Energy Review

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http://www.turkishweekly.net/energy

Inside

Letter from the Editor

Dear Readers,

From late summer, the team that is preparing the Energy Review has undergone through a very busy period. We failed to stick our policy on regular meetings. Some of us were abroad, some of us has been assigned new duties.

Yet, the pressure on us has grown day by day. From USAK's administration to stacked emails for subscription, and last but not least Mr. Direskeneli's personel commitment, we are back again.

The period we are in is a very historic moment. The oil prices are setting new records, the environmental concerns grow and the investments have not reached the expected levels.

Therefore, we took this chance as a wonderful opportunity to make a comeback; we hope that you are looking for this issue and more Energy Review newsletters.

Our pages are always open for your comments and notes.

All the best,

Editor

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Subsidizing Electricity Price; How far?

Osman SEVAIOGLU

"Dear Members of Press, I have no such statement - Price increase in electricity- in my agenda-. If there would be such a decision, then, the Government Speaker would definitely make a public announcement. All other statements are clearly nothing, but baseless gossip and rumor. We are very sensitive on these issues. Because our Government is in a great effort to upgrade the living standards of our citizens, we are not in the same mood of our past peers as "price increase in evening, and then again price increase in the next morning". We accomplished to make to forget the wording "Price increase" from our daily life. I presume that all of you and our citizens wish to remember- those days- again. Do not let them again"

These are the words of the highest Political Authority of the Turkish Administration concerning the current discussions on the wholesale electricity prices last week.

On the other hand, in the last five years, the labor and equipment/material prices have exhibited 50 and 100% increases based on the current local economic indexes, respectively. Moreover, the price of natural gas received from GasProm of Russia has unbelievably increased by 73%; currently being 315 US Dollars per 1000 m3. The contribution of gas term to the overall wholesale electricity price is about 8.13 Cents/kWh, while, as of 18 Jan 2007, the Turkish average electricity wholesale price for TETAS (the Turkish Government owned Wholesale Company) is set at 7.6 Cents/kWh level.

Table 1. Natural Gas share in NG Based electricity generation price

NG sales price to Power plants (USD/1000 m^3)	*315,00*
NG sales price to Power Plants (US Cent/m3)	*31,50*
Electricity generation from 1 m^3 NG (kWh/m^3)[1]	*4,20*
NG in 1 kWh electricity generation (Cent/kWh)	*7,50*
US Dollar exchange rate (YTL/USD)	*1,30*
NG share in 1kWh electricity generation (Ykr/kWh)	*9,75*

Despite of all these frustrating consequences in gas prices, a member of foreign embassy in Ankara, who obviously seems to have the authority of representing GasProm, could openly stated towards the audience of an intellectual platform in a liberal university that; "Gazprom, will certainly continue to increase the natural gas prices until otherwise their clients would find alternative fuel resources for themselves.", thus creating a very cold environment in the audience.

Furthermore, in parallel with increase in political tension between USA and Iran, the oil prices and then as a consequence, the natural gas prices are expected to increase in 2008. The progressively increasing prices in NG during the last four years had a reflection on the Turkish Private Electricity Generation Sector, particularly on the autoproducers (Turkish independent Power Producers) and the Licensed Electricity Generation Companies which depend on natural gas in deep disappointment and frustration.

As a result of these frustrations, most of these companies have eventually found themselves with no alternative, but applying to Turkish Market Balancing and Settlement Center (MBSC / DUY, a spot market operated by the Turkish Transmission System Operator TSO, where electricity is sold with respect to hourly marginal costs) and selling their generation with respect to these marginal prices, and thus abandoning their existing bilateral contracts made with their customers.

Today, TETAS is functioning as a purchasing mechanism for wholesale electricity taken from these companies at a price of 12.5 Cents / kWh and selling at 7.6 Cent/kWh to the Turkish public wholesale market. So, how is the difference being financed and by whom? That difference is obviously financed by the

[1] *Applicable only to large size, high performance, newly established power plants*

other public establishment on the other side of the same Avenue, the Turkish Treasury.

More unfavorable side is that, the Political Authority now seems to have no alternative, but favoring the natural gas fired plants, due to the obvious fact that time allowed to close the gap between supply demand curves is too short for establishing other types of plants than gas,

the unfortunate fate of the members of the Present Political Authority is that although they had all of their political accusations against the members of the Previous Government in that respect that a high volume of redundant natural gas fired generation capacity has been established without any reasonable justification during the past five years,

and now they seem to be heading exactly to the same situation that they are to be surrendered by gas fired plants even by higher percentages.

Present situation reveals that almost 44% of the total electricity generation belongs to natural gas, and this share is expected to be increased to higher levels within the next five years, due to the obvious gap in the supply demand curves expected within the next two years, thus leading to significant increases in the wholesale and retail electricity prices.

Table 2. Local and Foreign Sources for Electricity Generation in years (Units in: Milion Kwh)

Type of Fuel	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Hard Coal	2.574	3.273	2.981	3.123	3.176	2.706	2.646	2.694	2.478	2.852	2.855
Lignite	27.840	30.587	32.707	33.908	34.367	34.372	28.056	23.590	22.450	30.008	32.242
Hydro	40.475	39.816	42.229	34.678	30.879	24.010	33.684	35.330	46.084	39.940	44.154
Other	259	377	339	306	329	382	327	266	254	270	352
Import		0	0	0	643	1.340	1.447	5.969	9.520	10.205	11.055
Coal	6.540	7.157	7.923	8.080	9.311	10.366	10.744	9.196	7.670	8.016	7.804
Fuel Oil	17.174	22.086	24.838	36.346	46.217	49.549	52.497	63.536	62.242	70.962	77.233
NG											
NG %	18,1%	21,4%	22,4%	22,6%	37,0%	40,4%	40,6%	45,2%	41,3%	43,7%	44,0%
TOTAL	94.862	103.296	111.017	116.441	124.922	122.725	129.401	140.581	150.698	162.253	175.695

Electricity prices have always been a very serious subject of political concern for Turkish Political Authorities, since it is vitally important for being politically popular and being successful in the next election(s). The present Political Authority obviously and clearly foresees the possible risks of getting politically unpopular due to high prices, and does not even pronounce any increase in electricity prices. Therefore, it seems that the report prepared Three Turkish Ministers advising "increase in Electricity Prices"[2] has immediately been disappeared without being published.

With the fixed idea (obsession) of supplying cheap electricity to the local industry, current subsidy implemented on the Turkish wholesale market has obviously introduced severe symptoms on the private generation sector in the form of discouraging the foreign investments,

hence eventually leading to the obvious supply-demand unbalance expected to appear more clearly within the nest two years,

and create adverse effects in approximately 8 billion US Dollar equivalent, as a high burden on the Turkish Treasury.

The investors who could be interested in making further investments have obviously changed their

[2] *The report dated 19 Sep 2007 as prepared by Deputy Prime Minister, Minister of State and Minister of MENR*

intensions due to unfavorable climate created by the low electricity prices.

Within the directives of the Political Authority, the 8 billion US Dollar financial deficiency has already been compensated by the Turkish Treasury through the taxes paid by the ordinary citizens with no relation of consuming wholesale electricity whatsoever.

The obvious shortage between supply-demand balance however, would be felt soon in the Turkish wholesale and retail markets as sharp price increases within the next two years.

Unless a miraculous solution has been found, the developments seem to yield a picture exhibiting more and more dependency on the natural gas for electricity generation.

and the unconditional surrender by the prices dictated by the unreliable neighbors on the North and East borders.

Your comments are welcome

Thank you & best regards

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Afsin Elbistan Site Visit Follow-up

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Last week on 31st October, 1-2 November, we were in Afsin Elbistan coal mine and thermal power plant premises to participate "Clean Coal Technologies" workshop, which was organized by Chambers of Mining, Mechanical, Chemical and Electrical Engineers of Turkey.

Our workshop agenda covered the following key subjects

- Coal, its importance in Turkish Energy politics
- Turkish Local energy resources, renewable potentials
- Coal mine regional site planning
- Economics of Elbistan Coal Reserves,
- Coal preparation, Enhancing, Selective Mining,
- Recultivation of coal fields, Plant Recovery
- Coal gasification at site, underground in the mine field
- Coal gasification and liquefaction, above ground
- Applicable Coal firing technologies,
- Assessment of existing indirect pulverized coal firing
- New Coal firing technologies, Circulating Fluidized Bed,
- Integrated gasification combined cycle, applications
- Flue gas desulphurization, e/p dust collectors,
- New High Voltage Power transmission applications/ new solutions

We all know that the most important electric power generation projects are in "Afsin Elbistan" region where the largest lignite mines are located in Turkey; including almost half of the entire local proven reserves.

The existing power plants (Groups A and B) are based on pulverized coal firing technology which need relatively higher calorific value plus less moisture. Indirect type Pulverized coal firing technique can be successful only if you lower the moisture content and hence with higher the calorific value.

Available coal has a challenging content with very poor Low calorific value at about average 1150 kcal per kg, and 55% moisture, 20% ash, 1.5-4% sulphur.

We had the opportunity to listen/ visualize important presentations of Turkish academicians as well as market experts from public and private enterprises.

On Friday morning, we had the site visit to Elbistan lignite mine field in Kislakoy. Kislakoy Lignite mine fields were extraordinary. It was a huge man-made valley, with huge bucket wheelers, reclaimers, and stackers - coal band conveyors in operation. It is my feeling that there are so few similar examples on the world.

We then passed near recultivated coal fields with new trees planted on. It was an extraordinary application of recultivation on already depleted coal fields.

Finally we arrived to the thermal power plants, named A and B each with 1400 MWe installed electric generating capacity at full load.

Thermal Power plant A has no fluegas desulphurization. It was built in early 1980s, and its firing technique is based on indirect firing of pulverized coal. Power plant (A) electrostatic precipitators are designed at low capacity dust

collecting. One other set of E/Ps are loaded with 30% of incoming pulverized coal for drying prior to final firing in the combustion chamber. They cannot carry the extended load and they are out of service most of the time.

In the indirect coal firing technique, you dry the incoming coal/ lignite first in the coal mills with hot fluegas and then you send 30% of that pulverized wet coal into a second set of electrostatic precipitators for further drying with hot flue gas.

This “indirect firing” is borrowed from cement process; it may be called technology plagiarism, and that can not be proven after 20 years of interrupted operation. Operation was almost in mess, non-stop operation was not possible for 4 units altogether. When they call that “indirect coal firing” as the great western technology, I cannot conceal my smile.

E/Ps are out of service most of the time, and the 2 of total 4 stacks in operation pour huge flyash into atmosphere. If E/Ps are not working properly in a thermal power plant, and furthermore if they have no Fluegas desulphurization on the stacks, then those power plants have to be stopped for operation since their harm to nearby environment is greater that the gain in electricity generation to the national grid.

We then visited the thermal power plant named B. That was brand new thermal power plant in final acceptance until year 2008.

We have been informed that the major foreign contractor company in charge of boilers has bankruptcy and the plant was completed by partner companies. Practically there is limited or almost no engineering responsibility in case of any boiler malpractice. Local contractor companies have limited major engineering and/or contractual responsibility; they just wait in their prefabricated site facilities to pass the final acceptance period.

Another point is that B Thermal power plant has no individual coal feeding system in operation. That is tendered but the new facility is expected to be in operation in the next 3-5 year time. So you have a thermal power plant with no incoming fuel facility to fire. There is one temporary coal feeding system 5-km long from nearby Thermal Power plant A, but that extension line seems not sufficient to operate the B unit in full capacity.

Thermal Power plant Unit-B is brand new, clean, and better, fully equipped with sufficient capacity flue gas desulphurization systems, with high capacity flue gas dust collecting electrostatic precipitators. We visualized almost no apparent dust on the existing stacks. It has 4 units of water based cooling towers and 2 common stack for all 4 units. We could see only harmless vapor outgoing from cooling towers.

You can collect the outgoing dust- fly ash, but thermal power plant has no ash dam/ no ash collecting area. Ash is collected in nearby open area and left there at the mercy of nature’s hard wind. When the hard wind blows, everywhere becomes under ash rain.

Another important point to note is that the thermal power plant- Unit-B is constructed at the center of new coal field, so you have no ability to get coal underneath of the power plant. That is another poor planning.

B plant was in operation with 2 units when we were in the plant. One boiler had boiler tube failure. The other was out of operation due to water shortage.

Both thermal power plants were equipped with water cooling. That water

cooling process needs huge amount of water. Available water is not sufficient for both plants to be in full operation. If they do, then the nearby municipalities can not supply water to their citizens for their household consumption. We were told that new water dams were in tendering and they would be in operation within 3-5 year time. If you need that much water, why don't you make the power plant design for air cooled operation? It would certainly cost some more money but you could have all boiler units in operation when needed.

This site report is a sort of black humor. Clean Coal Technologies Workshop in Elbistan will create a great opportunity for all interested local parties to enable them to investigate the possible/ applicable technologies, to investigate and assess the available intellectual capability of the local human resources. We were very pleased to join/ support/ contribute to the event, hope to organize similar events in international platforms.

Your comments are always welcome. Thank you & best regards

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China and India is Expected To Fuel Growth in Energy Demand

Today, IEA's World Energy Outlook 2007 has been introduced to the public. The timing couldn't be worse. The oil prices hit record highs, speculation, supply problems and demand growth dominates the energy news. In the midst of this chaos, presenting a report about future projections is like feeding wood to the already hot debates.

The high oil prices have raised doubts about whether world oil supply can see 100 million barrels a day. Some claim that it has already peaked, but the economists argue that as the prices rise, more investment will follow. Probably not in the short term!.

Unfortunately, more people agree on the less availability of easy oil. This increases the costs for exploration and development which already takes year to get something on stream. Even there is a chance(for some it is a certainty) that we may already passed the peak oil production.

Yet , we can never be sure whether we passed the peak or not. But IEA's World Energy Outlook 2007 claims that world can see production levels as high as 116 million barrels a day (mb/d) according to reference scenario. Current oil demand is around 84 mb/d.

China and India to Dominate Growth

According to IEA's forecasts, under reference scenario (business as usual), China and India's combined oil demand will increase from 5.4 mb/d in 2006 to 19.1 mb/d in 2030. This is more than the combined imports of US and Japan today. World's primary energy demand will grow 55% within this period.

Not only that, coal, CO2 emissions are not decreasing. We can witness a comeback of "King Coal". This is more viable today as the oil prices hit record highs. In the report, the coal demand is expected to increase its share from 25% to 28%. During the same period the world appetite for energy is to surge from 11.4 billion toe (tons of oil equivalent) to 17.7 btoe. This is a 55% increase with an average of 1.8% year. Of course this hunger can only be silenced with more investment, estimated to be a "22$ trillion supply infrastructure".

While the share of natural gas increases from 21% to 22%, electricity use doubles and in the final energy consumption it will raise its share from 17% to 22%. The 45% of the increase of the growth will be from China and India. Chinese demand will grow from 1742 mtoe in 2005 to 3819 mtoe in 2030.

According to assumptions, world economy will grow 3.6% per year on average in reference scenario. But Chinese and Indian growth does not necessarily mean an alert for other economies. Although growing exports from China and India will increase competitive pressures on other countries, this will also increase other countries' access to wider range of competitively priced imported products and services.

While reading the numbers and thinking about the growth expectations, one struggles to find answers about whether security question has a satisfying answer. With a huge increase in demand and more and more tightening supply, should we expect India and China to assume the oil's presence just like any other commodity, or should we assume a more militarized behaviour from the two giants to protect their interests?

We are not sure whether the IEA experts are counting on the possible military power budget to secure the energy paths. Energy does not like any other commodity. So with the huge increase in demand, we should expect military budgets to increase. This will also increase the military capacities and possibility of conflicts.

Looking from today, the future is unfortunately not very bright. One should not blame China and India for this. It is the collective action that is required to stop the world from cooking because of global warming or implementing dialog platforms to decouple energy hunger and military power. Yet, numbers demand more anxiety about the world we are leaving to our children.

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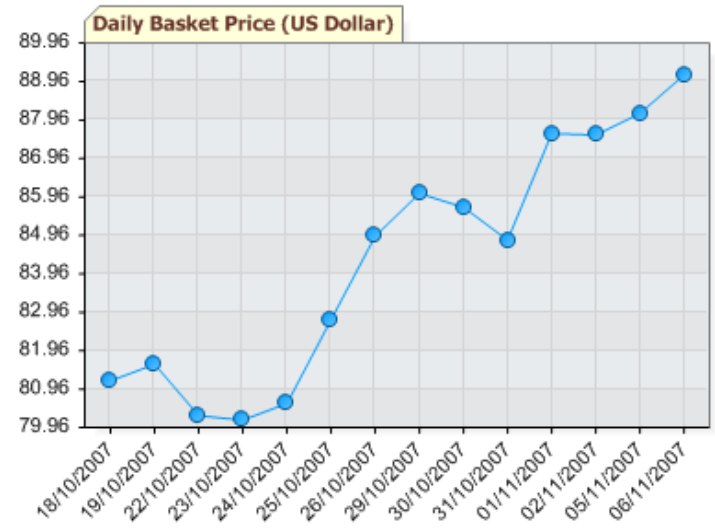
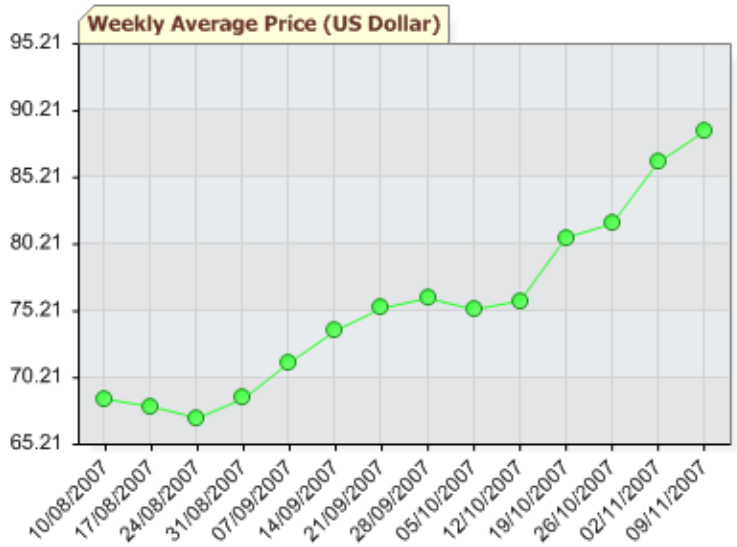
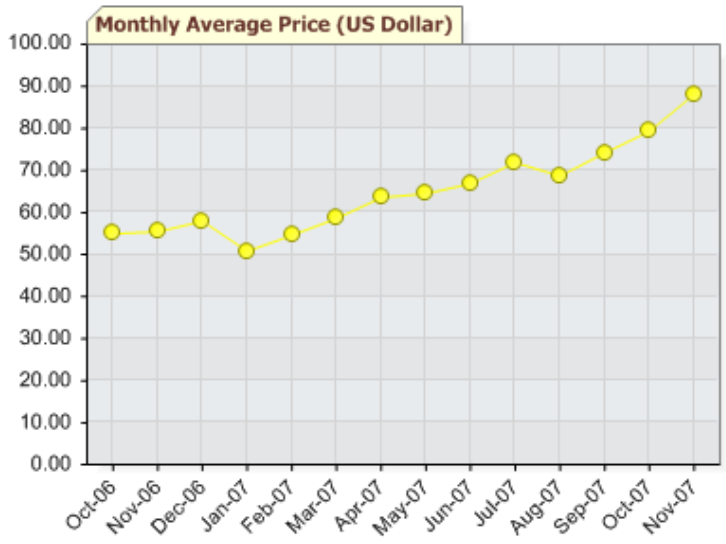
Indicators

OPEC's Basket Price







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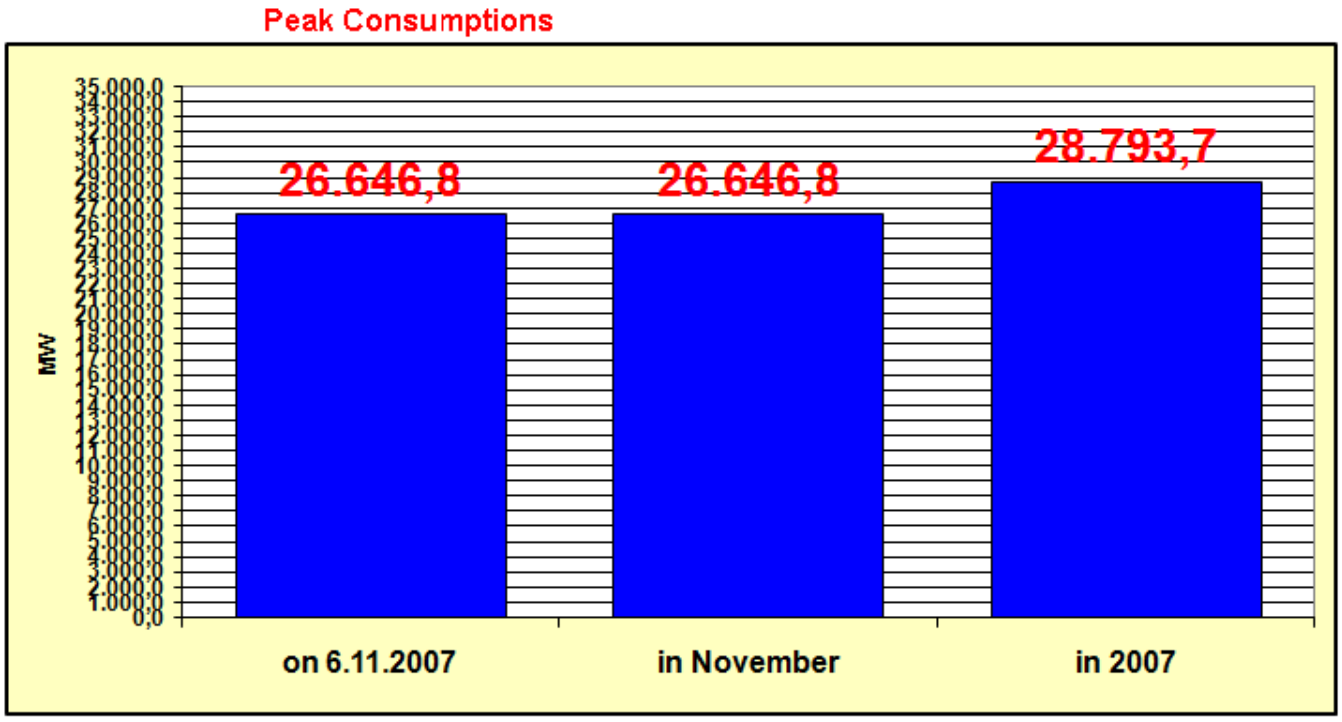
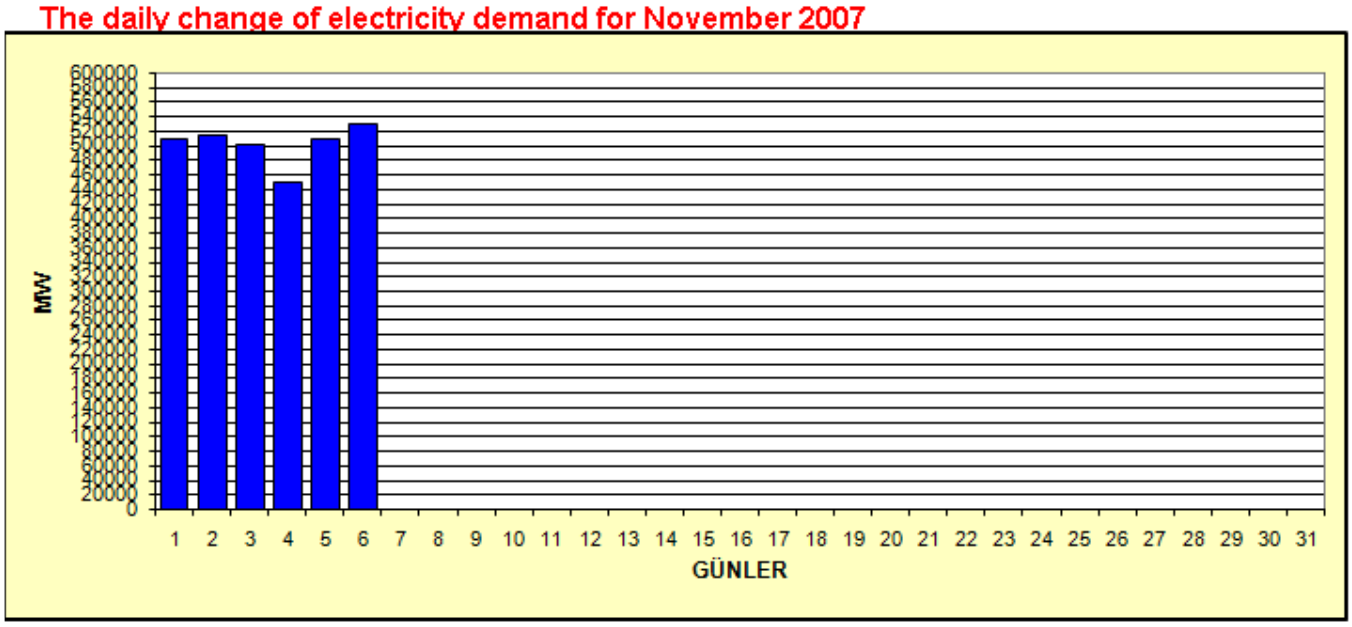
Turkish Electricty Consumption for November 2007





Indicators

Indicative Exchange Rates Announced at 15:30 on 11/07/2007 by the Central Bank of Turkey

CURRENCY		***EXCHANGE RATES***		***EXC.RATES ON BANKNOTES***	
		Buying	*Selling*	*Buying*	*Selling*
USD/TRY	1 US Dollar	1.1679	1.1735	1.1671	1.1753
EUR/TRY	1 EURO	1.7137	1.7220	1.7125	1.7246
GBP/TRY	1 British Pound	2.4524	2.4652	2.4507	2.4689