be Determined	0	To be Determined
Turkey	Syria	Annual	Unit Orientation	500	0	500
Turkey	Syria	Annual	Insulated Zone	To be Determined	250	To be Determined
Syria	Turkey	Annual	Unit Orientation	230	0	230
Syria	Turkey	Annual	Insulated Zone	0	0	0

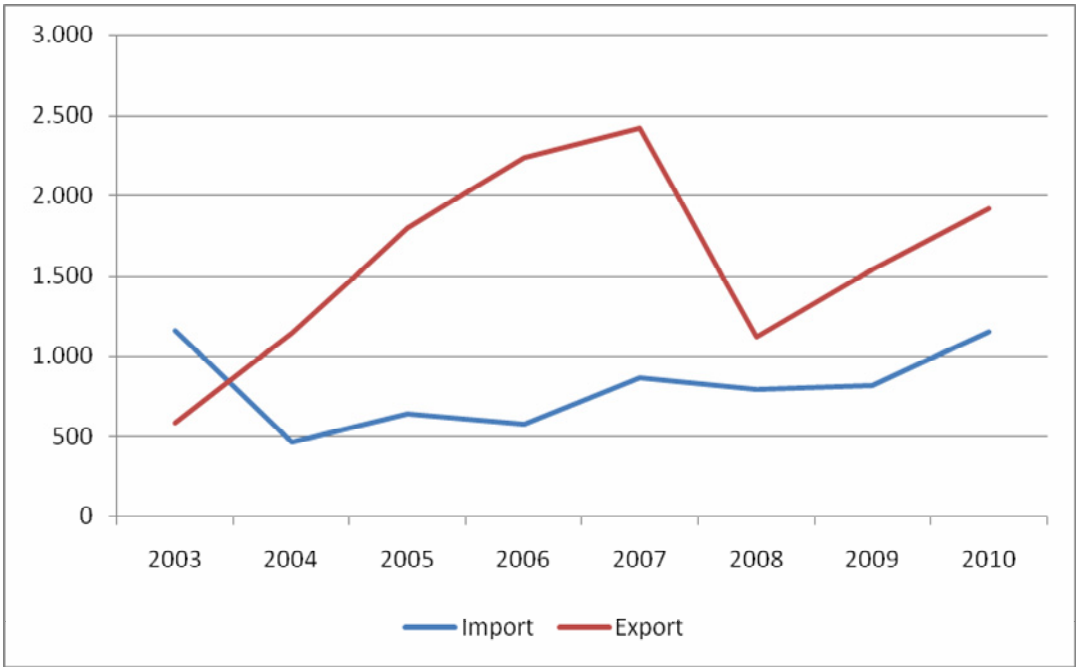
TEK: Allocated Capacity **KAK:** Capacity Open to Use **NTK:** Net Transfer Capacity

Source: TEİAŞ

Between Turkey and Armenia, there is Kars-Gumri Transmission Line. However, as there is no 154/220 kV transformer at Kars Substation, currently import or export is not possible via this line. Where the capacity is shown as zero in the Table, there are various reasons are cited such as absence of proper unit (plant) for the current situation, technical constraints or impossibility of formation of insulated zone in that region of Turkey.

Development of total electric import and export quantity in Turkey since 2003 is given[6] by years in the following figure.

Figure 6-2: Development of Electrical Energy Import and Export Quantity by Years (GWh)



Source: TEİAŞ

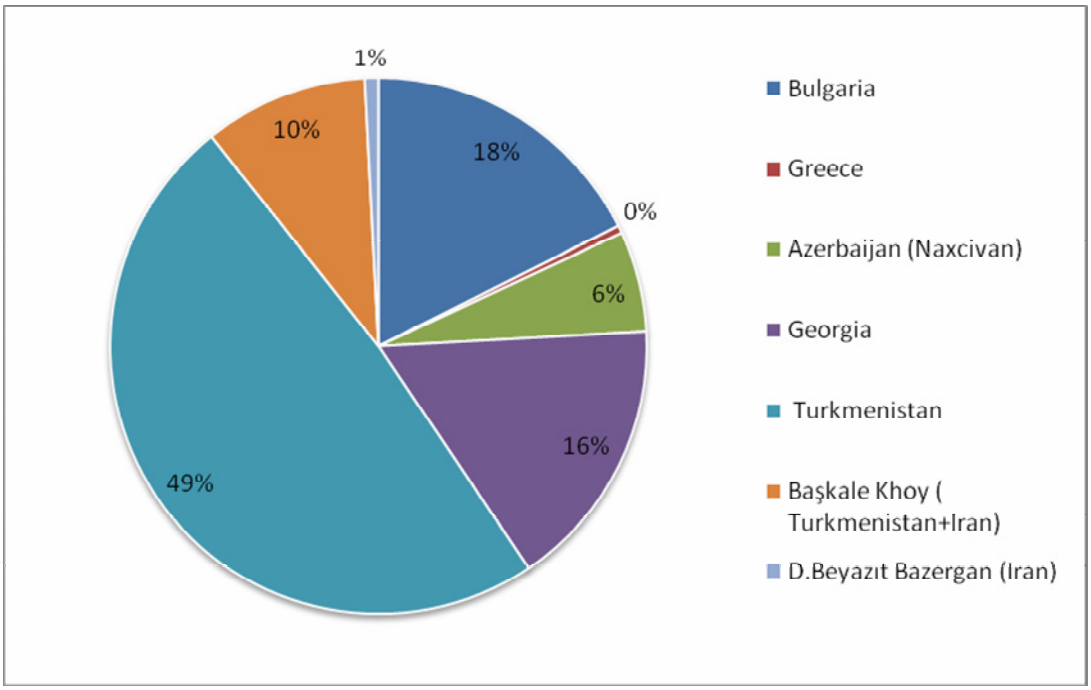
While total quantity of electric import in Turkey was higher than export in 2003, it has always remained below the export in other years. Accordingly, export quantity from the year 2004 to 2008 has been about three times the export quantity.

Export quantity has reduced only in 2008 throughout these years at about 60%. It is considered that this reduction stems from the global economic crisis. In the years of 2009 and 2010, both export and import quantities started to increase again.

As it is shown in the Figure 6-3, it is seen that share of Turkmenistan has been dominant in the import quantity from 2004 to 2010. And accordingly about half of the total import since 2003 have been from this country. After Turkmenistan, Bulgaria and Georgia appear as the countries from which import has been made since 2003.

[6] In the context of ENTSO-E Trial Synchronous Parallel Operation, total energy supply of 753,21 GWh and total energy withdrawal of 734,26 GWh as realized via Bulgaria and Greece are not shown in the import and export data for the year 2010 as they are non-commercial.

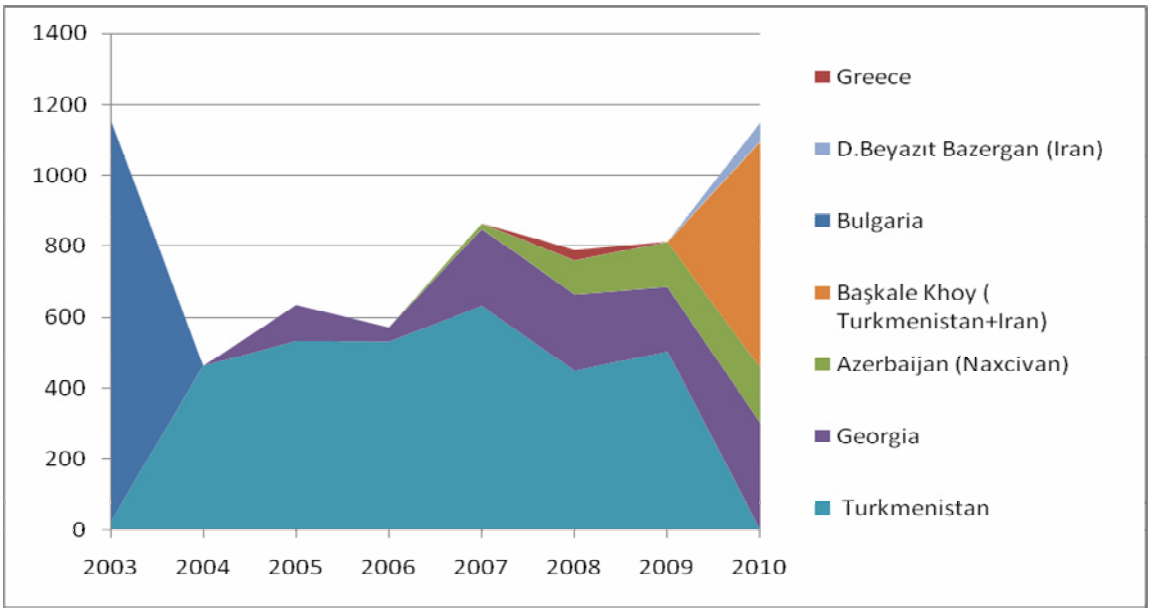
FIGURE 6-3: Distribution of Total Import Since 2003 (GWh)



Source: TEİAŞ

Looking at Figure 6-4 showing distribution of import by countries, import has been made from Bulgaria only in 2003 and no import has been made from this country from that year on. Georgia together with Turkmenistan account for all or majority part of total import most of the years.

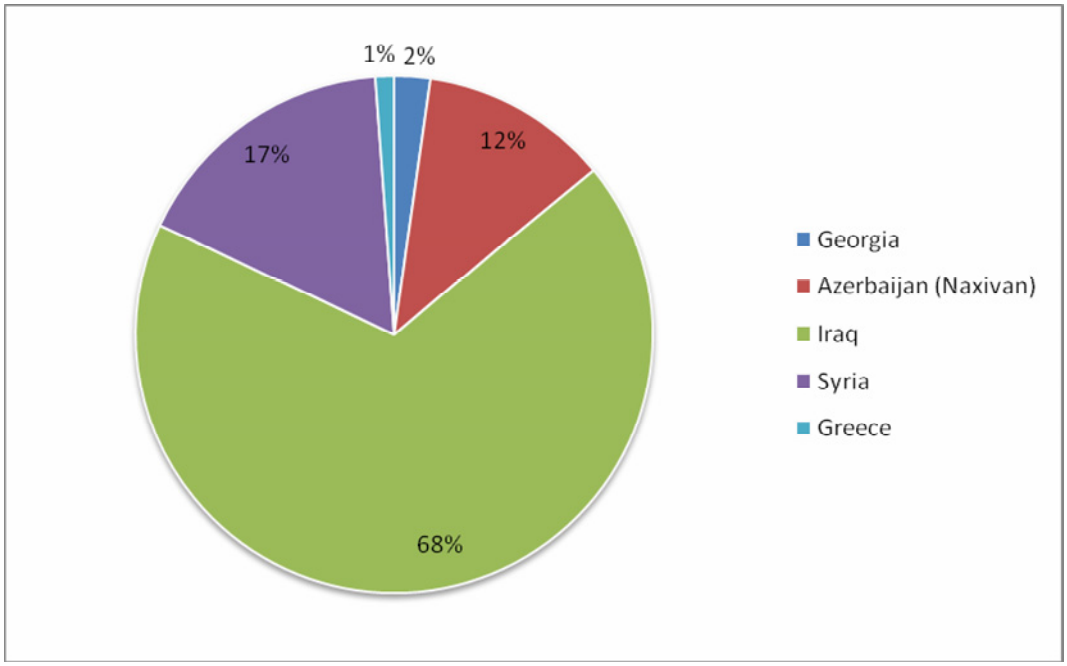
Figure 6-4: Distribution of Import on Basis of Countries since 2003 by Years (GWh)



Source: TEİAŞ

As shown in the figure below, great majority of Turkish export since 2003 has been with Iraq. Iraq is followed by Syria, Azerbaijan – Nakhcevan in this respect.

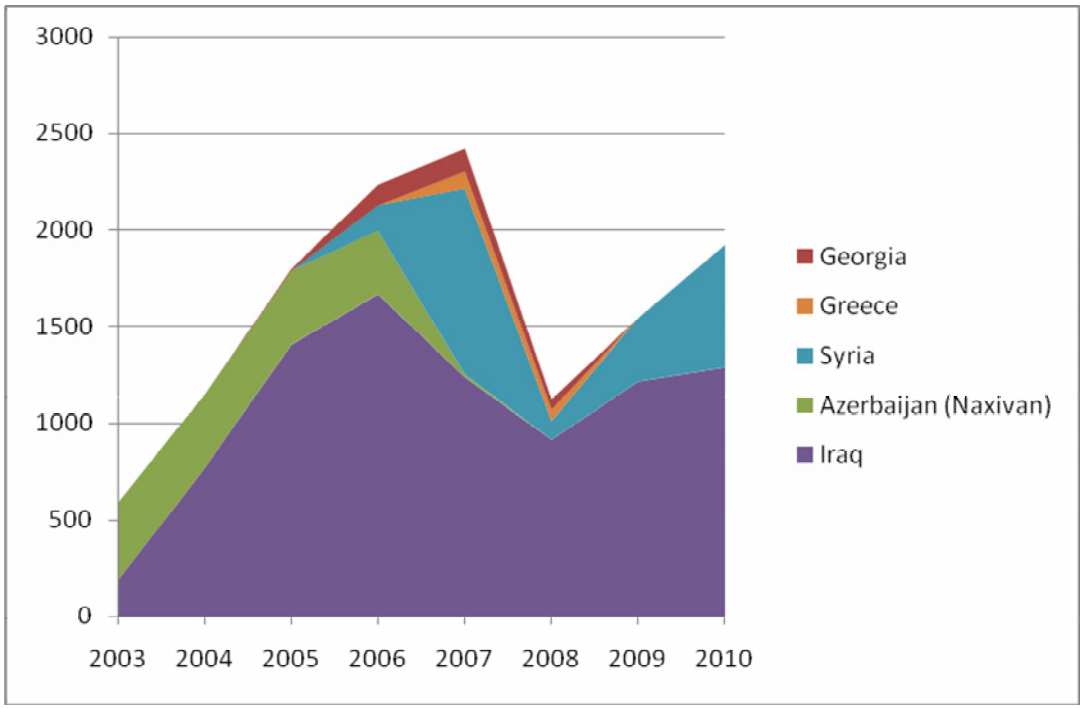
Figure 6-5: Distribution of Total Export from the year 2003 by Countries (GWh)



Source: TEİAŞ

While, looking at the share of the countries in export by years shown in the Figure 6-6, almost all of the total export has been made to Iraq and Azerbaijan, Azerbaijan was replaced with Syria from the year 2007 in this respect and almost all export has been made to Syria and Iraq in recent years.

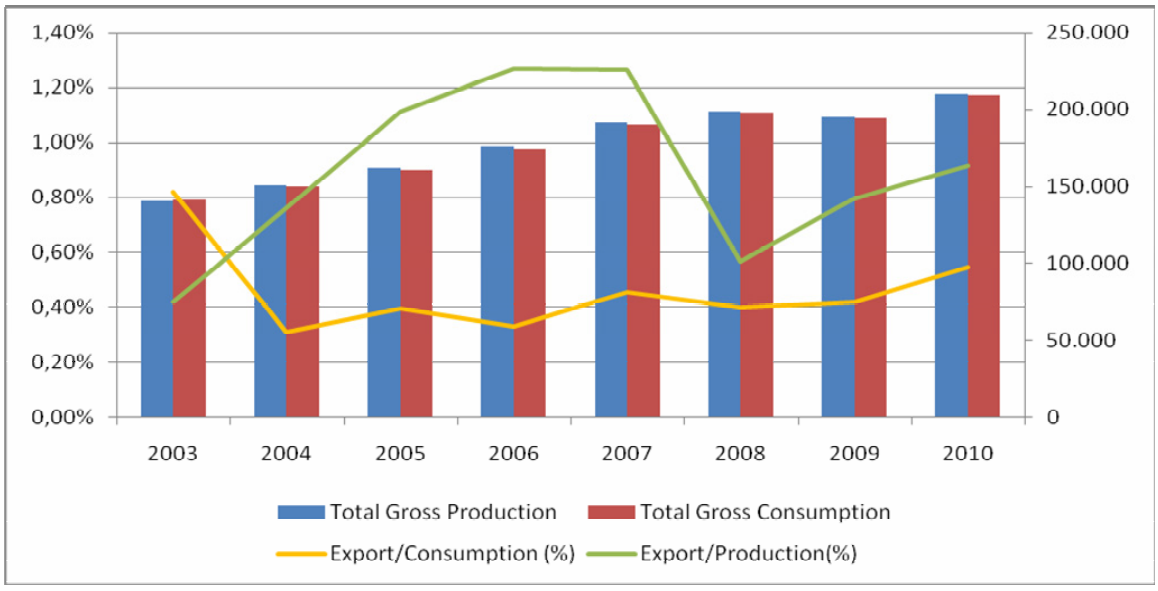
Figure 6-6: Development of Export since 2003 on Basis of Countries by Years (GWh)



Source: TEİAŞ

Information about import and export rates and gross production and gross demand (Gross Demand= Electricity Requirement=Apparent Consumption=Gross Production + Import + Export) of Turkey since 2003 is given Figure 6-7.

Figure 6-7: Development of Import, Export, Gross Production and Demand Since 2003 by Years (GWh)



Source: TEİAŞ

When the figure above is examined, it is seen that while the rate of Turkish import to its gross demand was 0.4% from the year 0224 to 2010, it reached to 0.55% in 2010. It is also seen that the rate of the export quantity to the gross production tends to increase in general, except for standstill in 2007 and serious reduction in 2008.

7 TRANSMISSION ACTIVITIES

The only license holder about electricity transmission activities in Turkey, which are regulated as natural monopoly, is TEİAŞ. With MFSM and the National Load Despatch Center (NLDC) under its roof, TEiAS works as electricity market and system operator of Turkey. All generation and distribution companies licensed by EMRA are able connect to the Turkish transmission system and use the system without any discrimination after they make agreements on connection and use of system with TEİAŞ under Electricity Market Law no. 4628 and the related legislations. Transmission planning and, accordingly, distribution and production planning is formed by the capacity projection of TEİAŞ. TEİAŞ The new market structure imposes significant duties and responsibilities on TEİAŞ beyond operating transmission lines and substations. The duties and responsibilities of TEİAŞ, operator of the Turkish electricity transmission system, are summarized below.

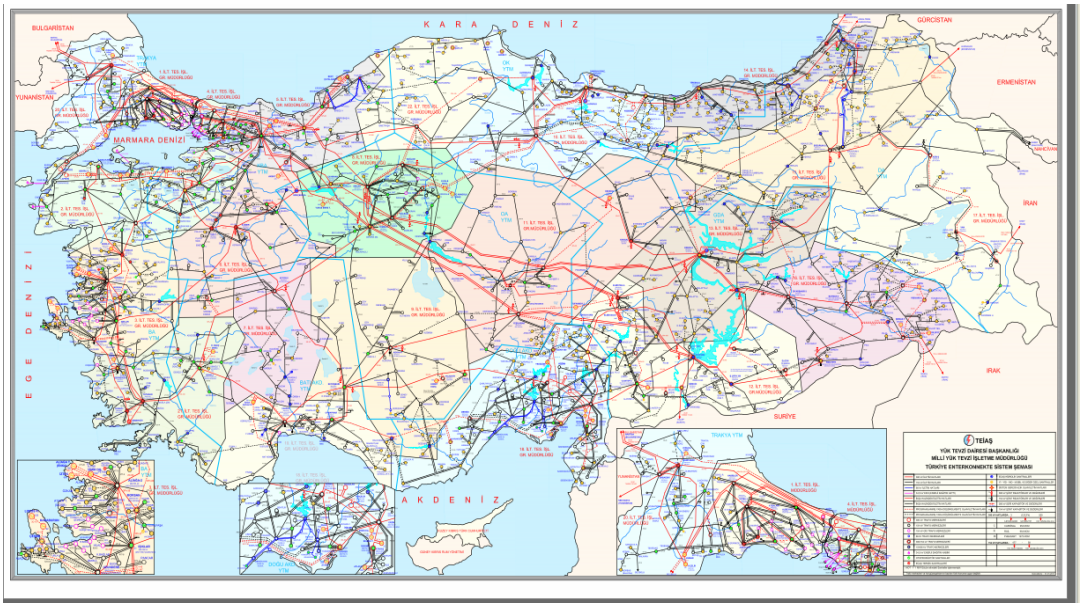
- making expansion and renovation investments in transmission system in Turkey,
- operating and maintaining transmission system in Turkey,
- ensuring users to connect and use the transmission system without any discrimination under the Connection and Use of System Agreements,
- preparing the Generation Capacity Projection,
- operating operate the Market Financial Settlement System,
- monitoring the reliability of the system in real-time,
- buying and monitor ancillary services,
- performing the international interconnection studies.

As a section of TEİAŞ, NLDC is the transmission system operator of Turkey and located in Gölbaşı, Ankara. In addition, there are Regional Load Dispatch Centers (BLDC) listed below:

- Thrace Load Despatch Center in Istanbul
- North Western Anatolia Load Dispatch Center in Adapazarı
- Central Black Sea Load Dispatch Center in Samsun
- Western Anatolia Load Dispatch Center in Izmir
- Western Mediterranean Load Dispatch Center in Antalya
- Central Anatolia Load Dispatch Center in Ankara
- Eastern Anatolia Load Dispatch Center in Erzurum
- South-eastern Anatolia Load Dispatch Center in Elazığ
- Eastern Mediterranean Load Dispatch Center in Adana

The diagram in Figure 7-1 shows the electrical transmission system of Turkey.

Figure 7-1: The Transmission Electrification Schema of Turkey as of 2010



Source: TEİAŞ

The voltage levels and the lengths of transmission lines are seen on the following table as of 2010.

Table 7-1: Voltage Levels and Lengths of Transmission Lines

	Voltage level (kV)	Line length (km)
Aerial lines	400	14.623
	220	84,5
	154	31.932
	66	508,5
Total		**47.148**
Underground cable	154	170,9
	380	22,3
Total		**193,2**

Source: TEİAŞ

The table below shows the number of Transformers and the installed capacity as of 2010.

Table 7-2: Number and Installed Capacity of Power Transformers

Voltage level (kV)	Number of Substations	Installed Capacity (MVA)
400	184	35.020
154	1034	58.015
66	54	637

Source: TEİAŞ

The transmission tariff and transmission connection tariff have been regulated according to the Electricity Market Tariffs Regulation Articles 6and 8. Accordingly, the transmission tariff prepared by TEİAŞ consists of use of transmission system price, transmission system operating price, market operating price and the Principles and procedures relating to the implementation of the tariff. However, transmission connection tariff is approved under the context of the Connection Fees Methodology/Calculation Method which is in the annex of transmission tariff approved by the Board.

The first transmission tariff of TEİAŞ was approved by the Board Decision No. 103 on 19.03.2003, and became effective after 01.04.2003 until a new regulation to be approved. However, because of changes that might occur due to consolidation of the costs in the regions of Çukurova Elektrik Co. and Kepez Elektrik Co., a new tariff proposal was submitted by TEİAŞ and the new transmission tariff in the same year was approved by the Board Decision No. 103 on 24.07.2003, and became effective and be operative after 01.08.2003 until a new regulation to be approved.

The new transmission tariffs in 2004 and 2005, were approved by the Board to be effective after 01.04.2004 and 01.05.2005 respectively, until a new regulation to be approved. In 2006, due to the beginning of the actual application of the Electricity Market Balancing and Settlement Regulation, a new transmission tariff was approved by Board Decision No. 849 on 04.08.2006 and became effective as of 01.08.2006. Accordingly, due to the beginning of the actual application of the organized wholesale electricity market, market operating costs were separated from the operating costs for the first time. Since 2007, all approved transmission tariffs are based on the calendar years in the three-year implementation period. TEİAŞ's annual licence fee[7] is determined as a percentage of all the tariff components[8].

[7] TEİAŞ's, annual licence fee was determined as 0.7% in 2003 and 0.5% in other years.

[8] Transmission additional price was determined by the Board as 0.7% in 2003 and 0.5% in other years.

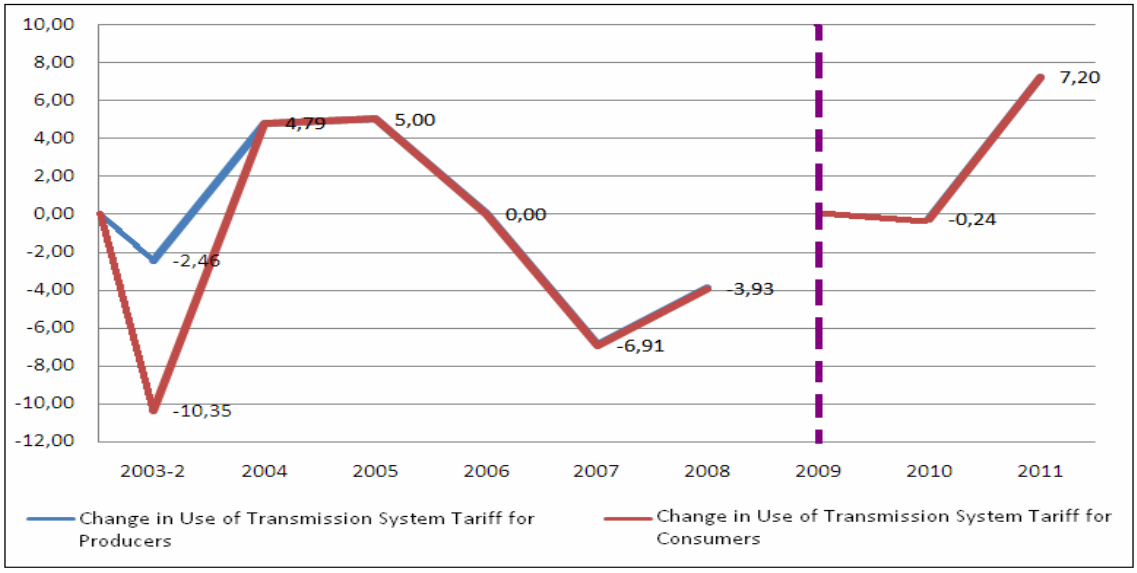
7.1 USE OF TRANSMISSION SYSTEM TARIFFS

By the first transmission tariff approved by the board decision No. 103 of 19.03.2003, the transmission system was divided into 22 regions where all the substations were connected in the annex of the decision. Thus the use of transmission system tariff was determined separately for both generation and consumption. From the date of 01.04.2004, on a need to import and export activities, 23rd region was added to these regions and the system use prices for production and consumption in that region were specified to be applied for imports and exports respectively.

23-region application of the tariff was continued until 2009, and from the year 2009 on the number regions has been reduced to 14 and tariff started to be implemented for 15 regions with the inclusion of the region specified for import/export activities.

After the first prices have been determined for the respective regions in the use of transmission system tariffs, the system use prices determined for all regions in the tariff have been increased or reduced at the same rate every year. Both production and consumption system use tariffs were increased or reduced at the same rate in all changes of tariff, except for the first tariff change; accordingly, the curves on Figure 7-2 coincide except for the year 2003. Annual change rates of the system use tariffs for production and consumption are shown in Figure 7-2. Due to changes in the number of the region, change rates are shown separately starting from 2009.

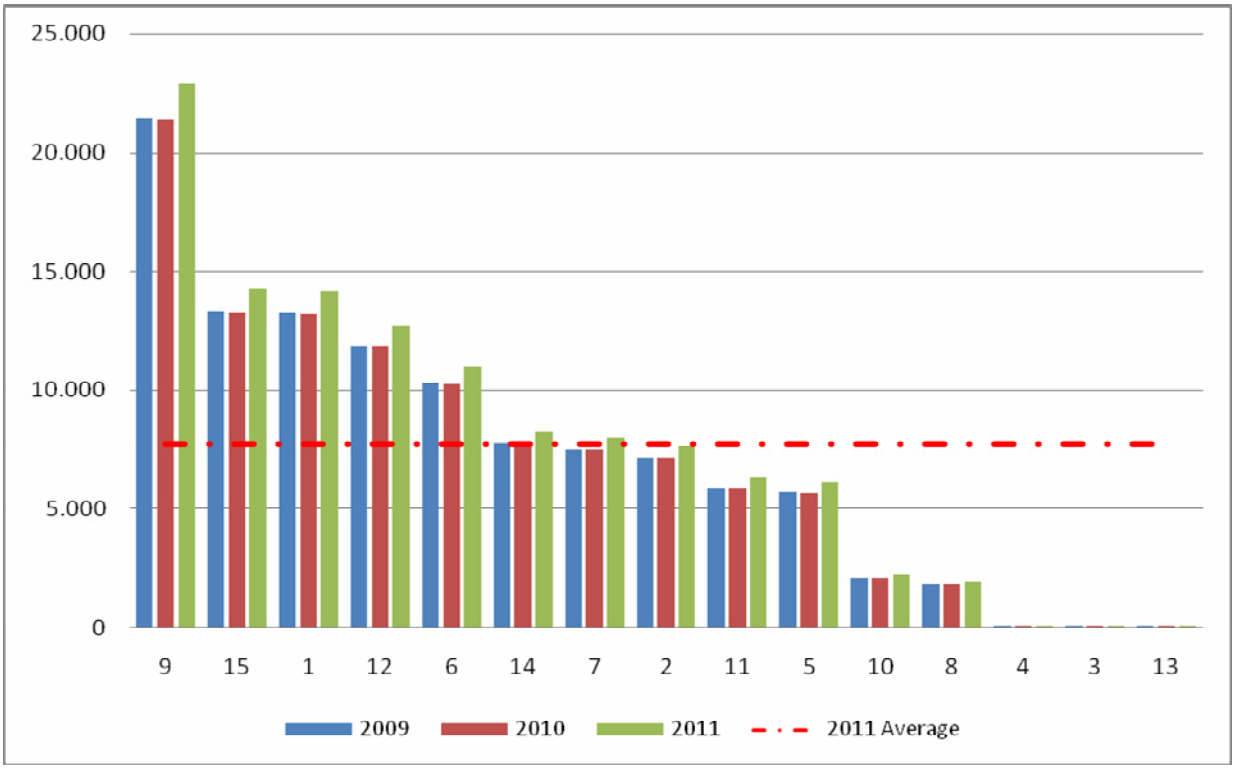
Figure 7-2: The Annual Change Rates of Use of Transmission System Tariffs (%)



Source: EMRA

Especially for examination of the recent years better, the regional use of transmission system tariffs approved for the years 2009, 2010 and 2011 are shown in Figure 7-3 and Figure 7-4 respectively:

Figure 7-3: The regional use of transmission system tariffs for production by year (TL/MW-Year)

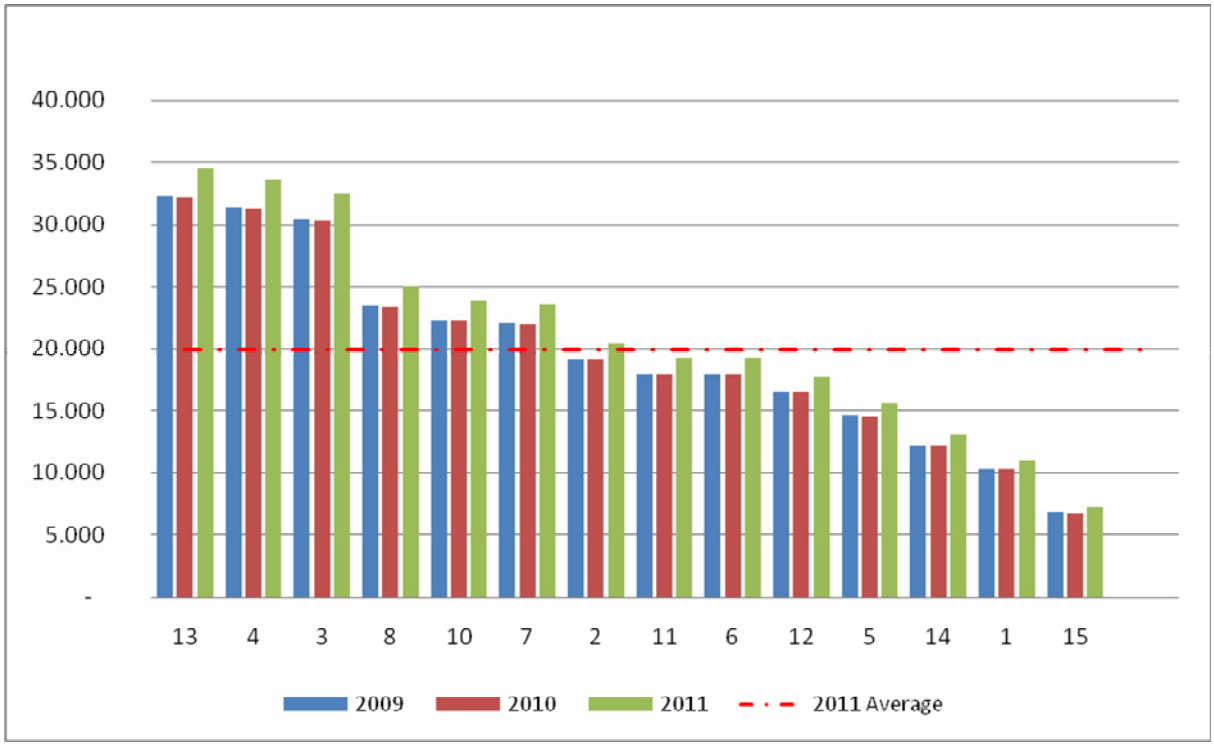


Source: EMRA

Looking at the use of transmission system tariff for production; the tariffs are high in the regions 1, 9 and 15, whereas it is low in the regions 13, 3 and 4. On the contrary, when looking at the Transmission System Use Tariffs for consumption, we see it is low in the the regions 1, 9 and 15, but it is high in the regions 13, 3 and 4.

It is also seen that the region 15 is used for import/export activities and the substations of the regions 1 and 9 are generally in the Aegean and Southern Marmara regions where the production activities are denser.

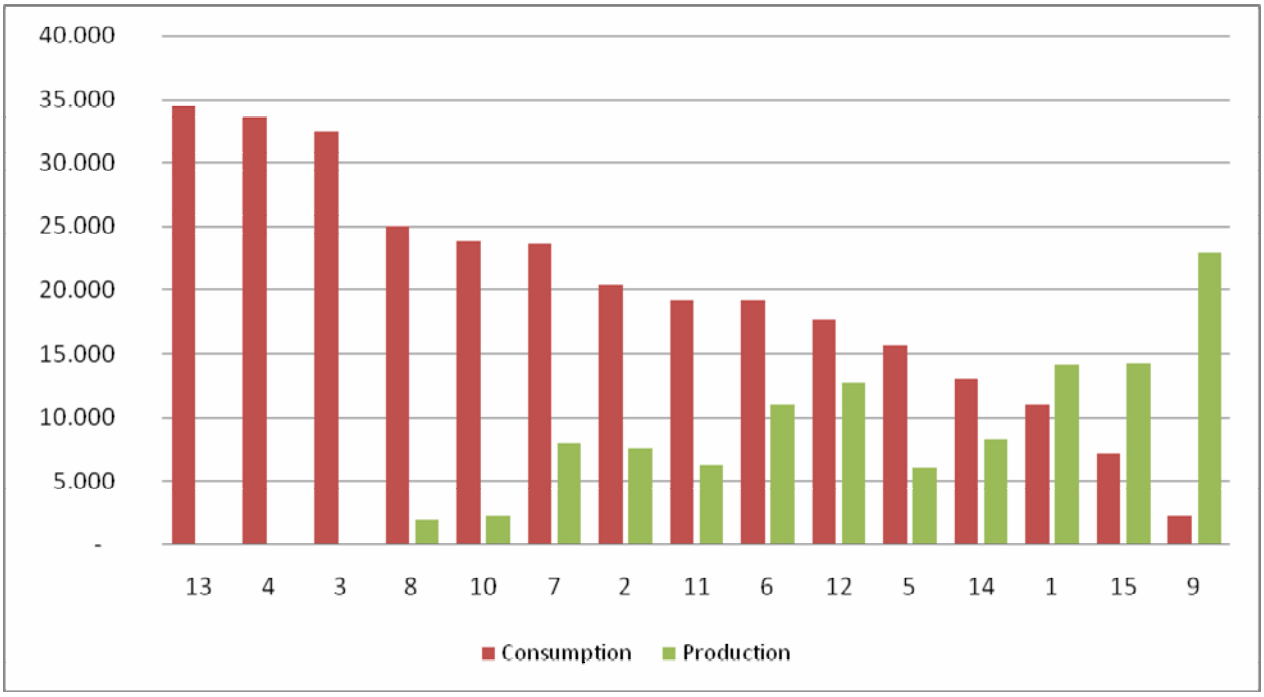
Figure 7-4: The regional use of transmission system tariffs for consumption by year (TL/MW-Year)



Source: EMRA

The regions 3, 4 and 13 consist of North Eastern, Eastern and Southern Geographical Regions where the consumption activities are denser than the production activities.

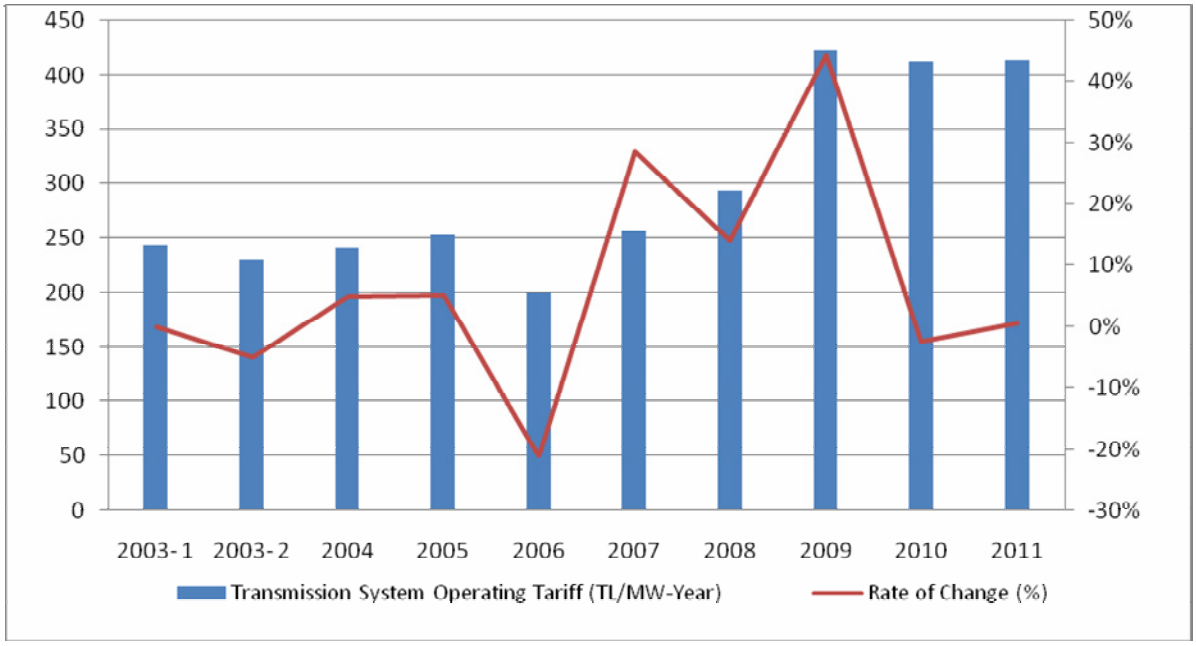
Figure 7-5: The regional use of transmission system tariffs for production and consumption in 2011



Source: EMRA

This tariff is determined same for production and consumption in all regions. The tariff has been changed certain amount every year, according to the needs for system operation.

Figure 7-6: Transmission System Operating Tariff (TL/MW-Year)

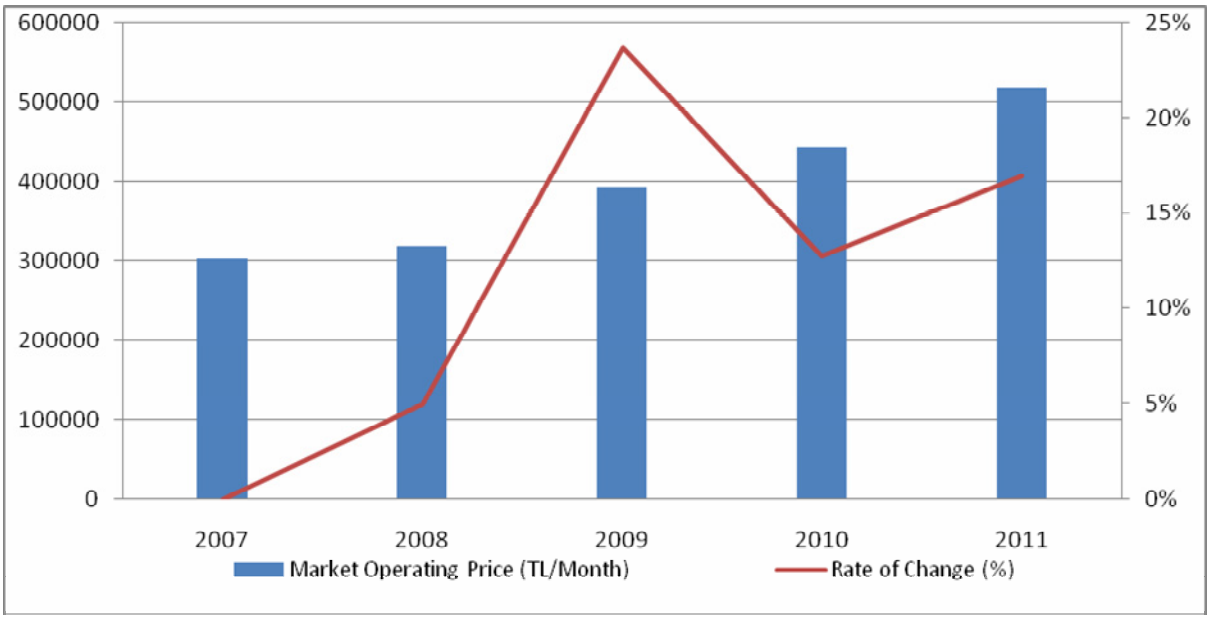


Source: EMRA

7.3 MARKET OPERATING PRICE

Market operating price is computed as a monthly total amount which is reflected to be met by the market participants according to their trading volumes in that month. The market operating prices in the market are being updated every year, parallel to the development in the organized wholesale electricity market.

Figure 7-7: Market Operating Price (TL/Month)



Source: EMRA

7.4 TRANSMISSION SYSTEM INVESTMENTS

According to Electricity Market Tariffs Regulation and Communiqué on Items Subject to Regulation in the Scope of Revenue and Tariff in the Electricity Market Procedure of Reporting, the regulated companies must submit their regulation based net investment expenses to EMRA. Thus their income regulations and tariffs can be prepared using these data. As a regulated company, TEİAŞ must submit its regulation based net investment expenses to EMRA and these planned expenses must be approved by the Board.

Information about the investment expenditures out of the those presented by TEIAS over years and approved by the Board are shown below:

Table 7-3: Approved and Realized Transmission Investment Amounts

Year	Approved Amount (Thousand TL)	Number of Projects based on Approved Amount	Realized Amount (Thousand TL)
2006	235.820	92	446.415
2007	516.726	156	249.670
2008	644.615	137	451.490
2009	1.403.544	340	-
2010	741.915	154	-
2011	698.340	137	-

Source: EMRA

Real investments and approved investments may show significant differences due to investments realized late or early. For example, as the investments scheduled to realize in 2007 have realized in 2006 and, similarly, those investments scheduled to have realized in the previous years could only completed in 2006, the investment has realized much more than the approved investment in the same year.

Furthermore, pursuant to the following provisions of the Communiqué on Items Subject to Regulation in the Scope of Revenue and Tariff in the Electricity Market Procedure of Reporting (Communiqué):

- "*Investment expenditures shall be taken into consideration as investment expenditure which forms basis for regulation in the calculations pertaining to the said tariff year by the tariff year when the*

assets related to expenditure have become to use or started to be used, irrespective of exchange rate, value date difference, interest and similar financial cost items," as specified in the paragraph to, Article 9 under the heading 'investment expenditures subject to regulation'; and

- " *In case the value of the investments realized in an implementation period as calculated by use of the unit prices taken as basis for revenue regulation is above net investment expenditure approver of the said implementation period, the over-realized investments in the application period and alternative costs pertaining to these investments are taken into consideration with respect to the closing value of the unredeemed amount in the implementation period concerning net investment expenditures for the said implementation period provided that prior approval should be sought after from the Board with respect to the investment expenditures,* as set forth in the paragraph two, Article 15 under the heading "short or surplus realization of the investments forming basis for the approved net investment;

Reimbursement and yield is given to TEİAS as of the year the investments have entered into use, for calculation of the "Investment Difference Adjustment Component" pertaining to the difference between the realized and approved investments, the unit prices taken into consideration for regulation of the revenue are used.

On the other hand, TEIAS is a State-owned Enterprise in the scope of Decree Law (DL) No. 233 an it presents each year to Undersecretariat of State Planning Organization (SPO) information about investment for allocation of subsidization and subsidization allocation is made to the investments accepted by SPO. As per Article 62 of Public Procurement Law (PKL), TEİAS cannot call for tender of any project having no subvention and, furthermore, the specified annual allocation should not be less than 10% of the project cost.

However, in the Article 5 of the Decree No. 2008/14200 on Implementation, Coordination and Monitoring of the Program for 2009, which was published in the Official Journal No. 27028 of 18.10.2008, there is a provision that reads:

"for determination of the detail programs that are collective or made collective in the Investment Program for the year 2009, it is determined by the approval of the Ministry to which the enterprise is connected or related, by the president in the universities and by the top executive officer in other organizations. Information related to the detail programs are informed to the Undersecretariat of State Planning Organization within 30 days upon publication of the Investment Schedule in the Official Journal."

In this frame work, TEİAS presents to EMRA the investment amounts approved by our Authority for the first and second implementation periods; investment projects for the previous year it has prepared of SPO and project proposals already accepted by SPO, but not certain to allocate subvention or not.

While EMRA accepts the amount found as per the provisions of the Communiqué “as of the tariff year when the assets related to the expenditure have become ready for use or started to be used, irrespective of exchange difference, value date difference, interest and similar financial cost items,” as investment expenditures taken as basis for regulation, TEIAS, in general, perceives the expenditure made from the subventions by SPO as investment expenditure and the principle of the assets becoming ready for use may occasionally be disregarded. Most of the time, this situation causes acceptance of the ongoing investments as investments made short and formation of the investment difference adjustment component at high level.

8 DISTRIBUTION AND RETAIL SALE ACTIVITIES

The electricity distribution sector in Turkey has experienced a variety of structural changes throughout the history. From the time the Act no. 4628 has come into force till year 2004, TEDAŞ was structured as seven subsidiaries and foundations in the provinces not included in the subsidiaries

Table 8-1: Subsidiaries of TEDAŞ

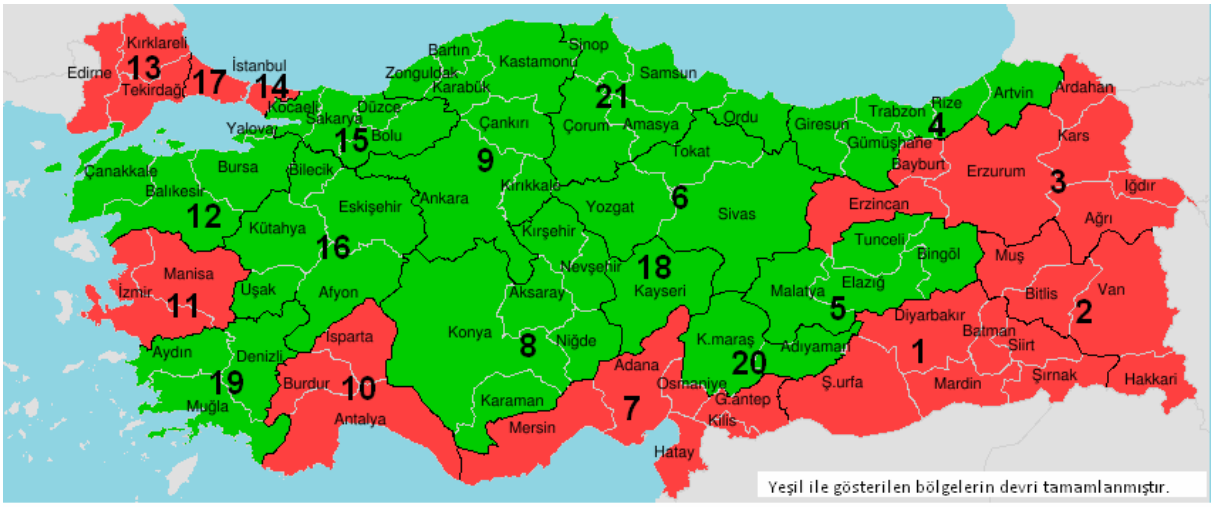
Subsidiaries	Regional Cities
Başkent EDCo	Ankara and Kırıkkale
Boğaziçi EDCo	İstanbul Avrupa yakası
Karaelmas EDCo	Zonguldak, Karabük, Bartın and Çankırı
Körfez EDCo	Kocaeli and Gebze
Meram EDCo	Konya and Karaman
Sakarya EDCo	Sakarya, Bolu and Düzce
Trakya EDCo	Edirne, Kırklareli and Tekirdağ

In the era after year 2004, in order to establish free market conditions and a competitive market environment in the electricity distribution sector, it was decided to privatize publicly owned electricity distribution companies. In this context, Electric Power Sector Reform and Privatization Strategy Document were declared with the decision of the Supreme Planning Council dated March 17, 2004 and numbered 2004/3. As a result, Turkish distribution network has been divided into twenty-one electricity distribution area.

Figure 8-1: Electricity Distribution Regions

Transfer of operating rights (TOOR) was preferred as a privatization method within the framework of Law No. 4046. In this method, the property of the distribution of assets remains with TEDAŞ, all shares of the distribution companies are sold as a whole on the basis of the operating rights. The distribution companies are subject to a tariff methodology, which includes components such as loss&theft ratio, operating and investment costs and consumption targets that are determined by EMRA. Investors recover the approved network investments through tariffs. The latest condition in the privatization process which is operated by Turkish Privatization Administration is seen in the map below

Figure 8-2: Privatization Transfers of Electricity Distribution Region



Besides, at the beginning of the year 2011, the operating rights of Aras Electricity Distribution Co., Akdeniz Electricity Distribution Co., Dicle Electricity Distribution Co., Gediz Electricity Distribution Co., Toroslar Electricity Distribution Co., Vangölü Electricity Distribution Co., Boğaziçi Electricity

Distribution Co., İstanbul Anadolu Yakası Electricity Distribution Co.ve Trakya Electricity Distribution Co. are still within TEDAŞ. While Menderes Electricity Distribution Co. was ceded to AYDEM Electricity Distribution Co. within the framework of Law 3096, the board decisions Nos. 2958-2 and 2958-3 of 27.12.2010 are given in accordance with the provisions of the same Law No. 3096 to complete the takeover of Göksu Electricity Distribution Co. to AKEDAŞ Electricity Distribution Co.

Kayseri and Environs Electricity Turkish Co. (KCETAŞ), whose chartered time had expired in 1982, was appointed for the generation, transmission and distribution of electricity to entire Kayseri and some districts of Sivas from the date 01.03.1990 for 70 years time. The agreement of delegation of duty to KCETAŞ has been accepted as an existing agreement according to Law No. 4628 and the right of chartered operation has been given to KCETAŞ via amending the existing agreements. In this context, the corporation amended the existing agreement and started operating electricity distribution as a licensed corporation.

During the process of electricity distribution privatization, there have been many changes in the Law and in secondary legislation. After the privatization, determination has been pronounced for the first time about the application of automatic tariff mechanism regarding some chronic systematic problems. In this way, the cost of electricity from the free market bought by the electricity distribution companies chartered for retail sale of electricity has been reflected to the consumers.

Table 8-2: Privatization Process of Distribution Companies

Electricity Distribution Company	Tender Date	Bidder Offered the Biggest Offer	Bid Price (Milyon$)
Akdeniz EDCO	07.12.2010	Park Holding Co.	1165
Aras EDCO	25.09.2008	Kiler Holding Co.	128,5
Başkent EDCO	28.01.2009	Sabancı Holding Co.	1225
Boğaziçi EDCO	09.08.2010	MMEKA Makine İthalat Pazarlama and Ticaret A.Ş	2990
Çamlıbel EDCO	12.02.2010	Kolin İnşaat Turizm Sanayi and Ticaret Co.	258,5
Çoruh EDCO	06.11.2008	Aksa Elektrik Co.	227
Dicle EDCO	09.08.2010	Karavil Day. Tük. Mal., İnş. Oto. Pet. Ür. Paz. San. and Tic. Ltd. Şti. and Ceylan İnş. Ve Tic. Co. O.G.G.	228
Fırat EDCO	12.02.2010	Aksa Elektrik Co.	230,25
Gediz EDCO	09.08.2010	MMEKA Makine İthalat Pazarlama and Ticaret A.Ş	1920
İstanbul Anatolian Side EDCO	07.12.2010	MMEKA Makine İthalat Pazarlama and Ticaret A.Ş	1813
Meram EDCO	30.04.2009	Alarko Holding Co.	440
Osmangazi EDCO	06.11.2008	Yıldızlar SSS Holding Co.	485
Sakarya EDCO	11.02.2009	Ak Enerji Co.	600
Toroslar EDCO	07.12.2010	Yıldızlar SSS Holding Co.	2075
Trakya EDCO	09.08.2010	Aksa Elektrik Perakende Satış Co.	622
Uludağ EDCO	12.02.2010	Limak Co.	940
Vangölü EDCO	12.02.2010	Aksa Elektrik Co.	100,1
Yeşilırmak EDCO	06.11.2008	Çalık Holding Co.	441,5

Source: ÖİB-website

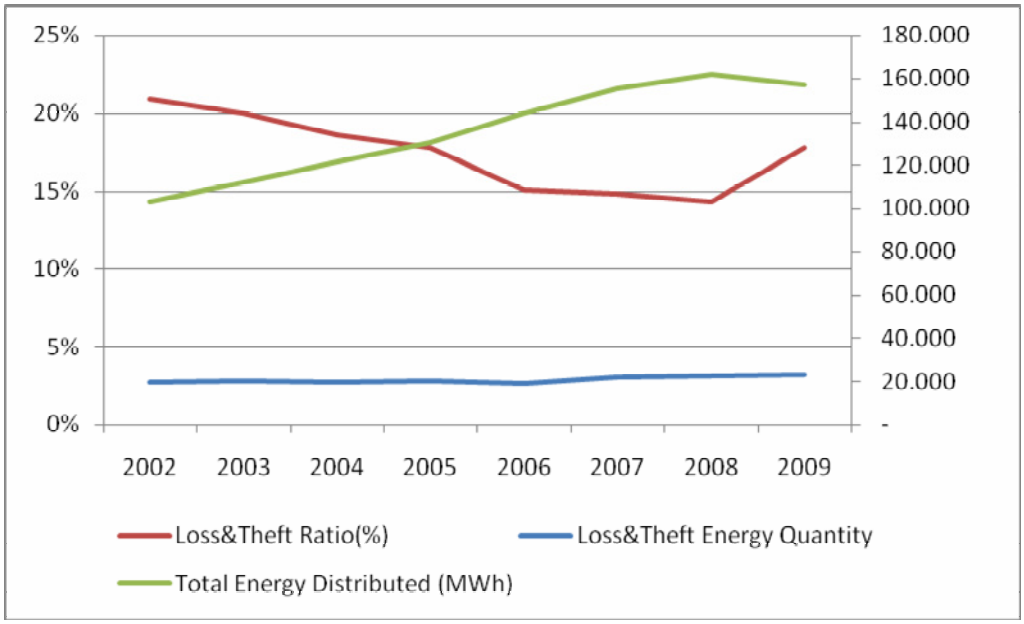
With respect to privatization, the expectations are in the way of reduction at the loss&theft rate, reduction of efficiency and liberalization of the market structure. Additional revenue obtained by reduction of the loss&theft under the targets approved by EMRA is left to the distribution company. Again, the investor is also entitled to use the additional revenue obtained as a result of increase of the operating efficiency above the targets approved by EMRA.

Pursuant to the paragraph three, Article 14 of the Law No. 4628, of the real and legal persons involved with the market activities specified in the said Law, the foreign real and legal persons may not be shareholder in the electricity production, transmission and distribution sectors so as to form control on sector basis. EMRA is liable to perform control and follow-up necessary in this respect.

8.1 LOSS & THEFT

Throughout the reform process started with the Law No. 4628, significant reduction has been achieved at the loss&theft ratio. While loss&theft ratio for distribution across Turkey was 20.9% in 2002, it reduced to 14.8%. However, in the year of 2009, the same ratio has increased to 17.7%.

Figure 8-3: Loss&Theft Quantity (MWh) and Ration at Distribution Level Across Turkey

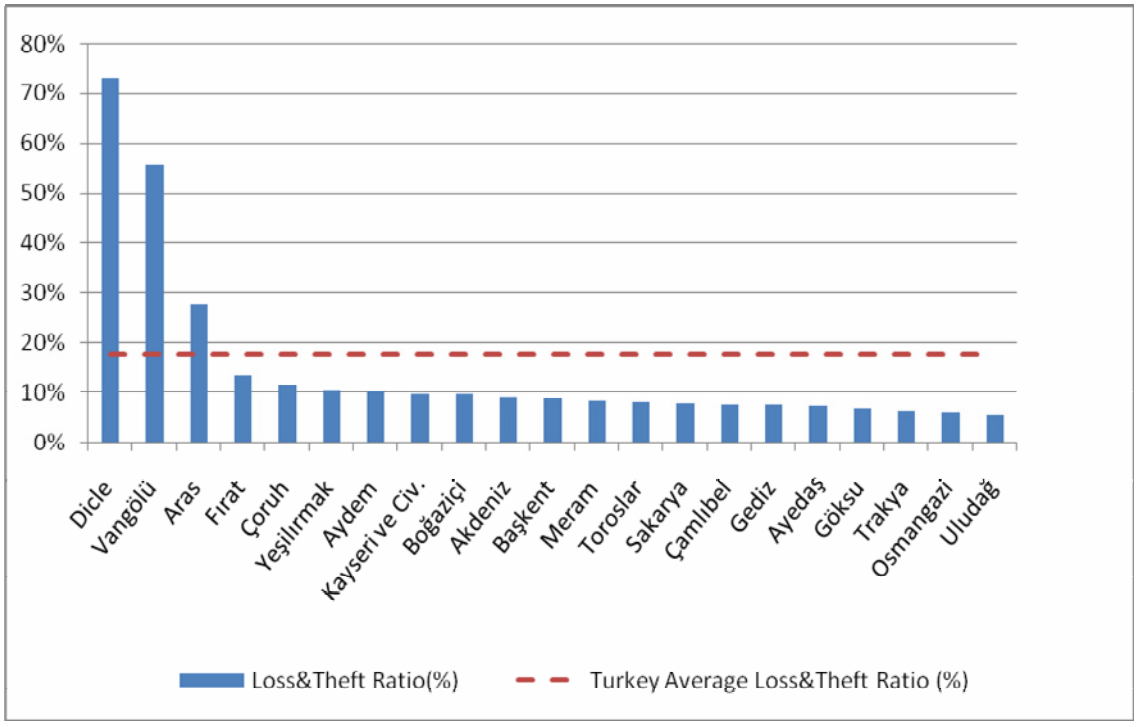


Source: TEDAŞ

Beside as a rate, when we analyze the loss&theft parameter as an amount indicator, the total amount of energy lost in the year 2002, that is 19,630 MWh, has amounted to 23,033 MWh in the year 2009, parallel to increasing consumption of energy. Seen in the figure above, while the loss&theft rate has been decreasing, there has been a minimal rise in the energy lost due to increasing consumption. When calculated using the average system price for day-ahead market of the year 2010, that is 12.16 Kr/kWh, the cost of loss&theft energy for Turkish economy is roughly 3 billion Turkish Liras,

The loss&theft rates based on distribution regions for year 2009 are shown in figure 8-4. The highest rate is realized 73% at Dicle Electricity Distribution Co., the lowest rate is 5.6% realized at Uludağ Electricity Distribution Co..

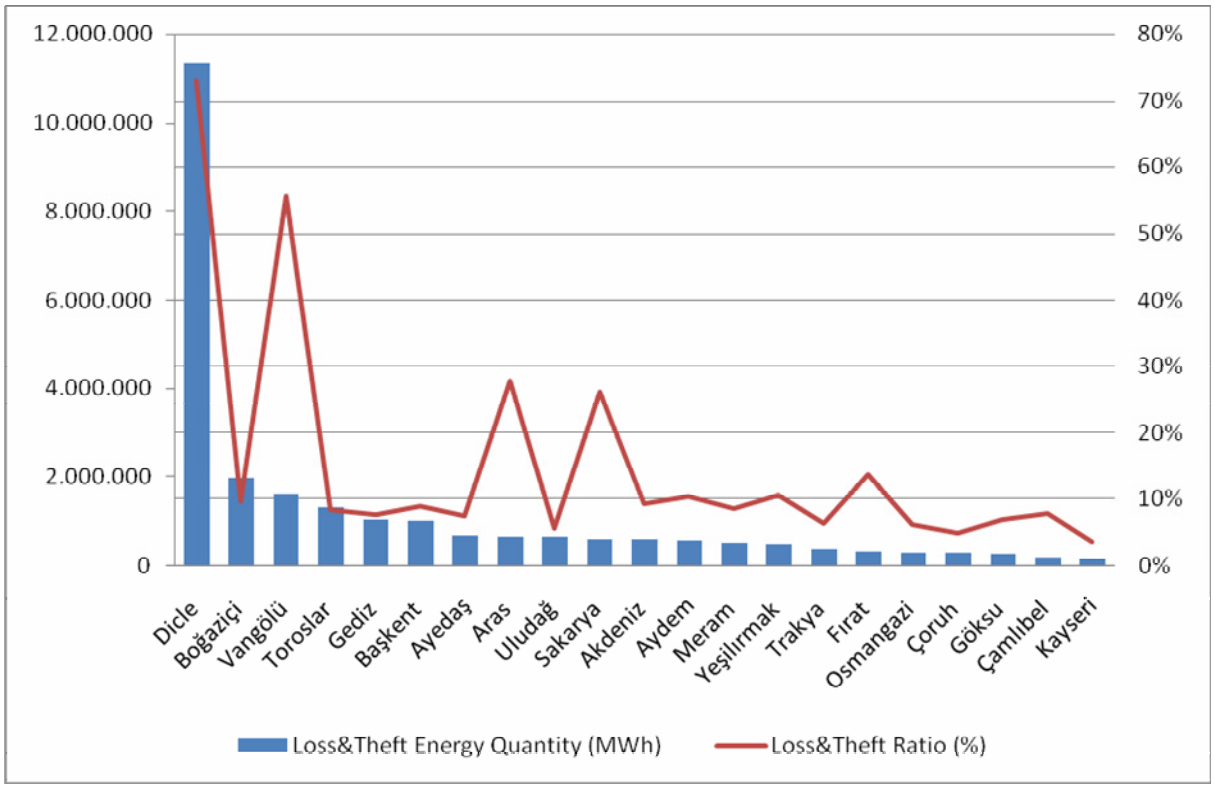
Figure 8-4: Loss&Theft Ratios of the Distribution Regions for 2009



Source: TEDAŞ

And loss&theft energy quantity is shown in Figure 8-5. As indicated in the figure, while the highest loss&theft energy quantity belongs to Dicle EDCO, Boğaziçi Elektrik Distribution Co. ranks second for the highest loss&theft energy quantity due to high consumption despite of low loss&theft ratio.

Figure 8-5: Loss&Theft Energy Quantities of the Distribution Regions for 2009 (MWh)



Source: TEDAŞ

8.2 ELECTRICITY TARIFFS

Within the frame work of Strategy Document, Turkish Electricity market has entered in the process of a comprehensive regulation and restructuring including generation and distribution. In this process, a new tariff methodology has been developed in order to answer the structural needs. The main purpose of the targeted liberalized structure in electricity market is to lower the tariffs by increasing efficiency without conceding from service quality. In this context, the cost-based tariffs have been determined in accordance with targets both envisaging improvements and predefined according to loss&theft rates and operational efficiency. The first five-year application period between the years 2006-2010 has been described as a transitional period to pass to a structure with cost-based tariffs

The transitional period has been prolonged till year 2012 by means of the Law no. 5784 of 09.07.2008. Thereby, the duration of price sync mechanism and energy sales agreements has been extended to year 2012. The end user tariffs charged for distribution regions between the years 2006 and 2010 and the revenue requirements which are essential for the calculation of mentioned tariffs have been approved by EMRA before privatization. The revenue requirements in question make up for the expenses foreseen for distribution and retail services and include a provision for the energy lost. Distribution companies are going to build tariffs on their own methodologies appropriate with Electricity Tariffs Code and other related legislations after the approved tariffs are expired and they are going to present those tariffs for the Board's approval.

The transitional period is designed to provide a smooth and gradual pass from current tariff system to the targeted cost-based tariff system. By 2012, a great majority of subscriber groups are aimed to have passed to cost-based tariffs.

The four components of tariff which are retail sale, retail services, distribution and transmission (excluding taxes and other deductions), are separated from each other in compliance with the Law no. 4628, Electricity Tariffs Code and other related regulations. Accordingly, retail sales tariff has a "price ceiling" that reflects the average price of energy bought by the distribution company holding a retail sale license. On the other hand, the distribution and retail services tariffs contain a revenue ceiling that fulfils the operational costs regarding distribution and retail services and investment costs. The transmission tariff is composed of transmission costs that are billed by the transmission company and reflected to the consumer completely.

As mentioned in Strategy Document, in the first application method "national tariff" system is set to be continued due to the inequality of price resulting from the application of "regional tariff". In current situation, because the parameter of electricity loss&theft shows high variability among the regions, the differences among tariffs are high on condition that cost-based tariffs are applied.

Consequently, some electricity distribution regions are to earn income more than the revenue ceiling set down, while some others are to earn less income than the corresponding revenue ceiling. EMRA removes the difference between the income earned and the targeted revenue ceiling by making revenue transfer among regions through applying price equalization mechanism

Table 8-3: Turkey-wide average tariffs after tuning component

Transitional Period National Tariffs (Kr/kWh)					
Subscriber Group /year	**2006**	**2007**	**2008**	**2009**	**2010**
Industrial MV	11,63	11,52	11,4	11,3	11,19
Industrial LV	11,63	11,63	11,63	11,63	11,63
Commercial	14,75	14,5	14,15	13,87	13,62
Residential	12,4	12,4	12,64	12,89	13,14
Agricultural Irrigation	11,19	11,19	11,19	11,19	11,19
Lighting	11,97	12	12,04	12,07	12,1

Source: EMRA

Procedures and principles with regard to second application period covering the years from 2011 to 2015 have been determined by a Board Decision. By force of the Board Decision regarding the preparation to second application period, eligible consumer limit has been defined as 30,000 kWh/year for the year 2011 in accordance with the provisions of 10th article of The Electricity Market Eligible Consumer Code. By the resolution taken by the Board on 28.01.2010, the eligible consumer limit for the previous year, that is, 100,000 kWh/year, was reduced to 30,000 kWh/year, and thus it is expected in both number of eligible consumers and market opening due to the decrease in the eligible consumer limit.

Another Board Decision affecting the consumer directly is about the TRT portion. With the Board Decision No. 3065 of 01/02/2011, with the regulation made in the Law No. 5784 of 09/07/2008 and in the paragraph (c), article 4 article of Turkish Radio and Television Income Law No. 3093, as per provisions of the Board decision No. 2999 of 28/12/2010, the sum of the costs of retail sale services other than meter reading and net energy are to be used in calculation of TRT portion except for the lost energy and the retail sale services regarding transmission, distribution and meter reading by the licensed legal entities that sell the energy to the end user.

Accordingly, the cost of lost energy has been excluded from TRT portion. With the Law No. 5784 of 09/07/2008, the © clause of the 4th article of the Turkish Radio and Television Income Law has been changed as "*The licensed legal entities that sell electrical energy to end users are to show the 2% of the cost of electrical energy (excluding value added tax, other taxes, funds and portions and similar deductions) in the invoices separately and demise the costs within this context to Turkish Radio and Television Corporation. The legal entities of organized industrial zones as a eligible*

consumer are not to pay any other for the electrical energy they provide for their participators to Turkish Radio and Television Corporation."

According to electricity distribution company tariffs which are decided to be applied from the date 01.01.2011 with the Board decision No. 2999 of 28.12.2010, the tariffs of the users that supply energy from distribution companies holding retail sale license and the tariffs of the users that supply energy from companies other than distribution companies contain the components below

Table 8-4: Electricity tariffs components

Components of tariff	Distribution companies holding retail sale license	Those other than distribution companies holding retail sale license
1) Net energy price	✓	
2) Lost energy price	✓	✓
3) Distribution price	✓	✓
4) Retail sale service price for meter reading	✓	✓
5) Retail sale service price outside meter reading	✓	
6) Transmission price	✓	✓

There has been a change in the procedures and principles regarding security deposit from the date 01.01.2011 and new security deposit per kW to be applied to new subscribers are defined as below:

Table 8-5: Security Deposit Price

Subscriber Groups	Security unit price TL/kW
Industry and Commercial	38,3
Residence, Families of War Causalities and War Veterans	13,6
Agricultural Irrigation, Lighting and Other	18,1

Source: EMRA

Also, the lowest connection power has redefined as 5 kW. Main Board decisions that affect electricity distribution and retail companies through tariffs valid in the second application period are:

1) Turkish average wholesale price for electricity (AWPE) has been divided into two parts through the Board decision No. 2930 of 16.12.2010. The mentioned price has been defined as 14.07 Kr/ kWh while buying energy from generation companies that generate electricity from renewable energy sources.

   On the other hand, in accordance with the Law No. 4628, it is decided to predicate the Turkish average wholesale price for electricity as the system marginal price determined in the day-ahead planning or the final swap price defined in day-ahead market while buying energy from generation companies that belong to distribution companies with a retail license or that have a shareholding relation with mentioned distribution companies.

2) According to new formulation for calculation of the price ceiling of average loss&theft cost mentioned in the second paragraph of third article of "The annunciation on changing the annunciation about regulation of retail energy sale prices and regulation of retail service revenue" which has been published in the repeating Official Journal No. 27800 of 29.12.2010, an application of cost of lost energy has been introduced for the consumers that are connected to the network from distribution voltage level.

3) According to Board decision No. 2776 of 21.09.2010, the alternative cost (real and before tax) concerning the second application period, that is the years 2011-2015, is defined as 10.49% (real and pretax) and the duration of redemption for the investment costs that are to be regulated is defined as 10 years.

4) With the Board decision No. 2932 of 16.12.2010, the target loss&theft rates for the electricity distribution activity regarding the application period 2011-2015 are set as below:

Table 8-6: Target loss&theft rates for distribution activity, 2011-2015 application period

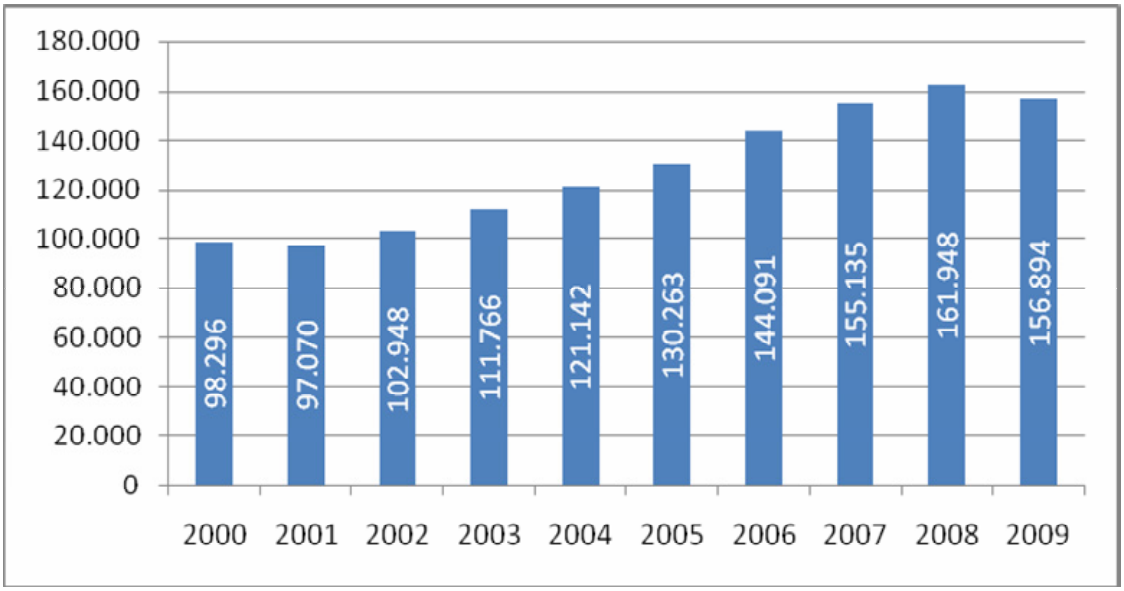
Distribution Company	2011	2012	2013	2014	2015
Akdeniz EDCo	8,86	8,45	8,05	8,02	8,02
Aras EDCo	22,92	19,04	17,62	16,30	15,08
AYDEM EDCo	9,80	9,34	8,90	8,49	8,09
AYEDAŞ	7,12	6,79	6,61	6,61	6,61
Başkent EDCo	8,46	8,07	7,88	7,88	7,88
Boğaziçi EDCo	9,12	8,69	8,28	7,90	7,57
Çamlıbel EDCo	7,72	7,36	7,02	6,92	6,92
Çoruh EDCo	10,90	10,39	10,15	10,15	10,15
Dicle EDCo	60,96	50,63	42,06	34,93	29,01
Fırat EDCo	12,59	11,65	11,11	10,59	10,09
Gediz EDCo	8,48	8,08	7,70	7,34	7,00
Göksu EDCo	10,03	10,03	10,03	10,03	10,03
Kayseri and its Vicinity ETCO	10,01	10,01	10,01	10,01	10,01
Meram EDCo	8,59	8,28	8,28	8,28	8,28
Osmangazi EDCo	7,21	7,21	7,21	7,21	7,21
Sakarya EDCo	7,66	7,31	6,96	6,64	6,33
Toroslar EDCo	9,38	8,94	8,52	8,12	7,74
Trakya EDCo	7,70	7,70	7,70	7,70	7,70
Uludağ EDCo	6,96	6,90	6,90	6,90	6,90
Vangölü EDCo	46,15	38,33	31,84	26,45	21,97
Yeşilırmak EDCo	10,35	9,87	9,41	8,97	8,78

Source: EMRA

8.3 CONSUMPTION AT DISTRIBUTION LEVEL

According to the data prepared basing on TIDAS data between the years 200-2009 and summarized in the following graphic, the electricity consumption quantity has increased from 98.295,7 GWh to 156.894,1 GWh, despite of reduction in consumption in the period of 2001 through 2009.

Figure 8-6: Distribution Level Electricity Consumption (GWh)

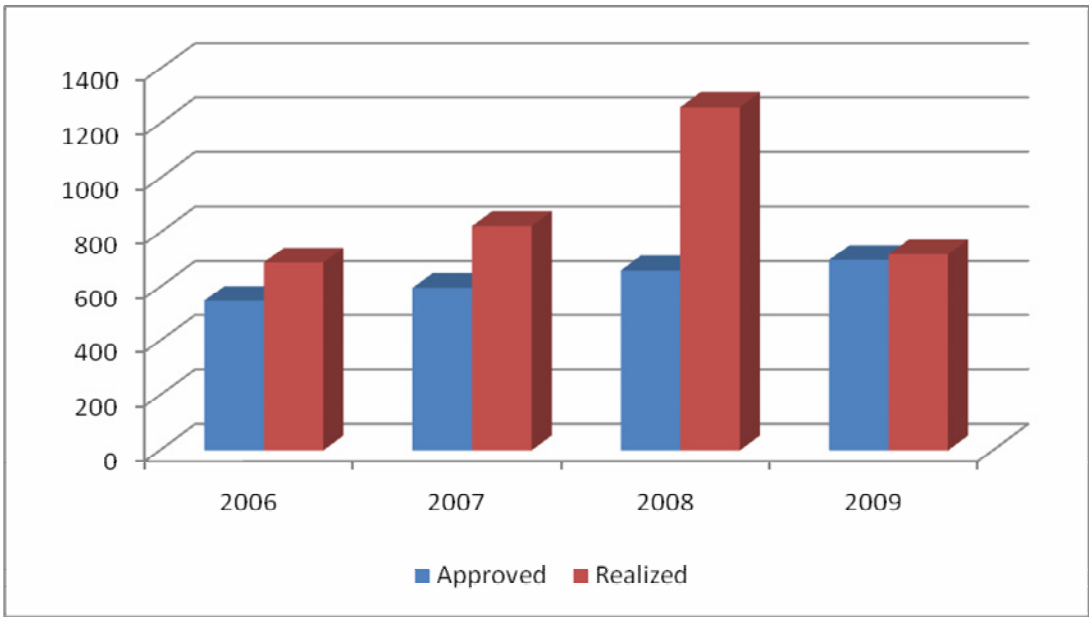


Source: TEDAŞ

8.4 DISTRIBUTION INVESTMENTS

While it was provided that 21 distribution companies were to make investment in amount of 2.5 billion TL in the period of 2006-2008, the distribution companies has made investment in amount of 3.5 billion TL in the said period, by an excess investment of 1.0 billion TL. It is evaluated this excess 1 billion TL has arisen from the KÖYDES and BELDES projects of Prime Ministry.

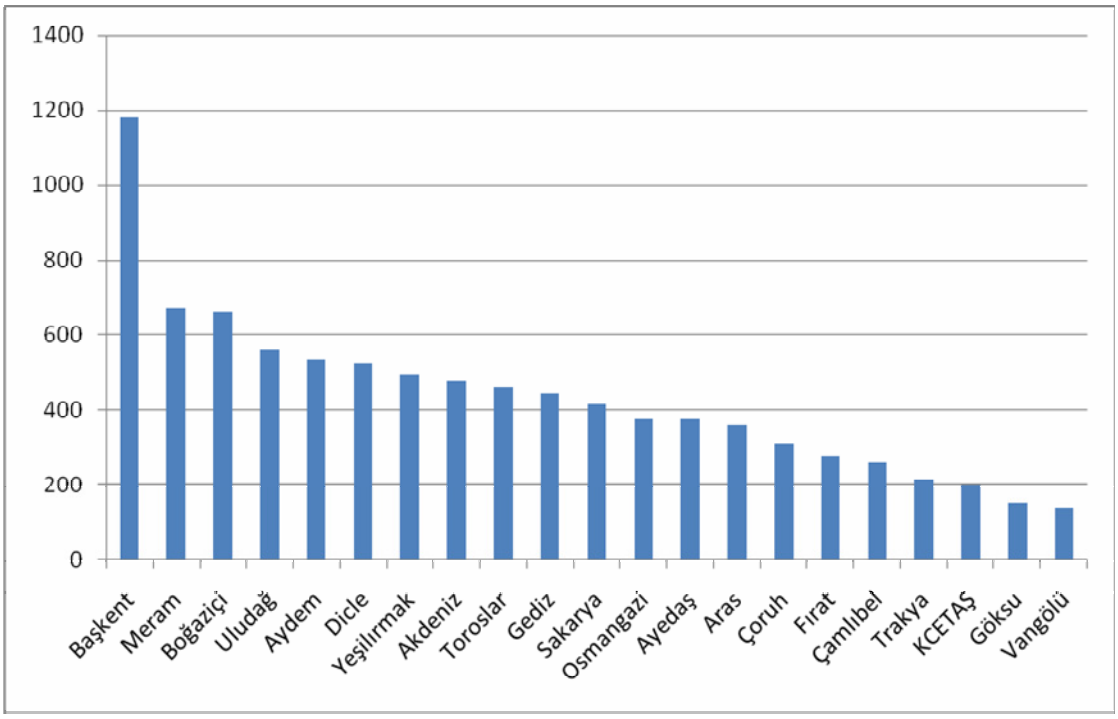
Figure 8-7: Approved and realized investments of distribution companies (million TL)



Source: EMRA

Roughly, a 9 billion TL investment budget has been approved by the Board for the second application period, that is, between 2011 and 2015.

Figure 8-8: 2011-2015 Total Investment Expenditure (TL)



Source: EMRA

8.5 AUDIT

Accepted on 29.12.2010 and numbered 6094, a provision which stating that "*the investigation and auditing of the generation plants and other plants that are mentioned in this Law are made by EMRA within the context of the licenses or EMRA may have auditing companies make the investigation and auditing in case of which the costs of the investigation and auditing belong to the related parties. The procedures and principles with regard to auditing companies are to be defined with a Code by EMRA through taking the view of the Ministry." has been added to The Law claiming a change on "The Law of Renewable Energy Resources Used for Generation of Electrical Energy"* which made the auditing of the privatized distribution companies by the auditing firms that are authorized by EMRA possible

The "Draft Code on Auditing The Generation and Distribution Companies Active in Electricity Market Within the Scope of Their Licenses" has been published on EMRA' s web page to ask for public opinion within the frame of related legislation

This draft contains regulations related to auditing of the generation and distribution companies which are licensed by EMRA in compliance with the Law, Codes, Annunciations, and Board Decisions for electricity market.

Besides, as a result of investigations made on distribution companies and the information and documentation presented by the market participants and consumers to EMRA, the following consequences have been reached:

- Regarding the applications for connection to the distribution network within the context of Electricity Market Customer Services Regulation and Electricity Market License Regulation: the written notification of a reasonable time with the excuses to the applicant that the demand for connection will be satisfied in case there is poor capacity related with the system usage when connected to the system, there is the need to expansion investment or new investment and there is lack of financing, the enlightenment of the applicant about the deduction of the cost of the investment from the distribution tariff of the real or legal entity that is connected to the network if the applicant is reluctant to wait for the aforesaid period of time for the new investment, the clearly statement of the above rule in all energy permits.

- Regarding the technical quality: to take necessary precautions and making periodical measurements without waiting for the consumers to apply on the end consuming point of the distribution system while staying stick to the part of "The Regulation for Supply Sustainability and Technical Quality of Electric Energy Offered in Distribution System of Electricity Market" that involves limits for technical quality and troubleshoot the problems while evaluating the applications of consumers regarding technical quality of electricity at first

- Regarding the supply sustainability: it is seen on investigation that, the durations of unreported power cuts are higher than the ones appearing in the attached tables of "The Regulation for Supply Sustainability and Technical Quality of Electrical Energy Offered in Distribution System of Electricity Market", the durations of reported power cuts are very long although there is not any limit cited in the mentioned Regulation, the prevention of successive power cuts within a program including maintenance and repair to minimize the duration and the frequency of reported and unreported power cuts, the prevention of any consumer indemnification through informing consumers about the date of power cut, the beginning and ending time of power cut using written, visual and audio mass communication,

- Regarding the takeover of the power plants that belong to 3rd parties: consummation of the power plants in common use to be done by distribution companies, the quick takeover of aforesaid plants without putting forward a condition, doing required maintenance and repair, making dispossessions when necessary,

- With regard to the paragraph four, article 40 of Electricity market License Code: the realization of construction works, purchase and sale of goods and services in an equal, transparent and competitive environment by the distribution companies that have a regulated tariff,

- According to the first paragraph of the 41st article of "The Communiqué on Basics of Reporting and Elements to be Regulated within Revenue and Tariff Regulation in Electricity Market", the commercial transactions such as the sale, the rent and the purchase of the goods and services the costs of which are not determined by "The Electricity Markets Tariffs

Regulation" or borrowing or lending should be done in a way proper to the costs of those transactions,

- The presentation of the commercial policies and procedures taking part in the first paragraph of 41st article of the communiqué and the observance of these policies and procedures.

8.6 QUALITY INDICATORS

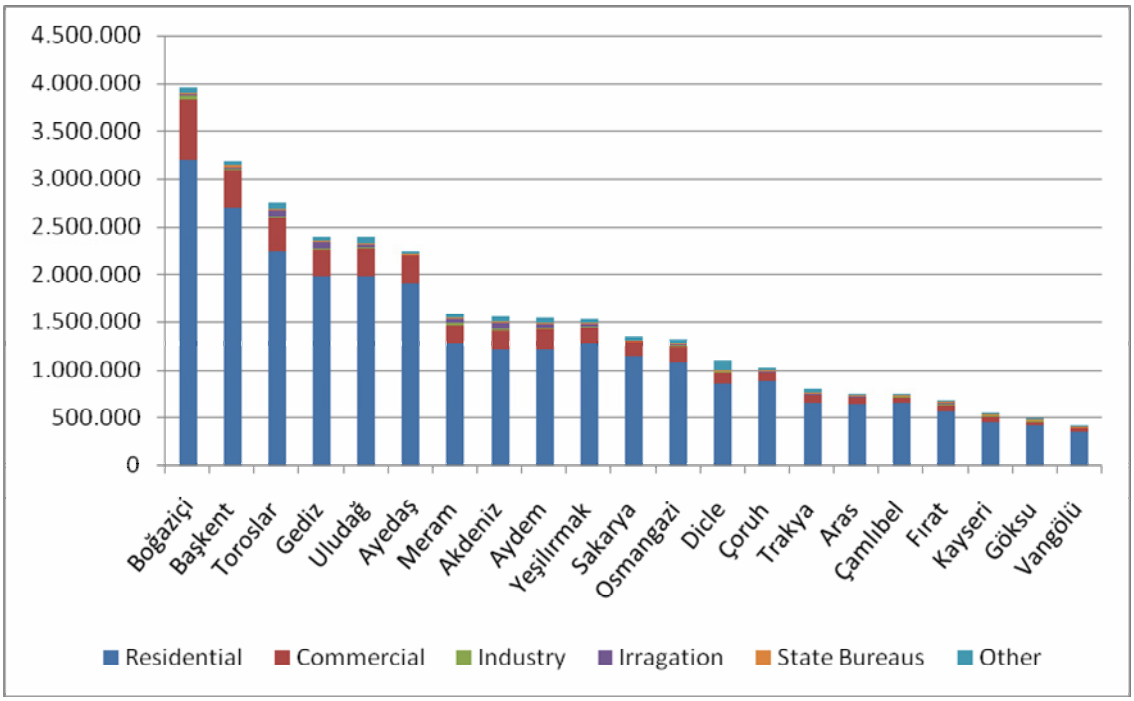
The necessary basis to collect the quality indicators has been defined via the Law and related legislation. With regard to this, the distribution company whose investment plans that foresee investment for remote viewing and control necessary for automatic recording of supply sustainability and technical quality have been approved by the Board, for the sake of healthy measurement in the second application period, in accordance with the second temporary article of "The Regulation for Supply Sustainability and Technical Quality of Electricity Energy Offered in Distribution System of Electricity Market", is responsible to complete the investment in question by 31.12.2012 and to begin recording all data related to supply sustainability and technical quality by 01.01.2013.

On this matter, a 1.29 billion TL subsidy has been approved by the Board to be used in the second application period of 2011-2015 for the whole country in order to fulfil the infrastructural investments of distribution companies to insure supply sustainability and technical quality.

8.7 NUMBER OF SUBSCRIBERS AND DISTRIBUTED AMOUNT OF ENERGY

In our country, there are 32,282,702 head of users of the electricity distribution system by 2009 and Boğaziçi Electricity Distribution Co. has 3,954,871 subscribers which is 16.4% of Turkey and the highest among the distribution companies.

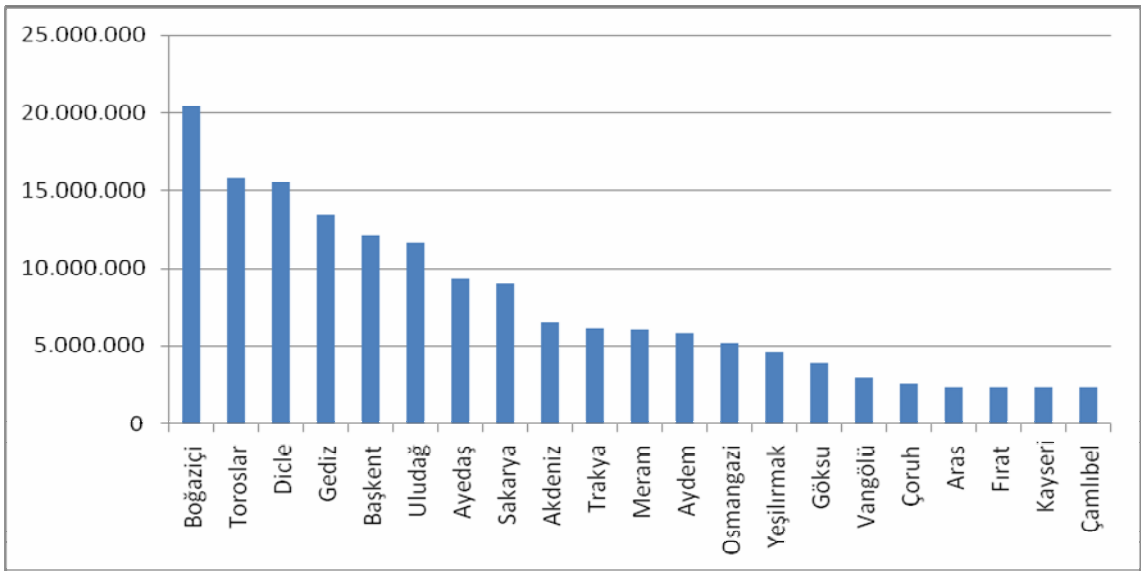
Figure 8-9: Number of Subscribers on Basis of Distribution Regions by 2009



Source: TEDAŞ

Distributed energy amount is shown in Table 8-11.

Figure 8-10: Consumption Amounts on Basis of Distribution Regions (MWh)



Source: TEDAŞ

9 ACTIVITIES OF ORGANIZED INDUSTRIEL ZONES (OIZ)

OIZs providing employment to about half a million people are not only industrial enterprises, but also enterprises as source of employment. While the industrial facilities in the body of OIZs are employment bases, they are also driving force of the export activity, which is very important for our economy. For this reason, it is of significant that the energy need of these facilities should be supplied in a constant, quality and cost-effective way. The reason is that these facilities can improve their competition power only by reducing all input costs to achieve competition worldwide. OIZs, which are eligible consumers irrespective of their consumption levels, have the possibility to have electrical energy in the competitive arena cheaper from the suppliers holding production and wholesale licenses operating in the free market. Participants within the borders of OIZs where loss and leakage ratios are low, have the facilities to compete worldwide by getting cheap electrical energy.

By the end of 2010, there were 263 OIZs in status of legal personality and 148 of which are in operation. In order to make the Organized Industrial Zones compliant with the Law No. 4628 and related regulations, the Organized Industrial Zones were allowed to operate by getting licenses within the borders approved under the Regulation of Electricity Market Activities of Organized Industrial Zones (Regulation) with an amendment made in the Law in the year 2006. In this context, the following basic activities are regulated by EMRA:

- OIZ distribution and OIZ generation license are granted to OIZs;
- By taking into consideration the investment and operating expenditures and technical losses of OIZS which get electrical energy in the capacity of eligible consumer, distribution prices and other services prices are determined;
- Furthermore, principles and procedures related to other matters in connection with other activities are regulated.

9.1 OIZ GENERATION LICENSE

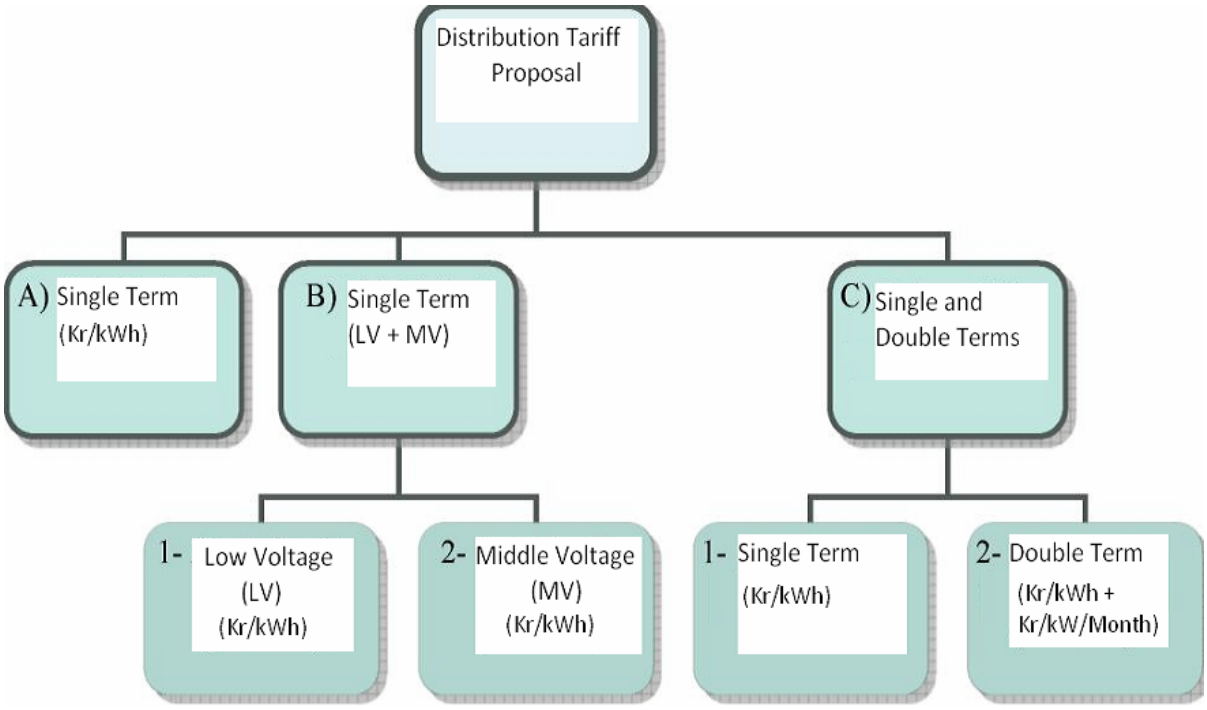
Throughout Turkey, OIZs consume electricity over 15Twh and natural gas over 4.5 billion cubic meter. About 8% of the electricity consumed in our country is consumed by OIZs. There is no OIZ that has obtained generation license from EMRA by the end of 2010.

9.2 OIZ DISTRIBUTION LICENSE

Of 148 OIZ in operation, OIZ Distribution License was given to 127 OIZs by the end of 2010. OIZ Distribution Prices to be applied by OIZs in 2011 were approved and posted in the website of the Authority. Licensing procedures of other OIZS in operation and newly established OIZs are going on.

Proposal of OIZ Distribution Price is determined by referring to "Table 1: Table for Calculation of Annual Distribution Price for Organized Industrial Zones" attached to the Regulation and it may be offered in 3 different ways as shown below, namely, single-term medium voltage (MV), single-term low voltage (LV) and single-term, double-term distribution price.

Figure 9-1: Types of Distribution Price Proposal



While average distribution prices approved for the year 2010 was 1,09 Kr/kWh, average of Distribution prices offered for 2011 was 1,39 Kr/kWh; average of the approved prices 1,22 Kr/kWh, and weighted average 1,14 Kr/kWh.

When we analyze OIZ Distribution Price proposals which have been taken as basis for calculation of OIZ distribution prices for 2011 and stated by OIZs that it has covered their costs, there is no certain relationship between the proposed distribution prices and number of participant and total line length; and that the proposed distribution prices were considered partly related to the fact that OIZ is not new, investment policy and energy amount supplied.

Figure 9-2: Relationship of the Distribution Prices Proposed by OIZs with Number of Participants

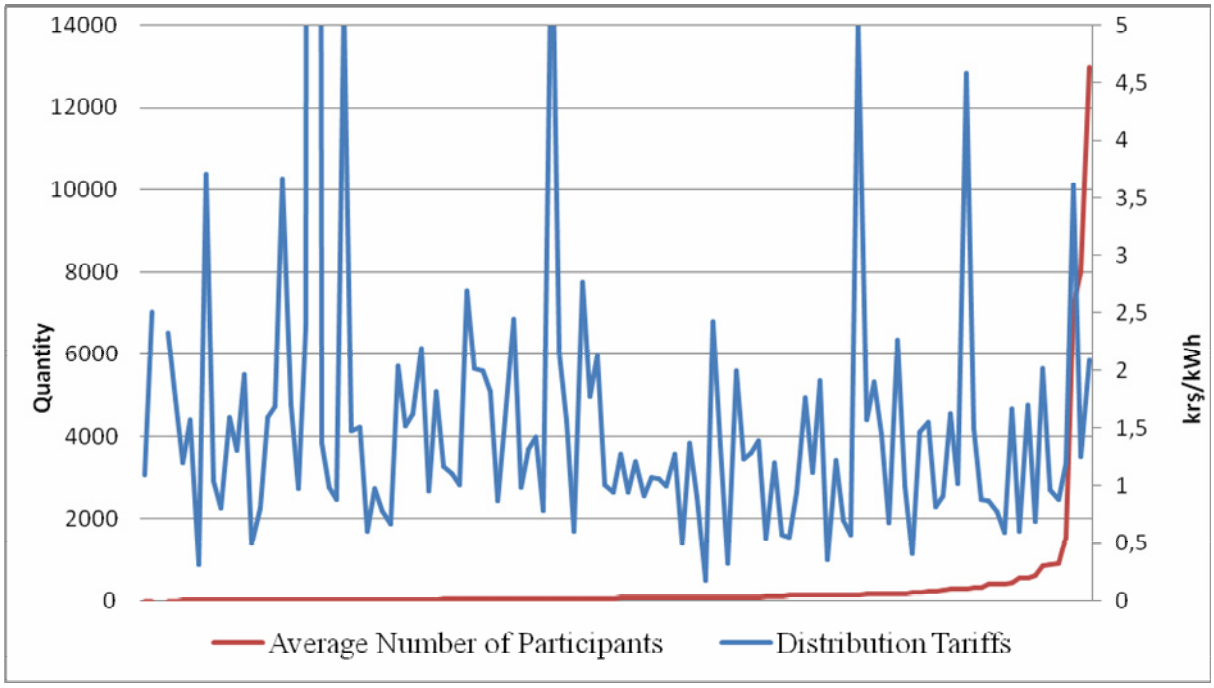
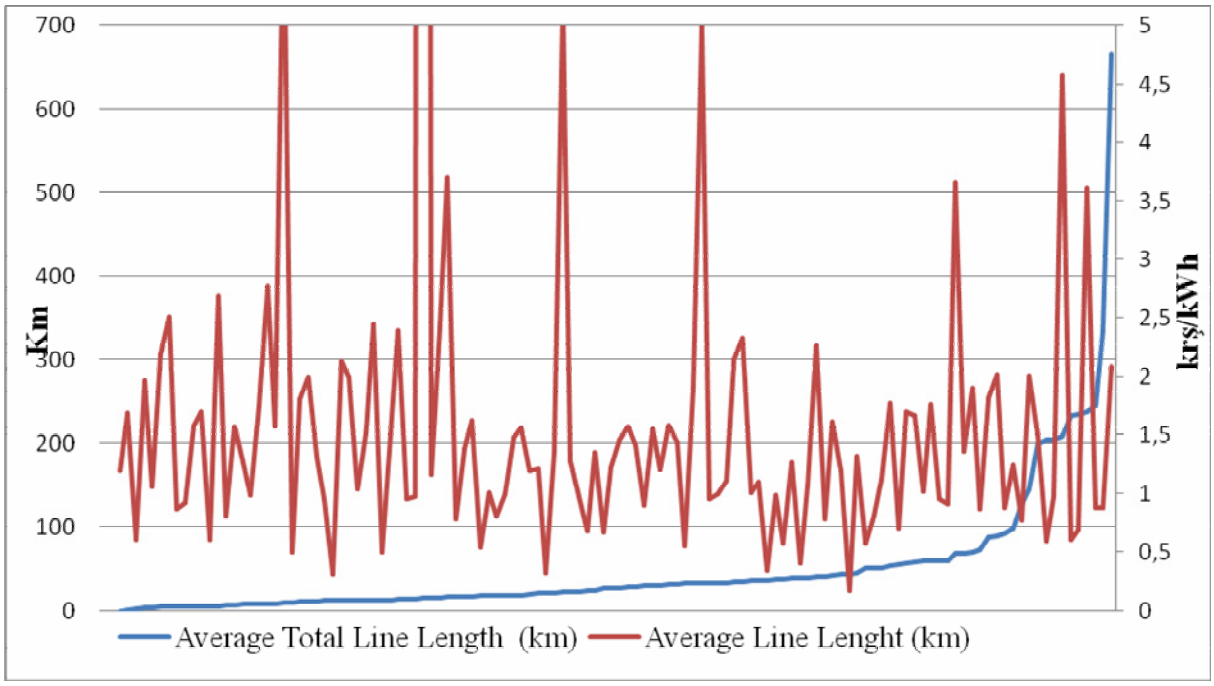
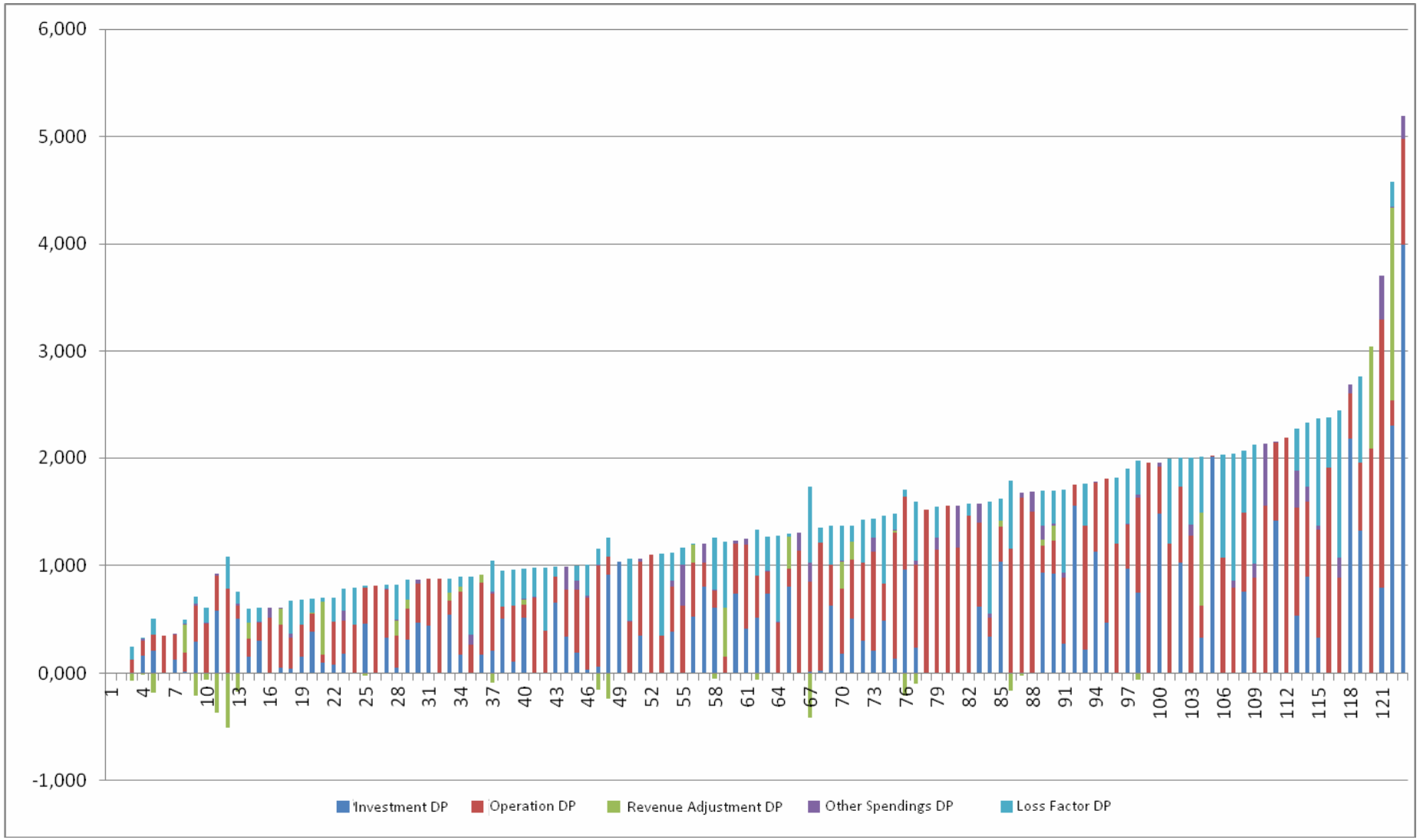


Figure 9-3: Relationship of Distribution Prices Proposed by OIZs with Line Lengths



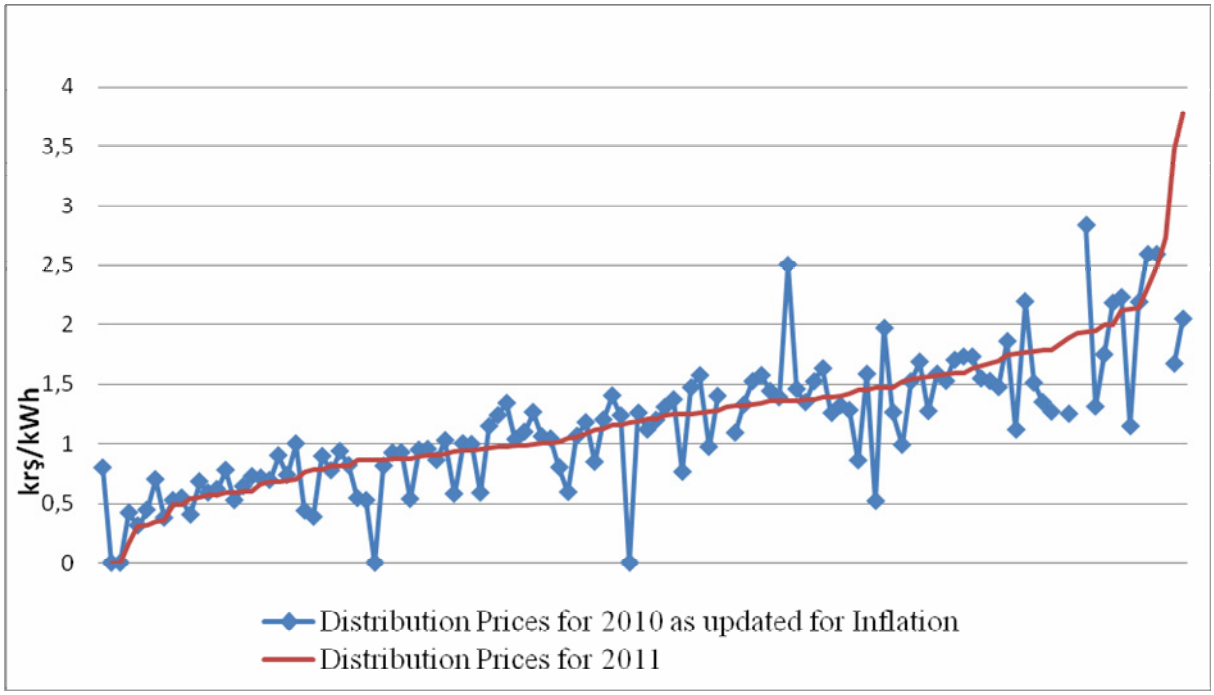
As shown in Figure 9-4, the proposals of distribution prices are basically consisted of operating costs and investment costs.

Figure 9-4: Components of the Distribution Prices Offered by OIZs (Kr/kWh)



Upon comparison of the cost items of OIZs proposing distribution prices, the distribution prices approved for 2011 and distribution prices for 2010 as updated by inflation are compared below:

Figure 9-5: Comparison of the Distribution Prices Approved for 2010 and Distribution Prices for 2010 as Updated by Inflation



In Figure 9-5, the distribution price is shown in an increasing graphic and the distribution prices for 2010 updated by inflation are compared with this graphic. In general, it is seen that while there is reduction in the distribution prices of 70 OIZs, number of OIZs with increasing distribution price is 51.

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