

Turkish Electricity Industry

October 2008

 Garanti Securities



Electricity Sector in Turkey

- The need of electricity is expected to increase approximately 8% during the next decade.
- The investment required in the energy sector until 2020 is around US\$100 bn.
- The majority of these investments is expected to be covered by private sector players.
- The privatization of energy generation and distribution will accelerate.

1

Increase in Electricity Supply

2

Increase in Electricity Demand and Projections

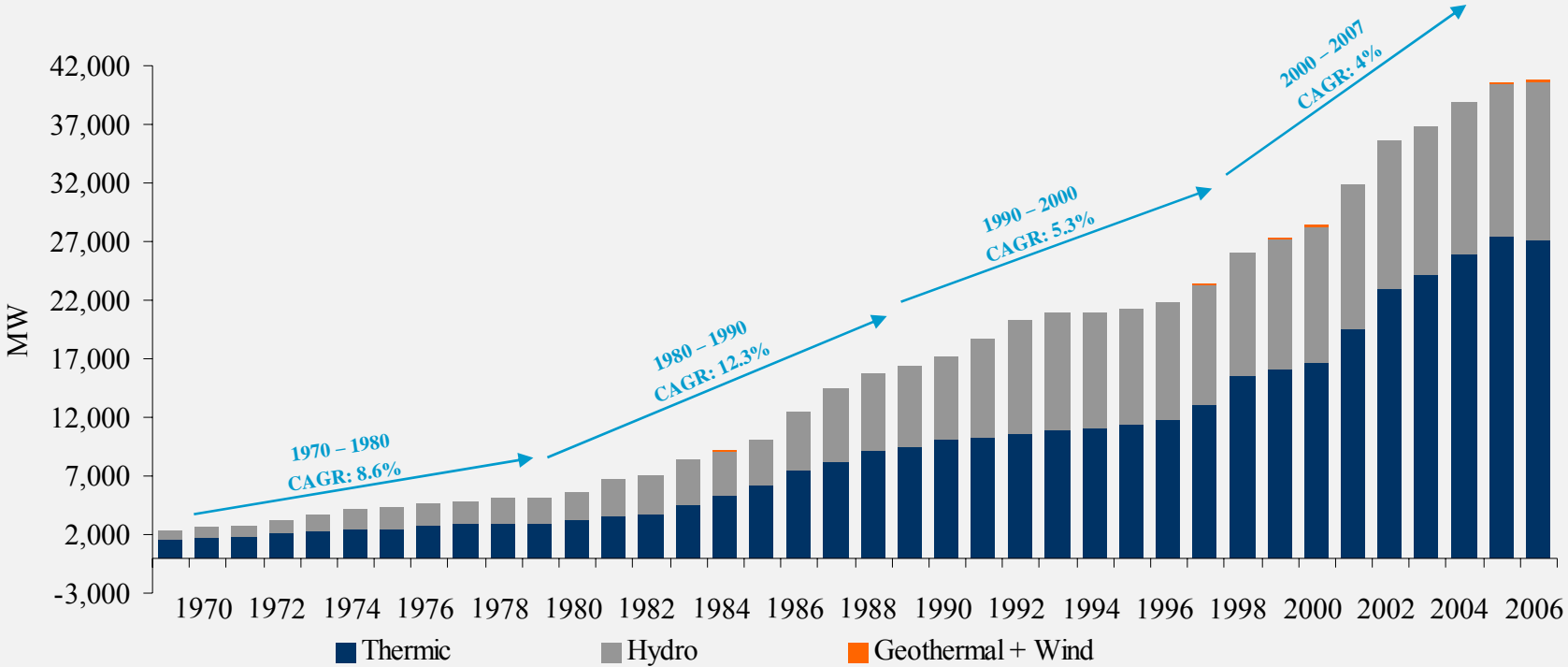
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Electricity Prices

4

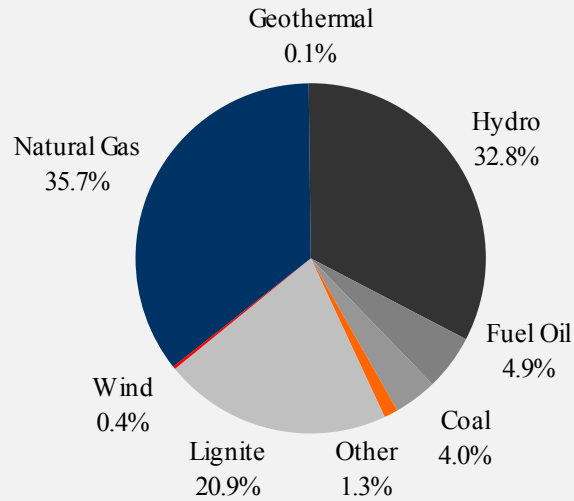
Difficulties Expected in the Sector

Installed Power Evolution

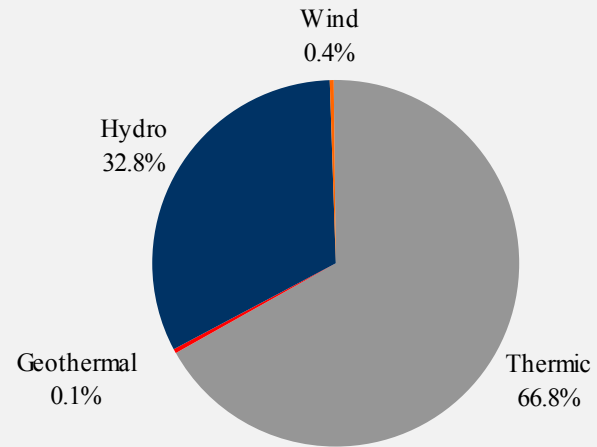


Installed Power Evolution

Installed Capacity by Fuel-type
(end of 2007)

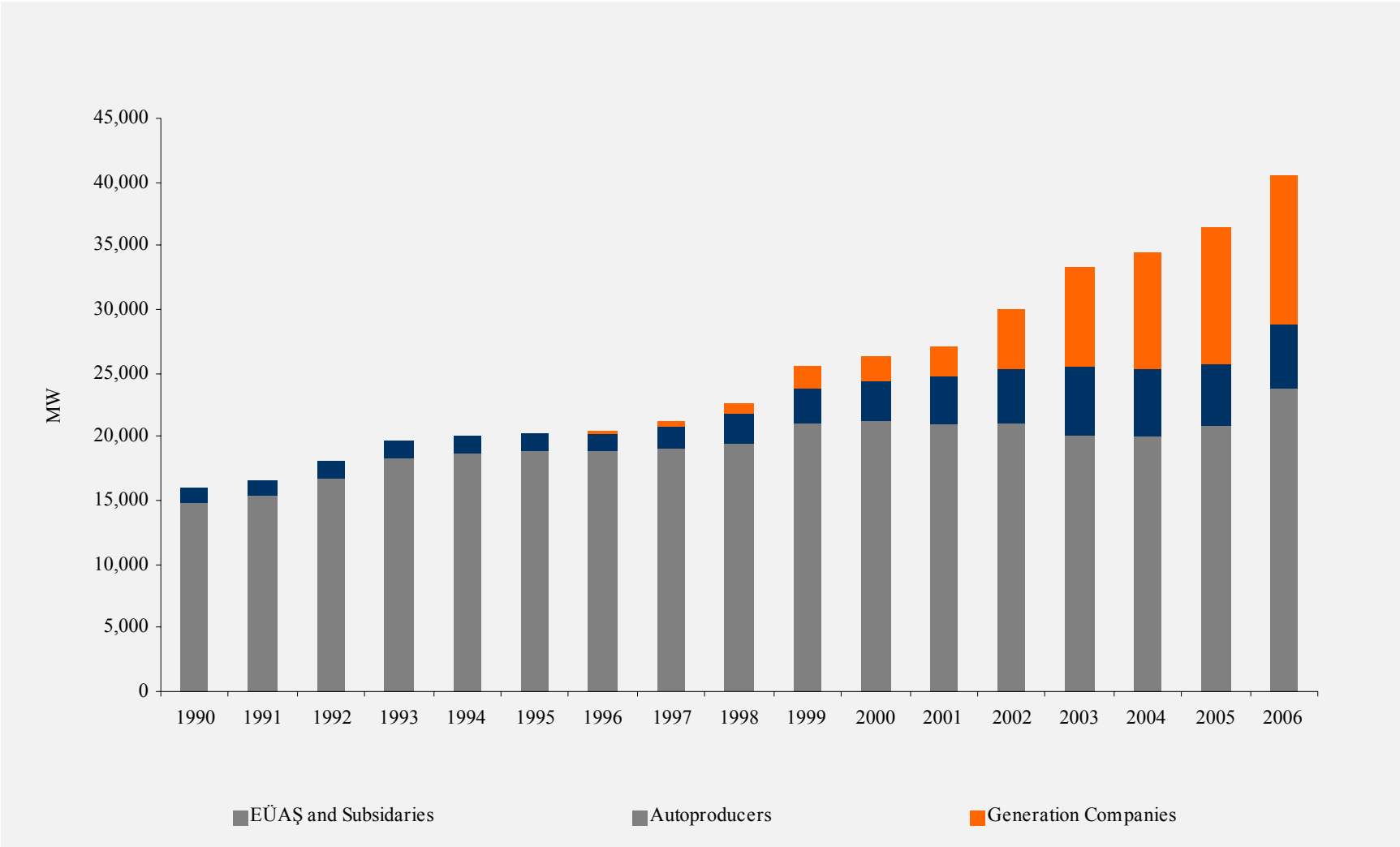


Installed Power by Power Plant Type
(end of 2007)

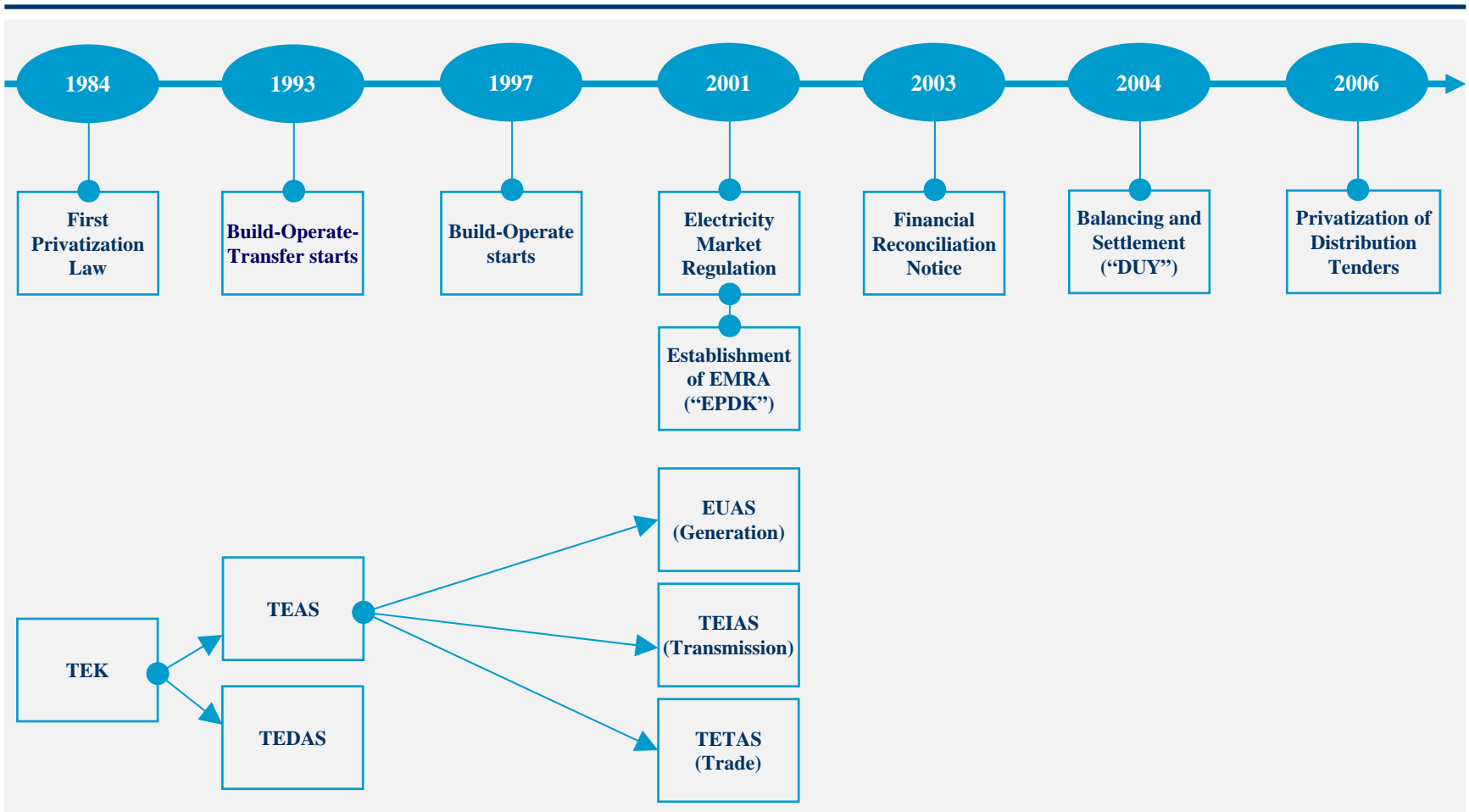


- The majority of installed power in Turkey by power plant type is thermal power plants. Garanti Securities expect renewable energy sources (wind, geothermal) to contribute more in the future.

Distribution of Installed Power in Private Sector and Utilities

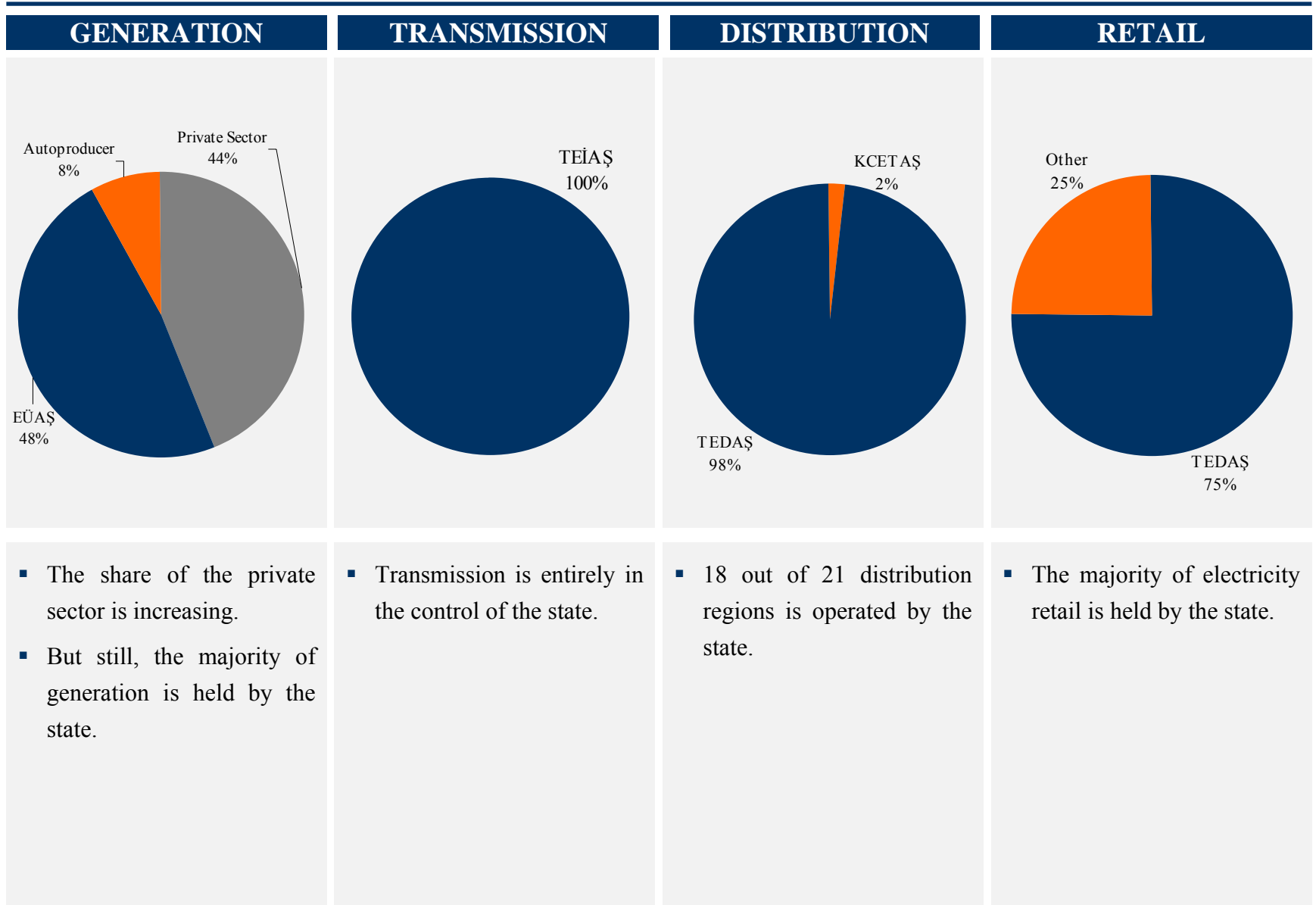


Evolution of Energy Sector



- Electricity supply was provided by the governmental institutions for a long time.
- In 1993 TEK divided in to TEAS and TEDAS.
- In 2001 TEAS separeted its generation, transmission and trade sections.
- With the privatization and liberalization, private sector became included in the electricity sector.

Electricity Procurement Process



Power Plant Installation Datas

Plant	Investments / MW	Construction Period (year)	Availability (hour/year)
Natural Gas	US\$600	1.5 - 2	8,000
Coal	US\$1,100	3 - 5	8,000
Hydro	US\$1,000 - US\$2,000	2 - 5	3,500 - 4,000
Geothermal	US\$2,000 - US\$3,000	2 - 3	3,500 - 4,000
Wind	US\$1,800	1.5 - 2	3,200 - 4,00

- Considering the investment need and installment period, private sector is mostly interested in investing in wind power plants.

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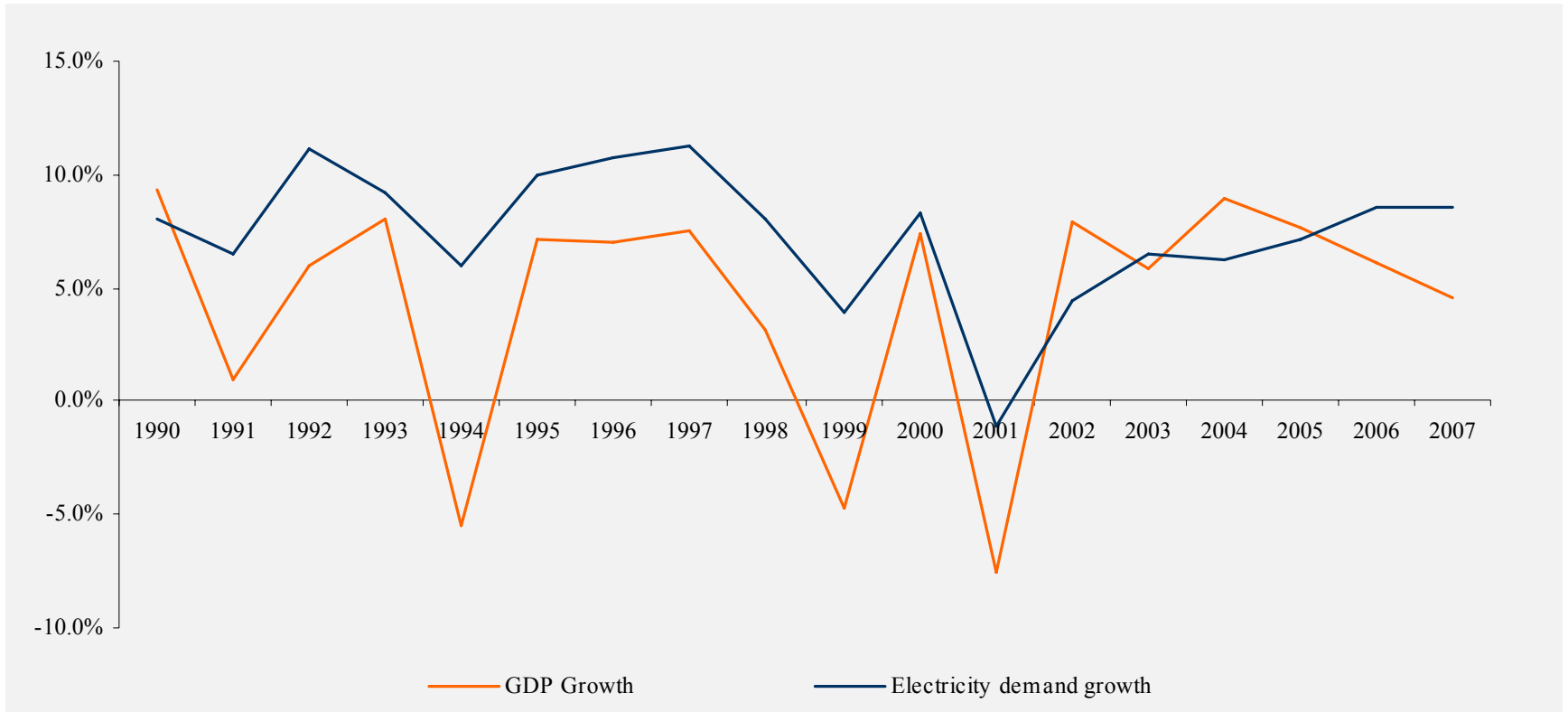
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Electricity Prices

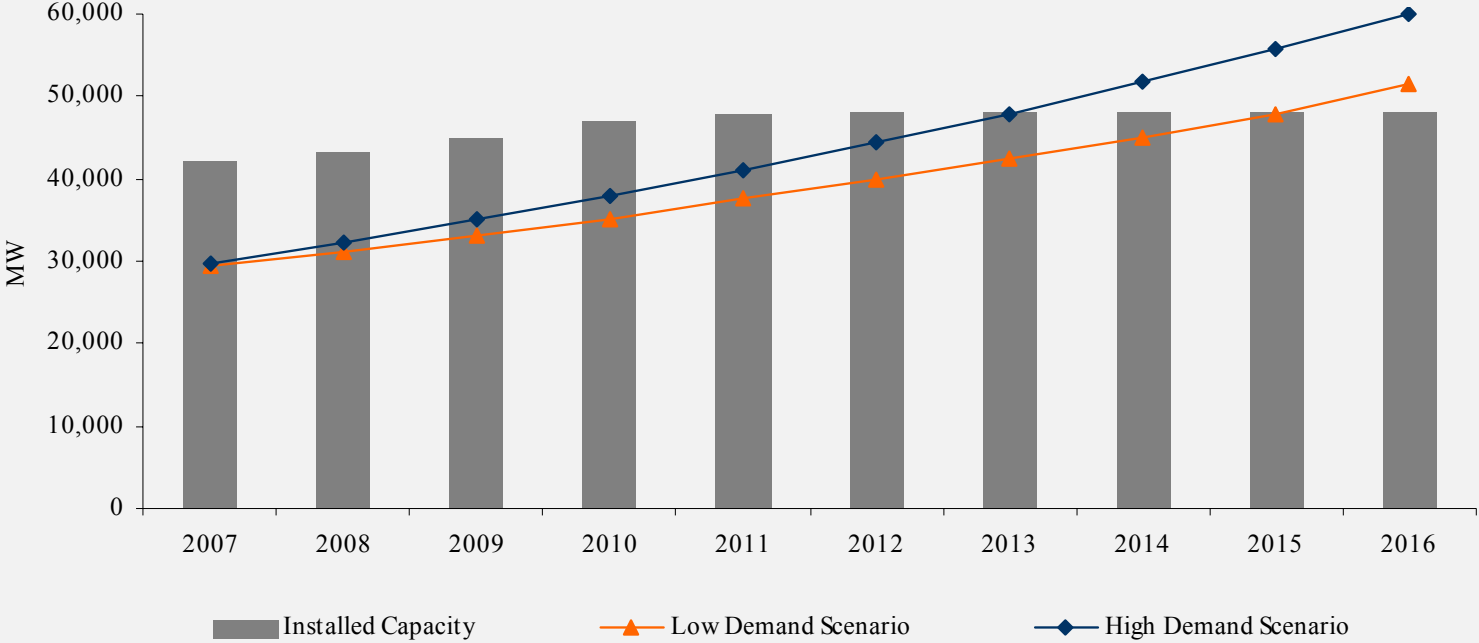
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Difficulties Expected in the Sector

GDP Growth and Electricity Production

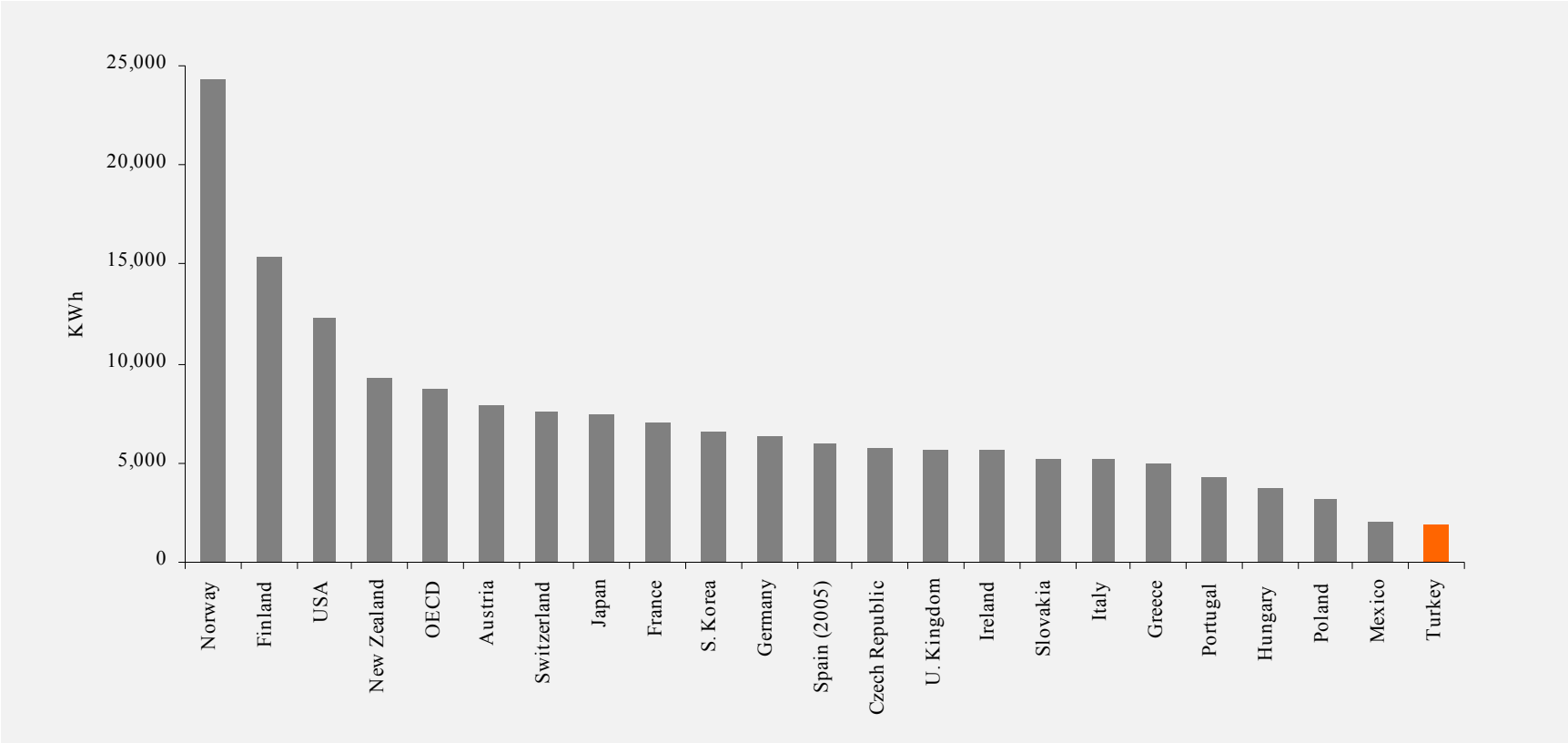


Turkey's Electricity Demand Projections

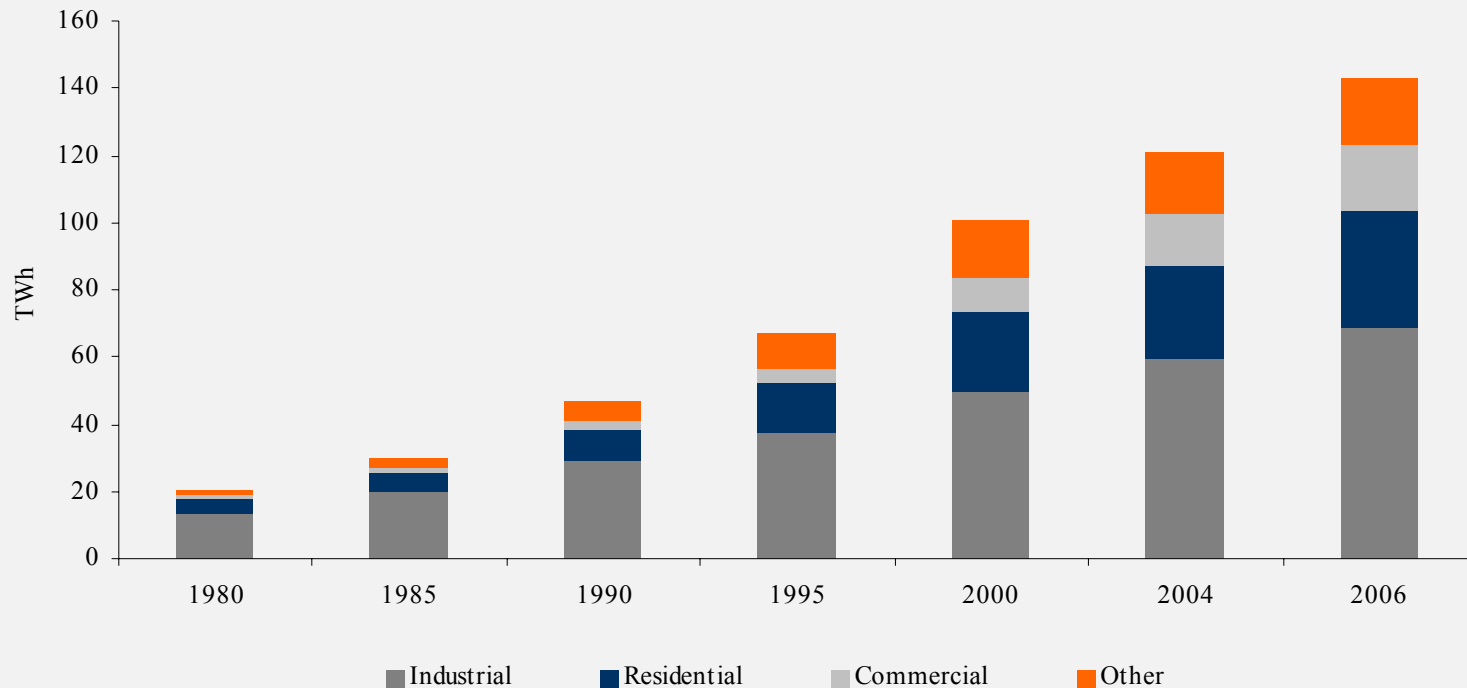


▪ According to TEIAS, an investment amount between the range 20-30 GW is needed until 2016.

Comparison – Electricity Consumption per Capita



Electricity Consumption in Consumer Groups Basis



- The annual growth in electricity consumption is 7.7% since 1980.
- Industrial electricity usage grabs the major share in total consumption with 50%.
- With growing urbanization, household consumption started to increase.

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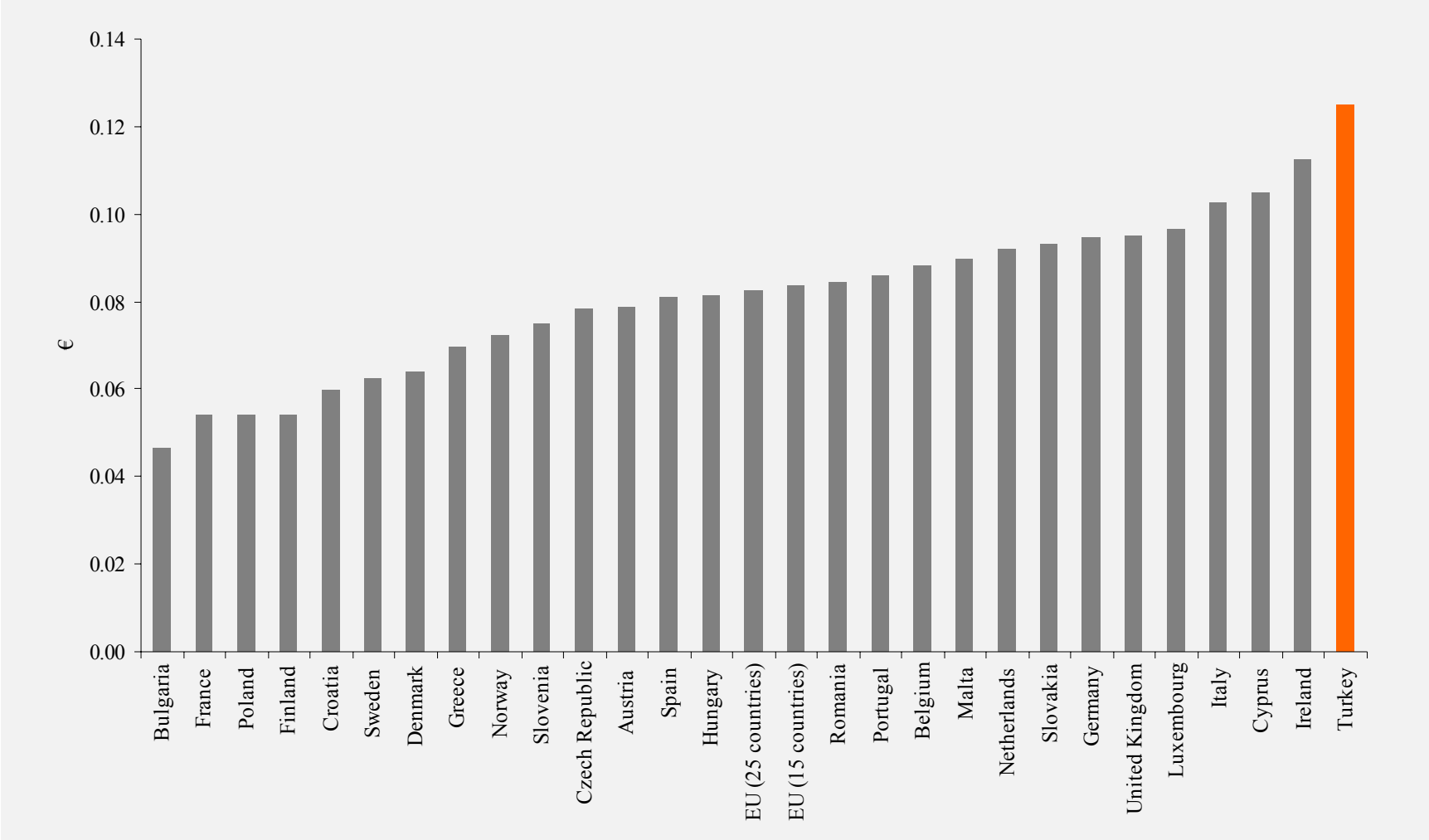
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Electricity Prices

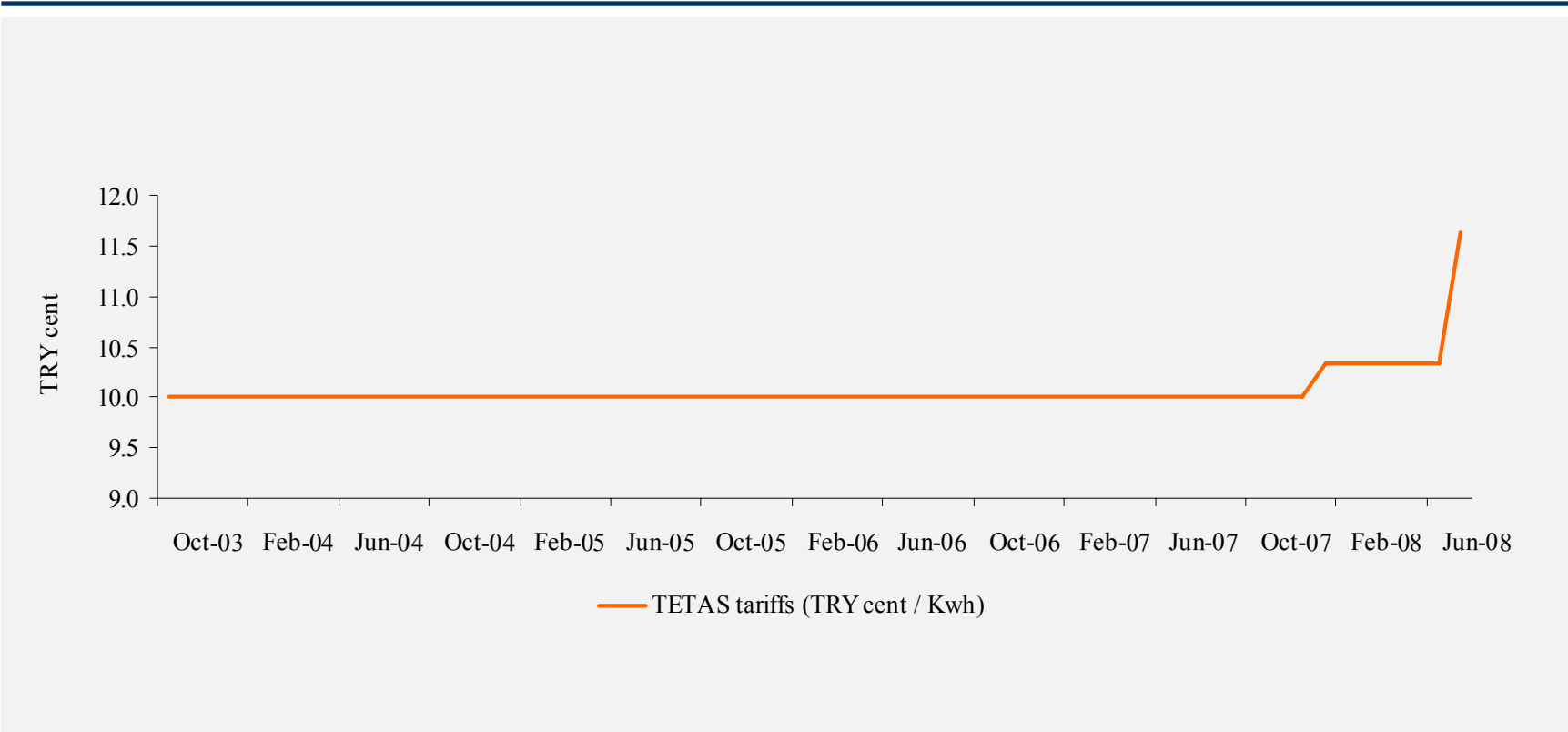
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Difficulties Expected in the Sector

OECD Countries Retail Electricity Prices



Electricity Prices

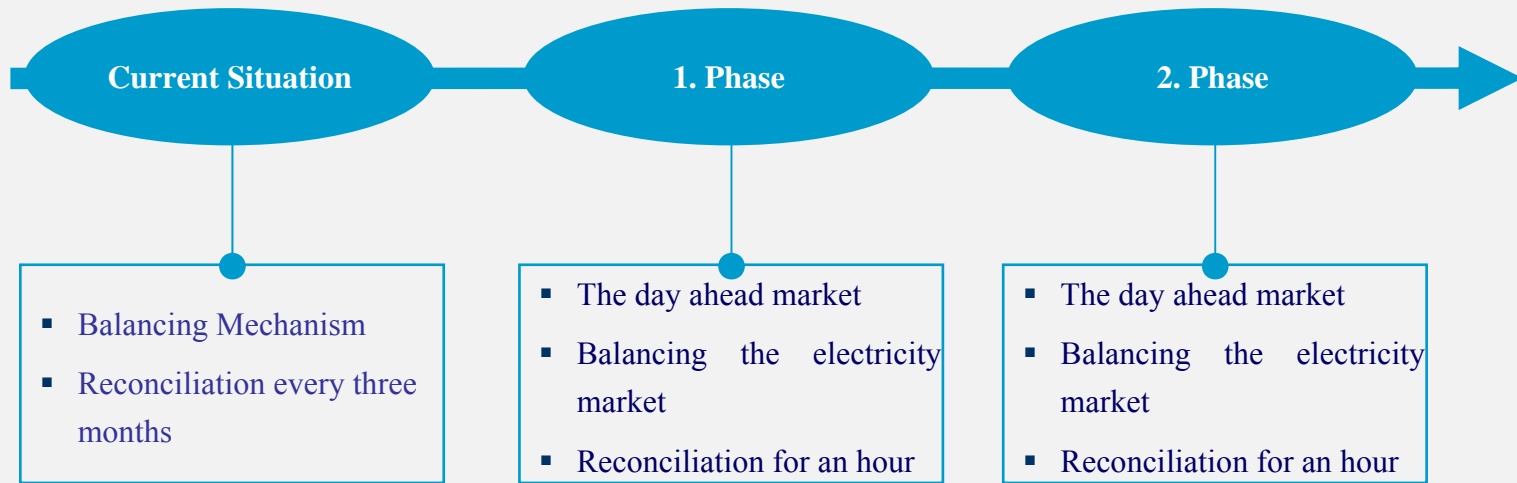


- Retail electricity prices increased 3% after a long period for the first time in January 2008.
- Another increase took place in 1st of July with 21%.

Market Financial Reconciliation Regime

- DUY: To overcome the insufficient supply and initiate the private sector, DUY market became effective in Aug 2006.
- The aim of this system is to use a spot market and create a competitive electricity pricing.
- Although it still doesn't work as a spot market, private sector keeps on its investments while expecting the market to develop.
- In July 2008, electricity prices started to be set automatically. With that, electricity prices went up by 21%.
- The recent electricity pricing mechanism will take into consideration the following parameters:
 - Exchange rate
 - Oil Prices
 - Inflation
- The prices will be revised in 3 month periods.

Target Market Evolution Stages and Aims



- After the installment of the DUY System, the automatic pricing will be done in phases.
- In the first phase, a temporary system is planned for the generators until the day ahead market is fully settled.
- In addition to bilateral selling contracts, the market players will be eligible to sell electricity in the day ahead market.

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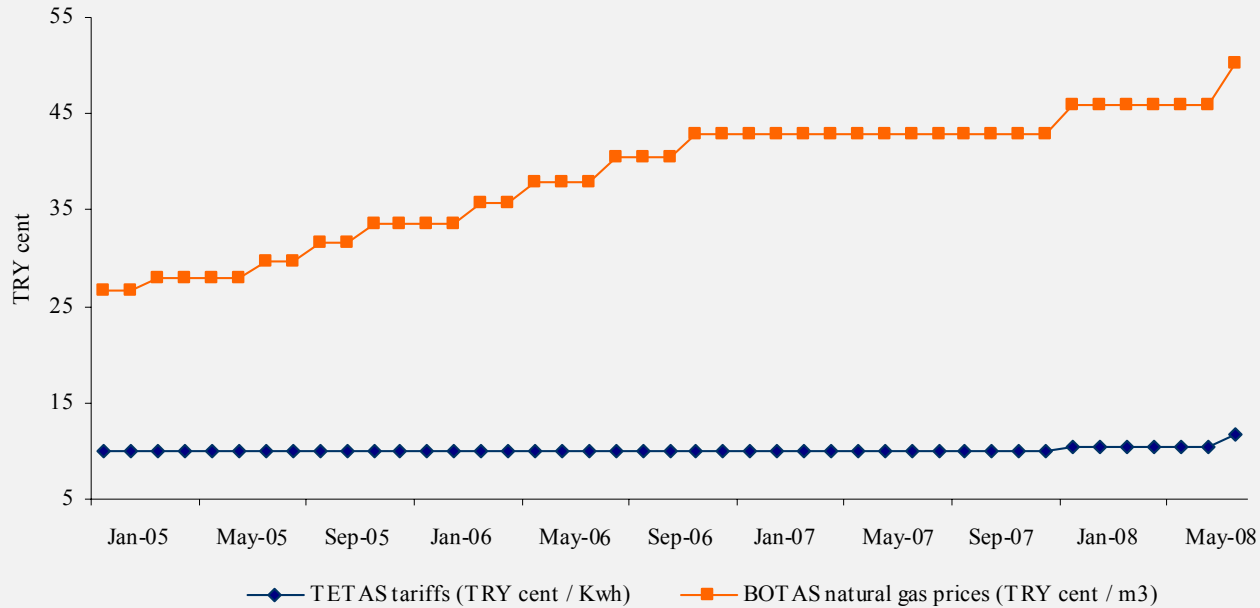
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Difficulties Expected in the Sector

Difficulties Expected

- The import, distribution and sale of natural gas is done exclusively by BOTAS.
- In recent periods, the price increase in natural gas was higher than the increase in electricity prices.
- Sources of financing are needed for the new investments.
- In order for the generation privatization to accelerate, an appropriate investment atmosphere is needed.
- Current theft-loss ratio is high and affects the industry in a negative way.

The Evolution of Electricity and Natural Gas Prices



- The price increase in natural gas was higher than the increase in electricity prices.
- In July 2008, electricity prices started to be set automatically. With that, electricity prices went up by 21%.