Nexia Turkey
Corporate Finance

ENERGY INDUSTRY REPORT 2009

NEXIA
INTERNATIONAL

CONTENT

AS/NEXIA TURKEY

Nexia Turkey is a professional auditing and consultancy company serving the leading firms in Turkey by giving independent auditing , financial advisory, full certification,corporate finance, designing and providing internal auditing, management consultancy, turaround management, tax dispute services.

Nexia Turkey executes its services with 10 offices country-wide with more than 170 partners and staff. Its Head Office is located in İstanbul and branches are located in Adana,Ankara,Bursa,Denizli and İzmir. Moreover Moscow Office ,active since 1994, with more than 30 specialist staff giving financial counsultancy, auditing and accounting services for leading Turkish Companies operating in Russian Federation.

Nexia Turkey is established by distinguished,respected and experienced professionals in audit and counsultancy sector and became a member of Nexia International,a world- wide network ranking top ten, as of 1 May 2007.

PREFACE

In the present-day economic atmosphere where the global crisis has been affecting Turkey by all its means, the electricity generation sector, the basic input of the industrial production that has been shrinking since August 2008, has been getting its share from the current unfavorable developments. Although it seems to have been affected less compared to the other sectors, the latest electricity consumption data announced support this argument.

The per capita electricity consumption in Turkey is much lower than the European countries. Considering the demographical structure and fast urbanization development and growth of our country, the electrical energy generation has a considerable potential in the medium and long run despite our expectation of shrinkage in the sector for the year 2009. The local and foreign investors' interest in the privatization tenders confirms this comment.

In spite of the liberalization steps taken after the year 2001, the public dominance in the sector continues. Although an increase can be observed in the private sector's share after the private sector investments and the privatization tenders made recently, the sector is still under the control of the public.

Although it is common to use fossil fuel in the existing energy generation facilities, the concentration is shifting to renewable energy resources in generation. The incentives and guarantees developed, though limitedly, also support the interest in generation through the renewable resources.

It is seen that the privatizations in the electricity sector are continuing despite the crisis. The local and foreign firms are seriously interested in the purchasing and investment opportunities in the sector. Among the developing countries, considerable electricity consumption increases are expected in Hungary, Poland, and Mexico as well as Turkey.

In spite of the optimistic expectations, the biggest problem of the sector is the supply of project finance. Long construction periods, return of investment periods longer than 5 years seem to be the biggest impediment in front of the project finance loan demands. According to the consumption scenarios published by TEIAŞ, it is necessary to make investment up to minimum 20-25% of the current capacity in the coming decade, and the financial need is calculated as 10 billion Euros.

According to the common opinion in the market, the consequences of the first tender made by TETAŞ to develop renewable energy financial sources and accelerate the projects under construction support the investors' high electricity price expectations. We think that the consequences of the bilateral agreement tenders to be made for a 4-year process will steer the sector.

We have prepared our present study examining the general structure of the energy generation sector, developments, and expectations so as to create a resource for the firms that are present in the sector as investors and the new firms that want to enter the sector.

Murat Kutlutürk
Corporate Finance Partner

AS/Nexia Türkiye

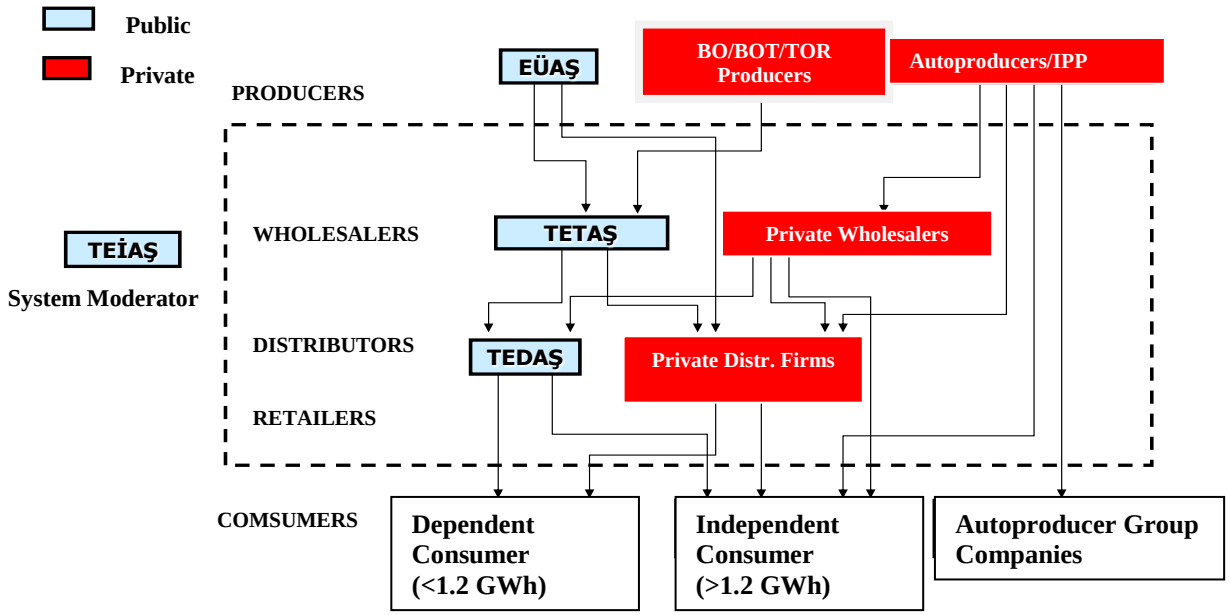
1.THE ENERGY GENERATION SECTOR

1.1. Sectoral Structure

The public sector continues to have a dominant position in the Turkish electricity market. The share of the public generation company Electricity Generation Co. Inc. (EÜAŞ) shows a regression trend due to the privatizations and Transfer of Operating Rights. In the existing situation, 48% of the electricity generation is carried out by the power plants and generation companies that are affiliated to EÜAŞ and its subsidiaries.

Transmission and wholesale is carried out by the 100% public companies Turkish Electricity Transmission Company (TEİAŞ) and Turkish Electricity Trading and Contracting Company (TETAŞ).

The retail sales are carried out by the Turkish Electricity Distribution Company (TEDAŞ), which is assigned to the Privatization Administration for privatization purposes.

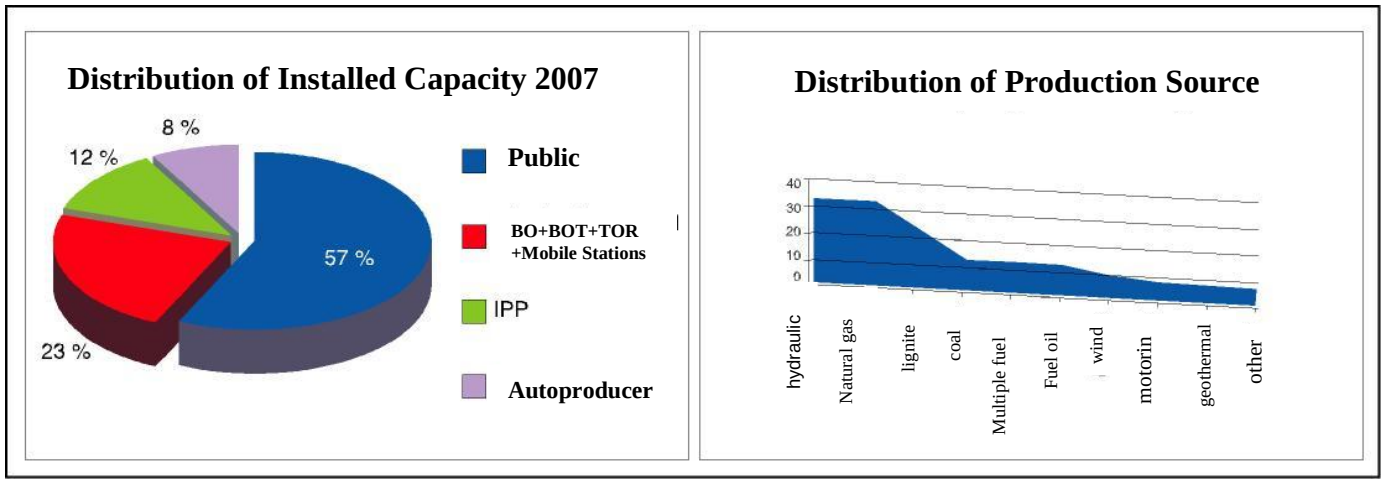


EÜAŞ : Elektrik Üretim A.Ş.
TEİAŞ : Türkiye Elektrik İletim A.Ş.
TEDAŞ : Türkiye Elektrik Dağıtım A.Ş.
BO(T) : Build-operate-(transfer)
TOR : Transfer of operating rights
IPP : Independent Producers

1.2.Installed Capacity

Major part (53%) of the 41,971 MW installed capacity in Turkey belongs to the government-owned EÜAŞ and its subsidiaries. However, the share of the private sector has been increasing year by year: the same rate was at a level of 74% in 2001.

Installed capacity figures on the basis of resources are as follows: 33% of the installed capacity is comprised of the plants built on dams or rivers, and this is followed by natural gas based generation plants with a rate of 32% and lignite based generation companies with a rate of 19



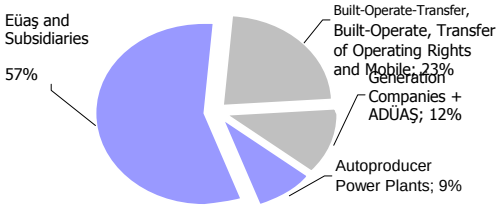
Despite the great interest and investment moves, the share of RES power plants is 1 % and the share of geothermal energy in total installed power is 0.7% and Coal plants; imported coal (4%), and stone coal (% 1) have % 5 of the total installed power.

1.3. Electricity Generation

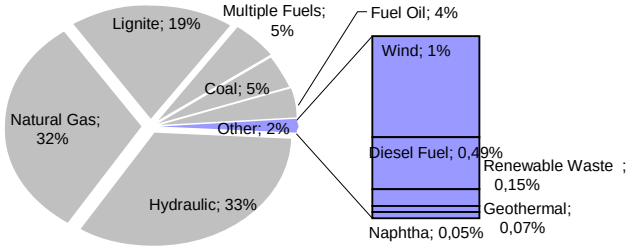
According to the data of 2007, EÜAŞ and its subsidiaries, holding 57% of the installed capacity, have accounted for 49% of the electricity generation in 2008, and the private sector plants and enterprises holding 43% of the installed capacity have accounted for 51% of the electricity generation in 2008.

The share of natural gas in electricity consumption is presently at a level of 48%. In other words, the natural gas dependence of the sector stands at a level of 48%.

Distribution of Installed Capacity on the basis of Producers (2007)



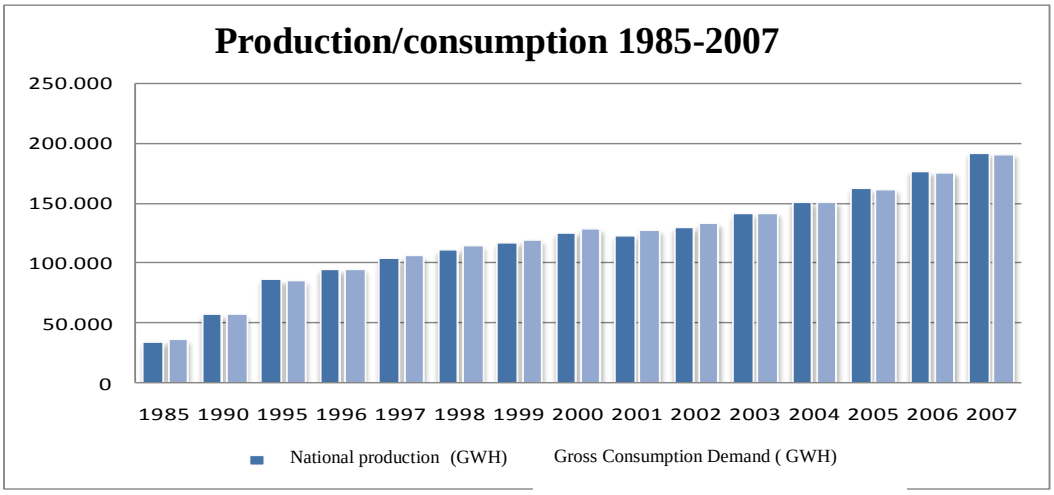
Distribution of Installed Capacity on the basis of Resources (2007)



It is expected that the share of " green" energy will increase within the framework of incentives and guarantees provided for production made from renewable resources.

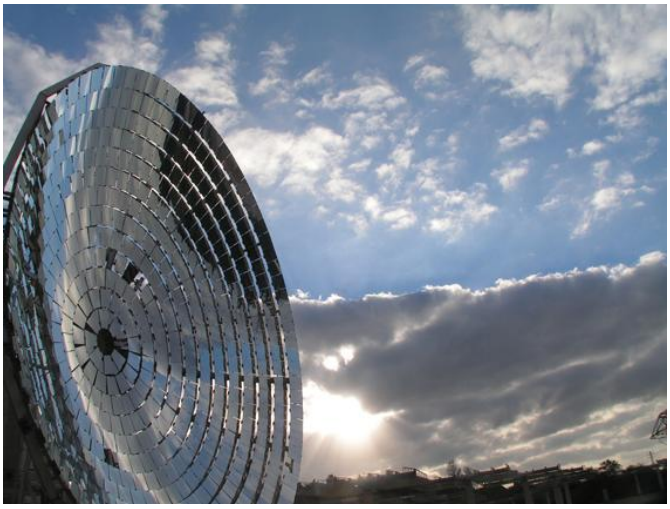
1.4. Electricity Consumption

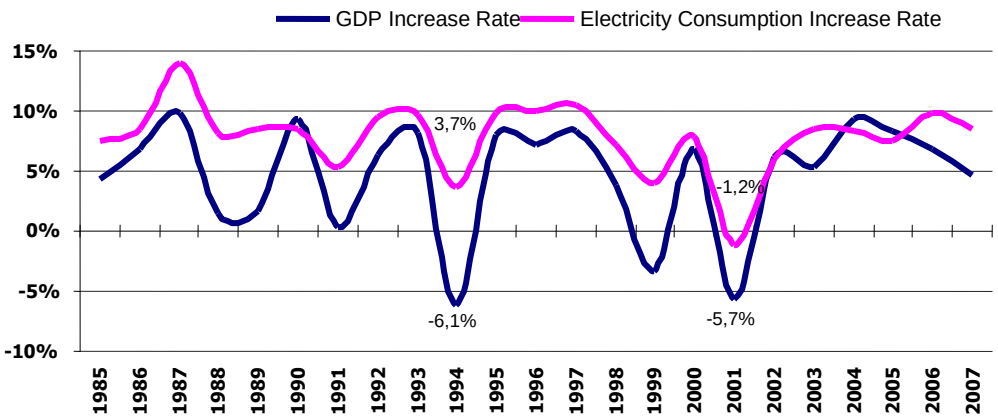
According to the data described by TEİAŞ, gross consumption demand between the years 1985-2007 has reached 190,000 GWH at a rate of % 7.8 in annual compound basis. Outside of the % 1.1.narrowing appeared in 2001 economic crisis electricity production and consumption are growing on a regular basis.



Electricity consumption demonstrates a more resistant picture during the economic crisis periods. For instance, in 1994, GDP has decreased at a level of 6.1% while electricity consumption has increased by 3.7%. Similarly, economy has shrunk at a rate of 5.7% in 2001, and electricity consumption has decreased by 1.1%.

In 1985-2007 period, GDP has increased by 4,7% and electricity consumption trend has shown an average increase speed of 7,8%.





GDP

Average Growth	4,7%
Standard Deviation	4,6%

Electricity Consumption

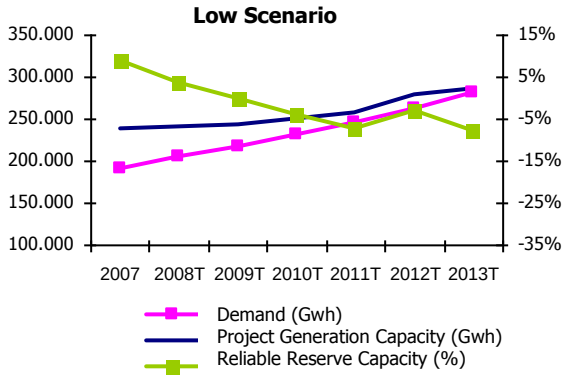
Average Growth	7,8%
Standard Deviation	2,9%

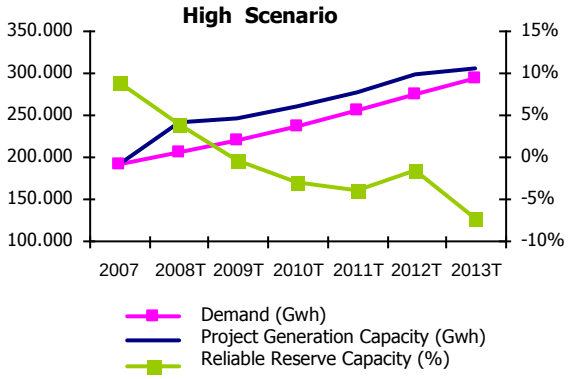
In the light of the data described above, it is understood that there is a meaningful relationship and a similar rate of growth between economic growth and electricity consumption but economical norrowings are not reflected on consumption at the same rate.

TEİAŞ Projections

The total electricity consumption in the first 2 months of 2009 has narrowed at a rate of % 8.3 compared to the same period of 2008. It is likely to see similar developments during the 6 months of 2009 in paralel with the serious decline in industrial production data described. Despite the decline seen in energy consumption, the possibility of supply deficincy in next 10 years in Turkey has been expressed seriously in the report prepared by TEİAŞ.

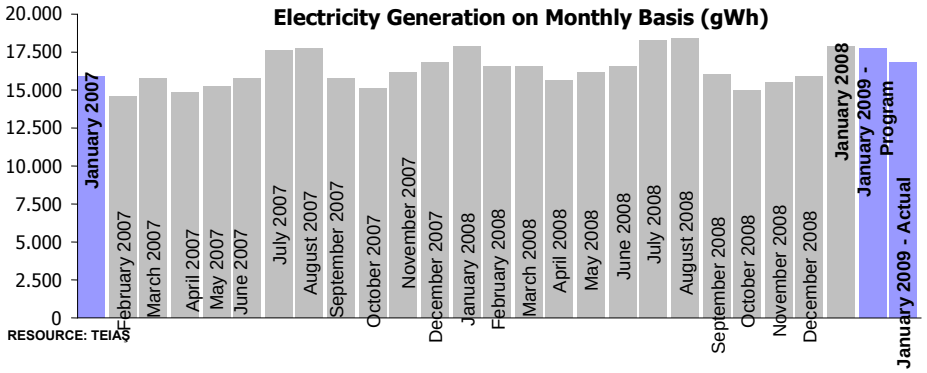
TEİAŞ has revised its previously-prepared 10-year electricity demand projections in the form of two different scenarios. Accordingly, the High Scenario set for the 2008-2017 period predicts a 7,5% increase in the average annual consumption demand, and the Low Scenario predicts an increase of 6,3%. These studies have shown that the High Scenario expects a supply deficit in 2009, and the Low Scenario expects the same supply deficit in the 2010-2011 period. In other terms, it is foreseen that the reserve capacity (production reserve) will reduce to a level that would jeopardize the supply security starting from 2008.





Electricity Generation/Consumption Estimates for Turkey in the Global Credit Environment

The electricity consumption that began to fall as from October 2008 has shown a decrease of 6% in December and increased by 2% on a monthly basis. According to actual January 2009 data (the latest data) announced by TEIAŞ, a 6% loss has occurred on an annual basis. According to the previous January 2009 program prepared by TEIAŞ for this period, it had been predicted that the electricity generation was going to decrease only by 1% compared to the level of January 2008.



Although TEIAŞ prepared its programs based on the assumption that the electricity generation/consumption would increase at 4% level in 2009, it was announced that this program had been revised following the announcement of January data.

1.5 Projects in Construction Phase and Their Progress Levels

In order to prevent electricity supply deficit considered inevitable in current situation of Turkey , local and foreign investors has taken important investment steps in last 3-year period According to the data from EMRA there are 497 premises to have 25,122 MW power are in construction phase and accounts for a capacity of 60% of the existing installed capacity (total of 41,987 MW) in Turkey.

Projects in Construction Phase and Their Progress Levels

Type of Plant	Number of Projects	Installed Capacity (MW)	Average Annual Generation (Million KWh)	Average Progress Level (%)
Total Thermic				
Coal	18	7.268	51.243	15
Natural Gas	47	3.793	28.423	22
Fuel Oil	2	87	565	50
Other (Asphaltite)	2	415	2.928	27
Total Renewable				
Hydroelectric Power Plant	328	10.399	37.576	16
Wind Power Plant	90	3.064	10.825	14
Geothermal Power Plant	3	64	445	83
Other (Landfill Gas, Bio-Gas)	7	32	241	8
Total	497	25.122	132.247	17

Resource: EMRA (Energy Market Regulatory Authority)

EMRA requires the project owners to provide information about the latest status of the relevant projects for which it grants electricity license, and submits such information to the Ministry of Energy. In this extent, the latest Project Progress Status report sent to EMRA and prepared by those companies which have obtained license from EMRA between 24th April 2003 and 10th September 2008 is as follows:

Despite the relative intensity of dependence on natural gas, natural gas power plants continue to be the most preferable plants due to such reasons as their supply possibilities, lower installation costs and especially their higher capacity factor compared to the renewable energy resources. 15.1% of the ongoing projects consist of the investments based on natural gas.

On the other hand, the coal power plant projects have reached the level of 29%. The government incentives provided especially for local coal is the most important reason of this interest.

1.6 Status of the Projects in Construction Phase in the Global Crisis Environment

Energy investments are long-term projects by their nature, and these investments are presently facing financial difficulties due to the global crisis. A lot of projects which cannot find long-term project finance have been ceased. Many small and large scale companies are now experiencing difficulties in finding project finance or partnership possibilities that they have intensely used in the past.

While the companies are seeking new partners to solve their financial problems in this crisis environment, the small scale investors that have previously been licensed by EMRA have started to pay frequent visits to the big

companies in the sector to sell these licenses. However, the big groups that have previously assured their financial requirements for the relevant projects and/or have foreign partners are continuing to make investments.

In this period, there are increased number of comments stating that the rates in the above table indicating the average progress levels in the sector (actual rates) are far from being reliable data and need to be investigated more thoroughly especially in the crisis environment.

2. SECTORAL DEVELOPMENTS

2.1. Balancing and Settlement Regulation (DUY)

In order to fill in the supply deficit and encourage the energy generation of the private sector, the balancing and settlement (DUY) system has been put into practice in accordance with the "Balancing and Settlement Regulation".

The purpose of the system is to increase the efficiency and effective resource utilization of the sector through an electricity market operating with a competitive pricing system.

Despite the absence of a fully-open spot market due to the fact that most of the players on the buying and selling side of the existing situation are government bodies, the private sector producers have taken advantage of the high price levels in the market and optimized their margins.

2.2. DUY Mechanism

The Balancing and Settlement system, which is prepared on the basis of the English energy practices (the clearinghouse system) and the Electricity Market Law No. 4628, requires that the private and public sector electricity generation companies notify the system operator, TEİAŞ's National Power Distribution Center, of the amount of electricity they can generate and their price offers, on a monthly basis taking into account the status of their plants and their costs.

TEİAŞ, taking into account the requirements of the system, arranges the price offers in order and then instructs the companies to either increase or reduce their energy generation according to these price offers for the purpose of establishing a supply-demand balance in the electricity system.

Thus, the system is kept balanced and, at the end of each month, the receivables and payables of all the system users are calculated and settled on the basis of the "system imbalance price (SDP)" through TEİAŞ's Market Financial Settlement Center (PMUM).

In the existing situation, total of 274 autoproducers, autoproducer groups, retail, wholesale and generation companies are buying and selling electricity within the Balancing and Settlement system.

2.3. Automatic Pricing System

The automatic pricing system "Cost-Based Automatic Pricing Mechanism for Energy SEEs (State Economic Enterprises)", which entered into force in July 2008, is based on calculation of the electricity prices according to the formulas designed on the basis of the cost factors in electricity generation. According to this logic, if the costs increase, the prices of electricity will increase as well. In addition, upward and downward adjustments will be made in electricity prices three times a year.

2008	January	February	March	April	May	June	July	August	September	October	November	December	Cumulative Increase Rate
Electricity Tariff Price Change	11%						22%			9%			48%
Natural Gas Tariff Price Change	7%					9%		20%		5%	23%		81%
Average Balancing and Settlement Prices (SIP)* (YTL/MWh)	164	166	161	157	163	156	176	173	152	131	162	132	

*SIP: System Imbalance price, RESOURCE: TEIAŞ

2.4. 4-Year Bilateral Purchase Agreement of TETAŞ

TETAŞ has stated that it will make energy purchase agreements for purchasing of the generation of the "existing" or "to-be-commissioned" generation plants of the license holder legal persons and that the duration of the agreement will cover the 2009-2012 period (4 years).

Through this tender, the public authority intends to assure Market security by way of bilateral agreements. In addition, downward adjustment of the prices which were set according to the Balancing and Settlement mechanism is considered a secondary important objective. The advantages to be provided by this tender may be listed as follows:

- The investor companies make pricing and generation estimations on a monthly basis in accordance with the Balancing and Settlement mechanism. Through the bilateral agreements to be signed as a result of these tenders, the predictable and/or manageable period for all parties will be extended up to 4 years.
- It will be possible to participate in tenders for the projects which have not yet been put into operation and will be put into operation until 2012, thus providing these companies with the opportunity to complete their investments. Because the new system is expected to bring a kind of a solution to the existing resource problem, based on the assumption that the 4-year contracts may be accepted as a guarantee by the banks.

32 proposal have been submitted to the tender dated 16.03.2009 and the rates are between 19,5-29,8 Krş/Kwh.

3. BASIC INCENTIVES

Renewable Energy Investments: Law No. 5346: The law concerning the use of renewable energy resources in electricity generation has made it possible for the private sector to generate electricity with the renewable energy resources. With the additional regulations prepared in 2007, the purchase guarantee period given for the electricity energy to be generated in the renewable energy plants that will enter into operation until 2011 has been extended from 7 years to 10 years, and a base price has been set at a level of 5 eurocent/kWh.

Nuclear Power Plants: With the "Regulation on the Procedures and Principles and Incentives related to the Tender and Contract to be made under the Law Concerning Construction and Operation of Nuclear Power Plants and Selling of Energy" prepared for the **Law No. 5170**, TETAŞ will provide a 15-year purchase guarantee for the electricity generated in the nuclear power plant in Mersin-Akkuyu that has a nominal capacity of 4000(±%25) Mw.

Coal Power Plants: Law No. 5170, Provisional Article 2: The electricity generated by the thermal power plants with a capacity over 1000 MW, which will be installed on the coal sites controlled by EÜAŞ and which will use local coal, will be purchased by TETAŞ for a period of 15 years, provided that such plants will enter into operation until 2014. In other words, these types of investments have been secured with a 15-year purchase guarantee by TETAŞ.

Other Incentives: Law No. 5784 , Provisional Article 14: Several incentives have been granted to legal persons holding generation and autoproducer license. Accordingly;

A 50% discount shall apply on the system utilization prices of the transmission systems from the moment the generation plants start operation until the end of year 2012.

During the investment period of those generation plants which will start operation until the end of 2012, the procedures related to the generation plants and the relevant documentation will be exempt from the stamp duty and imposts.

4.RISKS OF THE SECTOR

Dependence on Foreign Resources for Natural Gas: Almost 72% of the total fuel consumption is imported. Therefore, supply deficits arising from international disagreements may have direct influence on electricity generation.

Raw material cost-sales price imbalance: Before starting to use the Balancing and Settlement system, the companies were unable to reflect the raw material costs on the electricity sales prices. After establishing the system, the companies have resolved this problem. However, if the demand reduces in 2009 and the TETAŞ tender of 16th March 2009 achieves success, it will be possible for the sales prices to fall down.

Risks resulting from bureaucracy, competent authorities and legislation: The energy legislation and the legal infrastructure often undergo changes. Even if the existing changes fit the benefits of the companies, new changes are likely to take place either due to change of government or other reasons.

Risk of drought arising from climate changes: There are very limited actions to take for the drought problem, which cause huge risks especially for the hydro power plants. The producer companies are making efforts to overcome this problem by way of diversifying their generation portfolio.

5. SWOT

Strengths

- Incentives
- Demonstrates local conditions, is not influenced by the global supply-demand imbalance

Weaknesses

- High level dependence on foreign resources for fossil fuels
- Finance problems
- Existence of a great number of players

Opportunities

- Supply deficit
- Consolidation process in medium and long term
- Emission trade

Threats

- May cause the global crisis to deepen, escalate and stretch out for longer periods
- Legal problems, lawsuits
- Raw material supply problems
- Global warming and drought

6. CONCLUSION

Despite the financing problem of Turkish electricity generation industry, the medium and long term picture of the sector is considered positive. It is known that because of the abstaining attitude towards financial loans, investments are about to stop, but firms who solved the financial problems regarding significant projects are continuing to make investment. The project development firms which has been granted their licenses from EMRA but have not initiated the projects yet, and other investors are postponed their 2009 projects. In addition to this, it is obvious that "wait and see " age moves towards its end.

Foreign initiatives in the sector are continuing to exist and this creates a consolidation process for the sector. Especially the small scale project owners and project developers that have been licensed by EMRA are seen as target companies-projects to be acquired by the other big players and foreign companies in the sector. This tendency is likely to increase especially after year 2009.

The proposals participated to the purchasing tender of TETAŞ which has been held on 16th March 2009 supports the positive atmospheres in industry.

The next 1-2 year period has significant potental business opportunities in terms of either fixed investment por purchases and mergers. The governmet intends to increase the investments and opportunities by increasing the volume of incentives provided to the industry.

It is strongly reccommended that investor firms should follow the next steps of government as they are expected to give direction to the sector's development.

AS ENERGY MODEL

AS Energy model has been prepared for the companies investing in energy industry or the companies which are planning to operate in industry. The model designed to cover all renewable energy industry's investment types. (Hydrolic, Geothermal or Wind)

The model briefly calculates the economical credibility of the project. At the same time the model helps users to identify, the level of dept, equity ration, investment budject etc.

The model also automatically estimates the company value where each energy investment is regarded as an independent company.

AS Energy Model includes accurate technical (investment costs) and economical sides (inflation, electricity and carbon costs, tax rates etc.) of energy investments.

The model stands out with two important sides It is a dynamic model. At the same time the model includes reference data as a matter of investment costs and economical data.

The investment costs of previous projects have been included as reference data in the model. The attached references are particularly important for the companies that have not invested in energy industry yet. Being informed whether the estimated investment costs reflect the market prices or not, will increase the incidence rate of steps taken and decisions given before starting the investments.

Dynamic Model

The most important characteristic of the model is; having a "DYNAMIC" structure. It means that the model has not been specifically prepared for a Project. The model estimates the project's "investment costs" which can be either Hydrolic, Geothermal or Wind types by considering the listed items below;

- Installed power,
- The type of selected turbine and/ or origin of the turbine
- the distance of the Project to the power line
- the depth of the well to be diged
- the number of the wells to be digged
- land to be condemned (dry, wetland, etc)
- cost of insurance

The company using the model has opportunity to see the numeric results of the investment cost on Project by changing data such as turbine type, place of origin, the size of investment

Another dynamic side of the model is that it considers the economical side of the energy industry. The items listed below are variable on the economical side of the model. It enables the evaluation of company value automatically by entering the data according to the investors' expectations.

- rate of interest,
- electricity rates,
- carbon rates,
- inflation rate
- general production costs,
- operational costs

In light of these items, the "Model" brings important references to companies planning to buy a company/Project or to companies obtaining offers out-of Company for their current projects. As it designates the position of prices offered towards the prices in market It can be called as a "support model" for decisions to be taken.

"AS ENERGY MODEL" consists every detail of energy industry and creates "benchmark" opportunities for investors. It is an important reference source to be used by the investors during decisional process.

audit ■ consulting ■ tax ■ corporate finance

NEXIA TURKEY

audit ■ consulting ■ tax ■ corporate finance

www.nexiaturkey.com.tr

AS CPA and Auditing Co.
Büyükdere Cad. No.23 Kat.5
34381 Şişli/İSTANBUL TURKEY
Tel. +90 212 225 68 78
Faks +90 212 225 62 52

Nexia Turkey
Corporate Finance