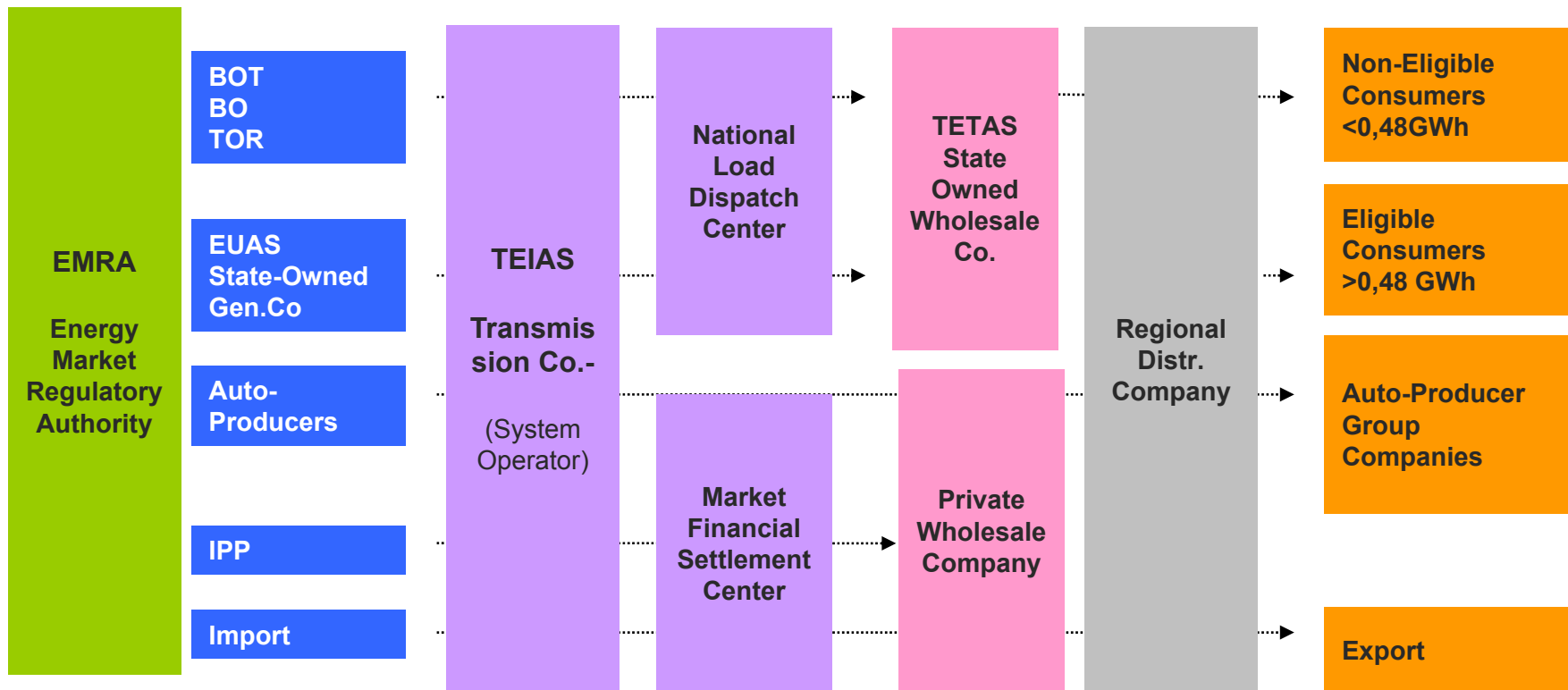


# OPPORTUNITIES IN TURKISH ELECTRICITY MARKET

**Firat ÇEÇEN**  
IC HOLDING

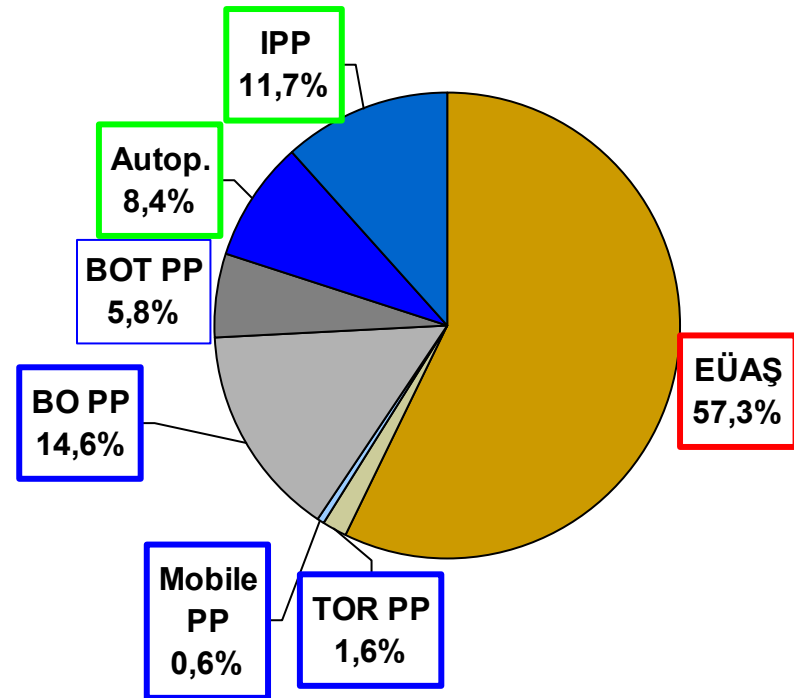
MAY 2009

# Turkish Electricity Market Structure



# Installed Power by Utilities (2008)

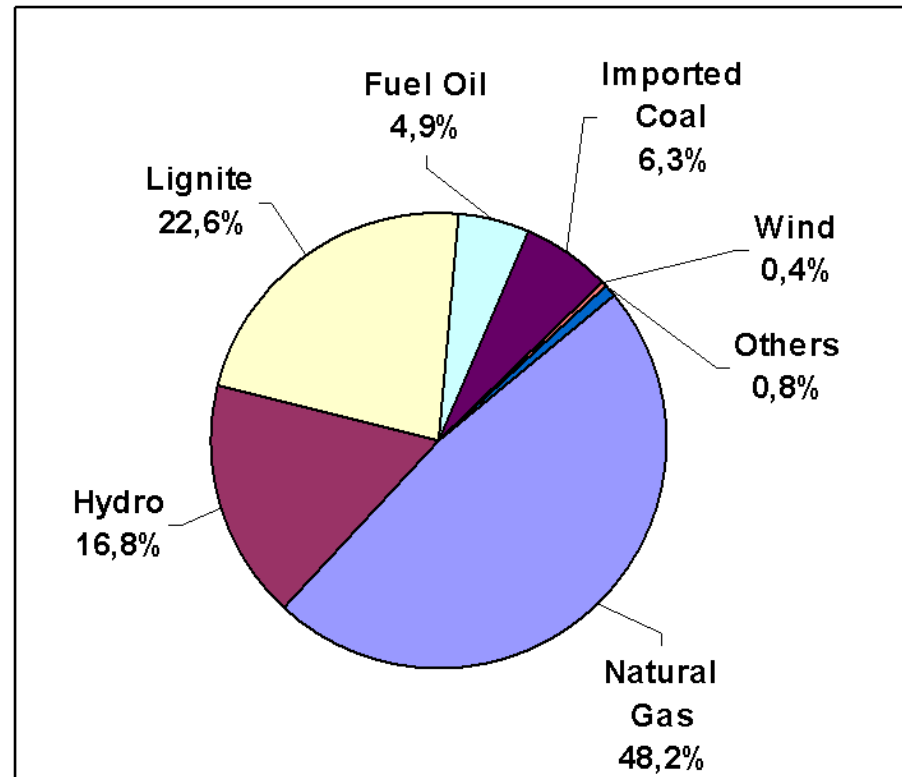
<b>Utilities</b>	<b>MW</b>
<b>EÜAŞ*</b>	<b>23.990</b>
<b>TOR</b>	<b>650</b>
<b>Mobile</b>	<b>263</b>
<b>BO</b>	<b>6.102</b>
<b>BOT</b>	<b>2.439</b>
<b>Autoproducers</b>	<b>3.521</b>
<b>IPP</b>	<b>4.889</b>
<b>Total</b>	<b>41.855</b>



\* State Owned Generation Co.

# Generation by Sources (2008)

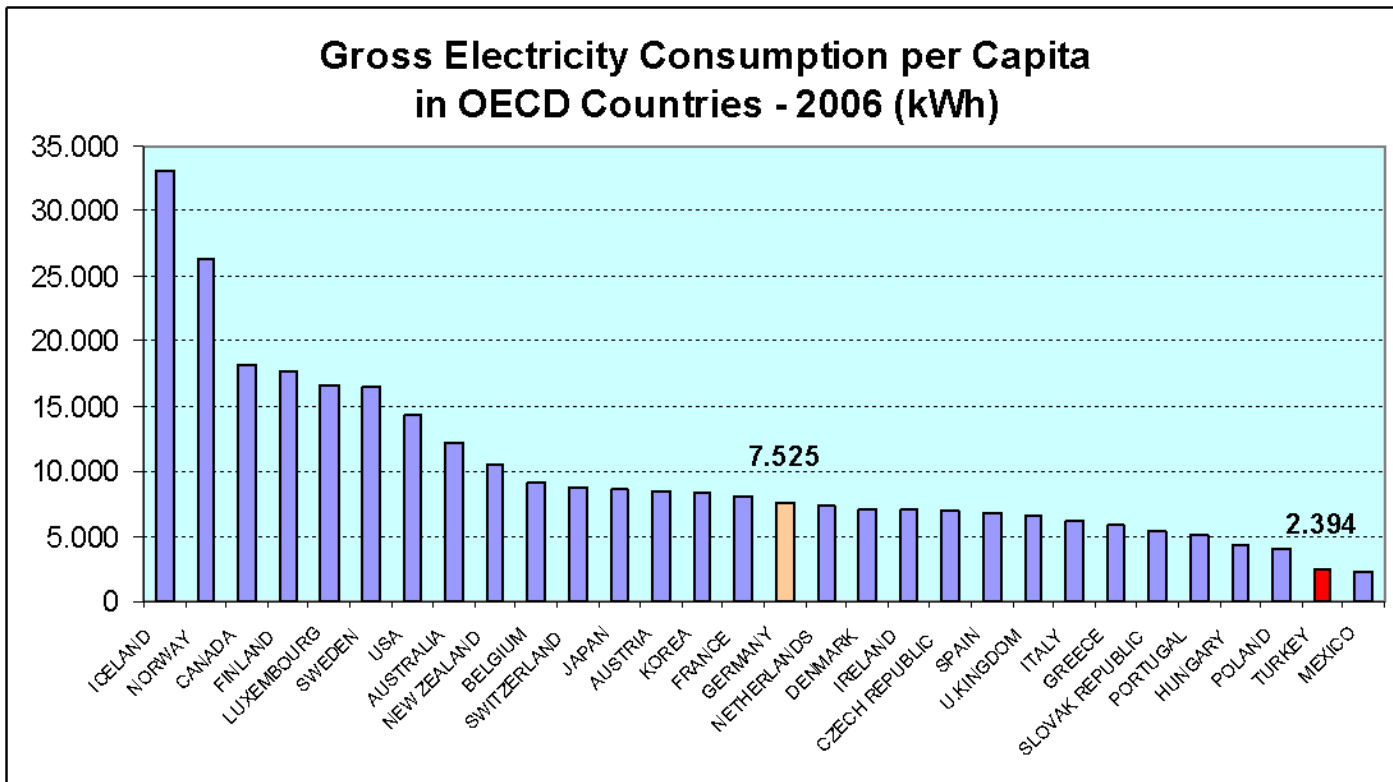
Source	GWh
Natural Gas	96.041
Hydro	33.283
Lignite	41.939
Fuel Oil	9.315
Imported Coal	15.619
Wind	798
Others	1.604
<b>Total</b>	<b>198.599</b>



➤ Total fossil fuel share in electricity mix is **60%**

# Consumption Per Capita

- Gross Electricity Consumption per Capita in Turkey in:
  - 2006 → 2.394 kWh
  - 2007 → 2.690 kWh
  - 2008 → 2.768 kWh
- 2020 Target → **5.700** kWh



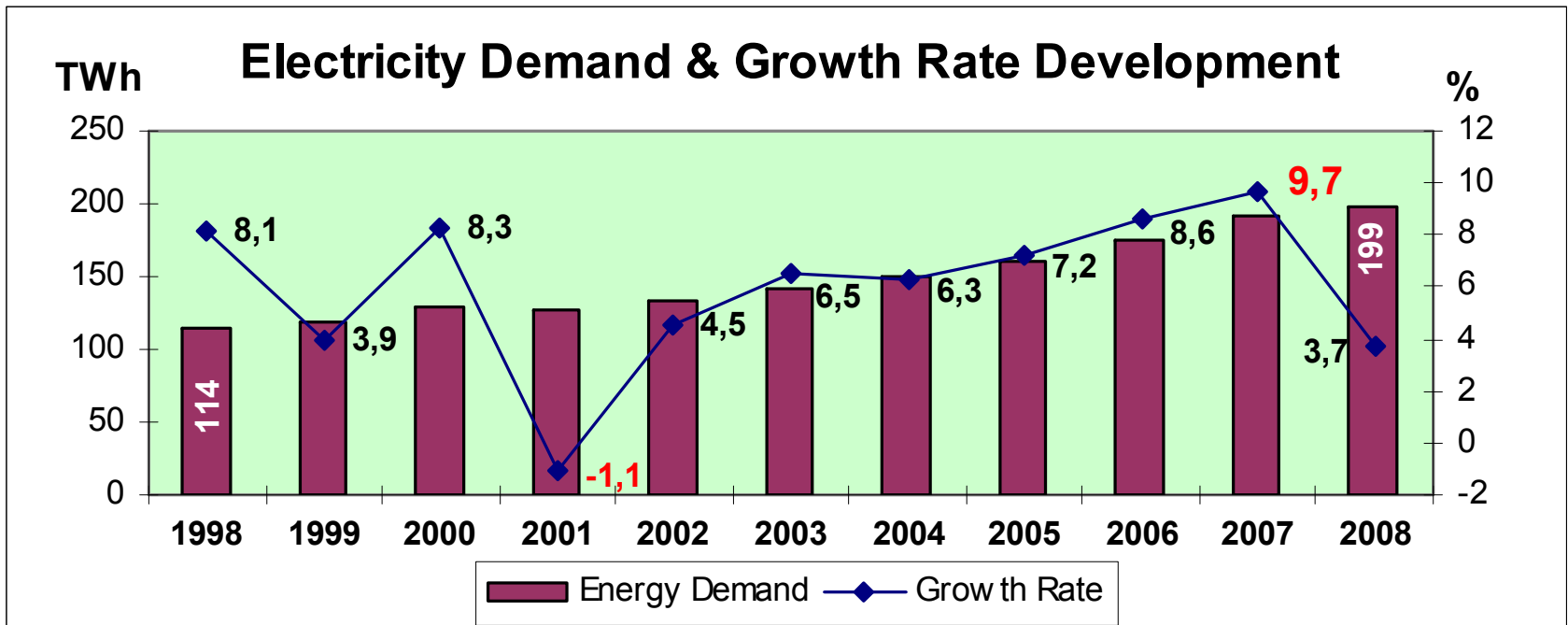
# Demand Development

Average electricity growth rate of last

- 11 years is : 5,75%
- 5 years is : **7,09%**

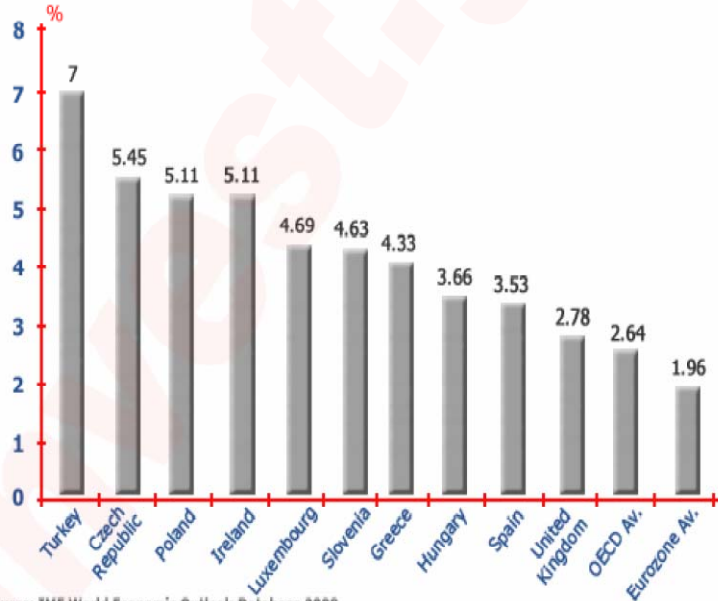
- World : 2,4%
- Developed Countries : < 2%
- Developing Countries : **4.1%**

***Turkish electricity demand is the fastest growing after China***



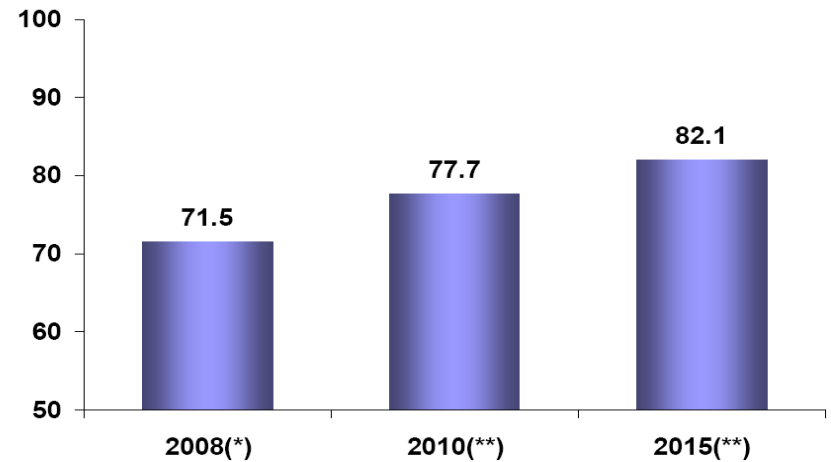
# GDP Growth and Population

### Real GDP Growth (2002-2007 average)



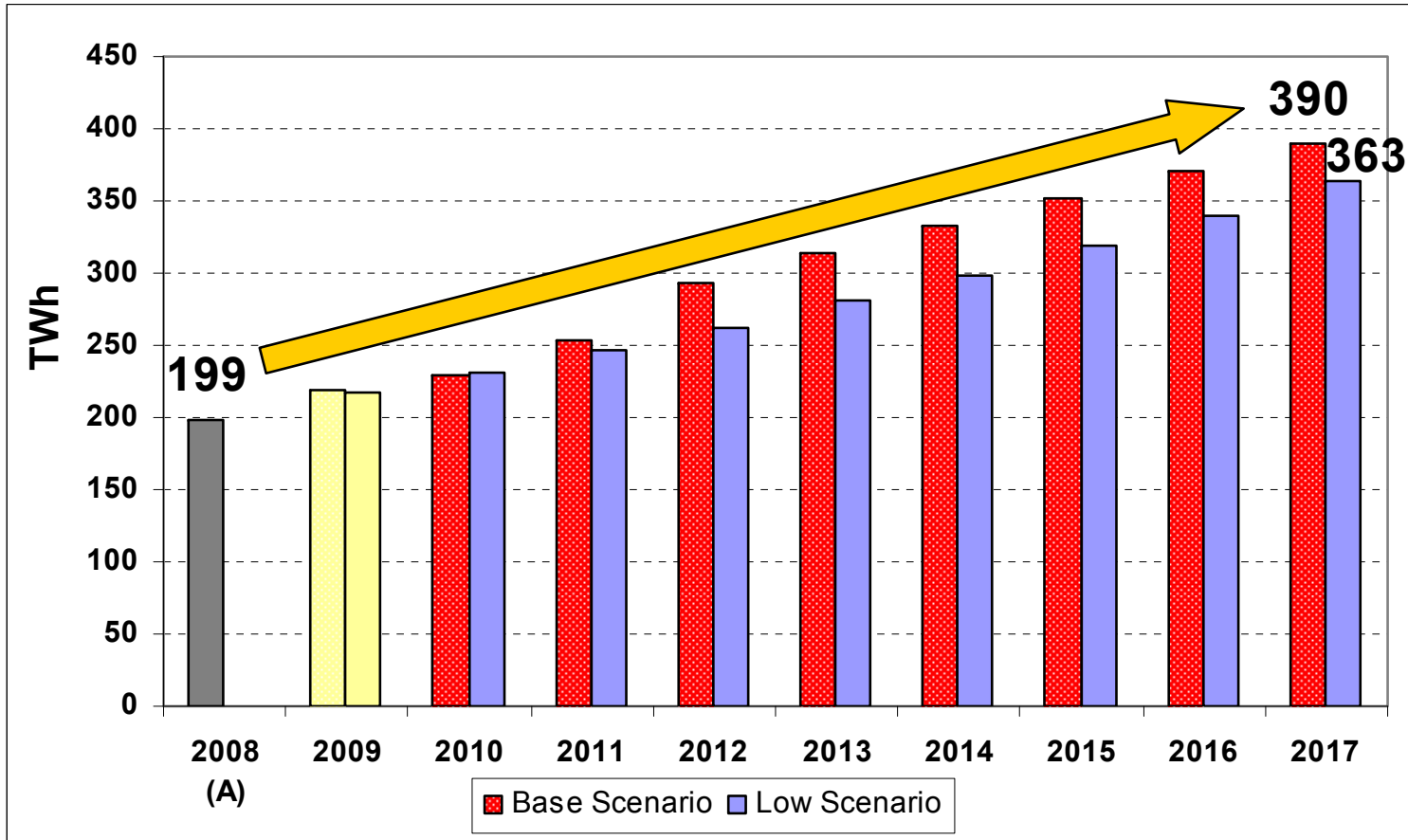
Source: IMF World Economic Outlook Database 2008

### Turkey: Population Prospects (Million People)

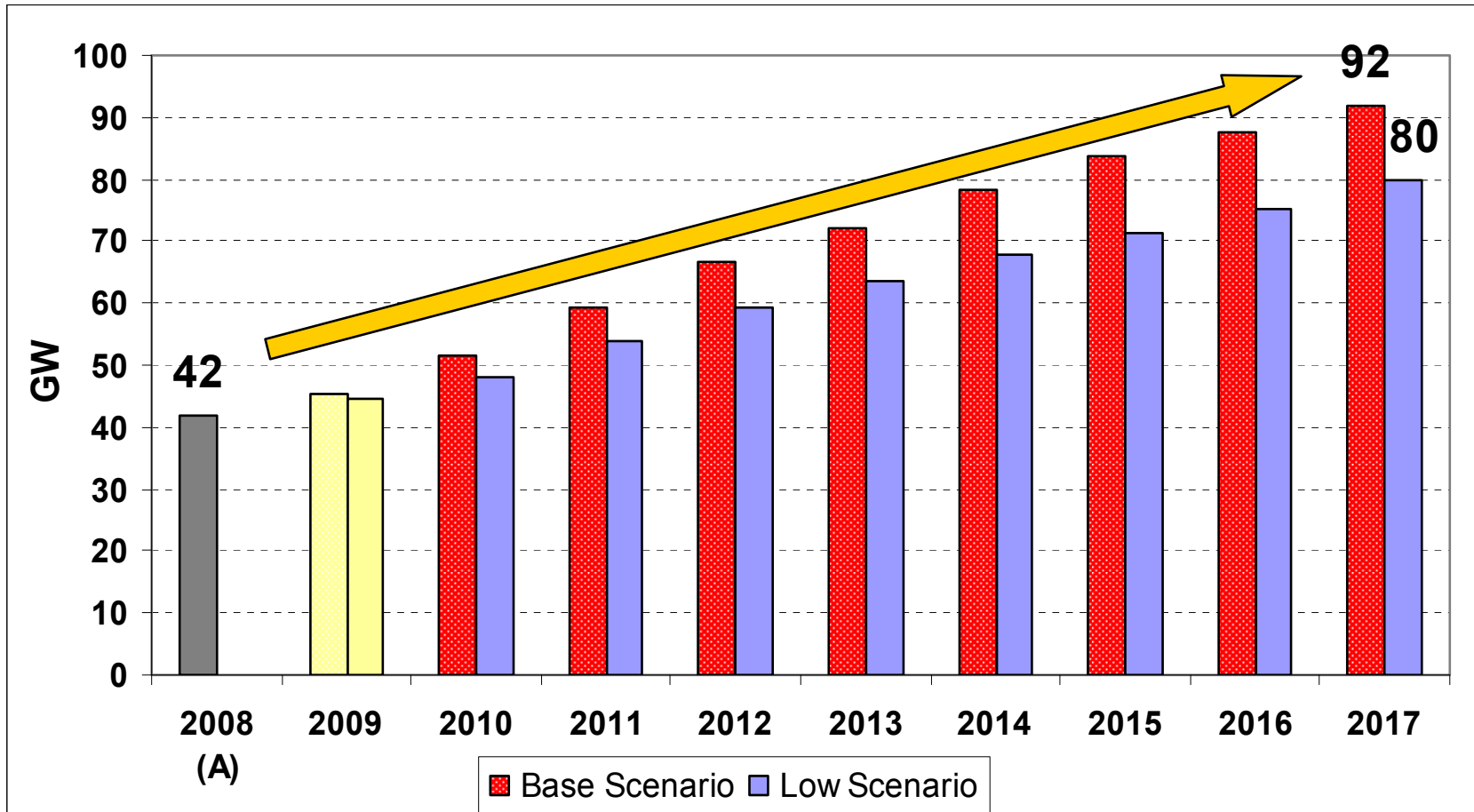


Source: (\*) TURKSTAT  
(\*\*) UNDP World Population Prospects

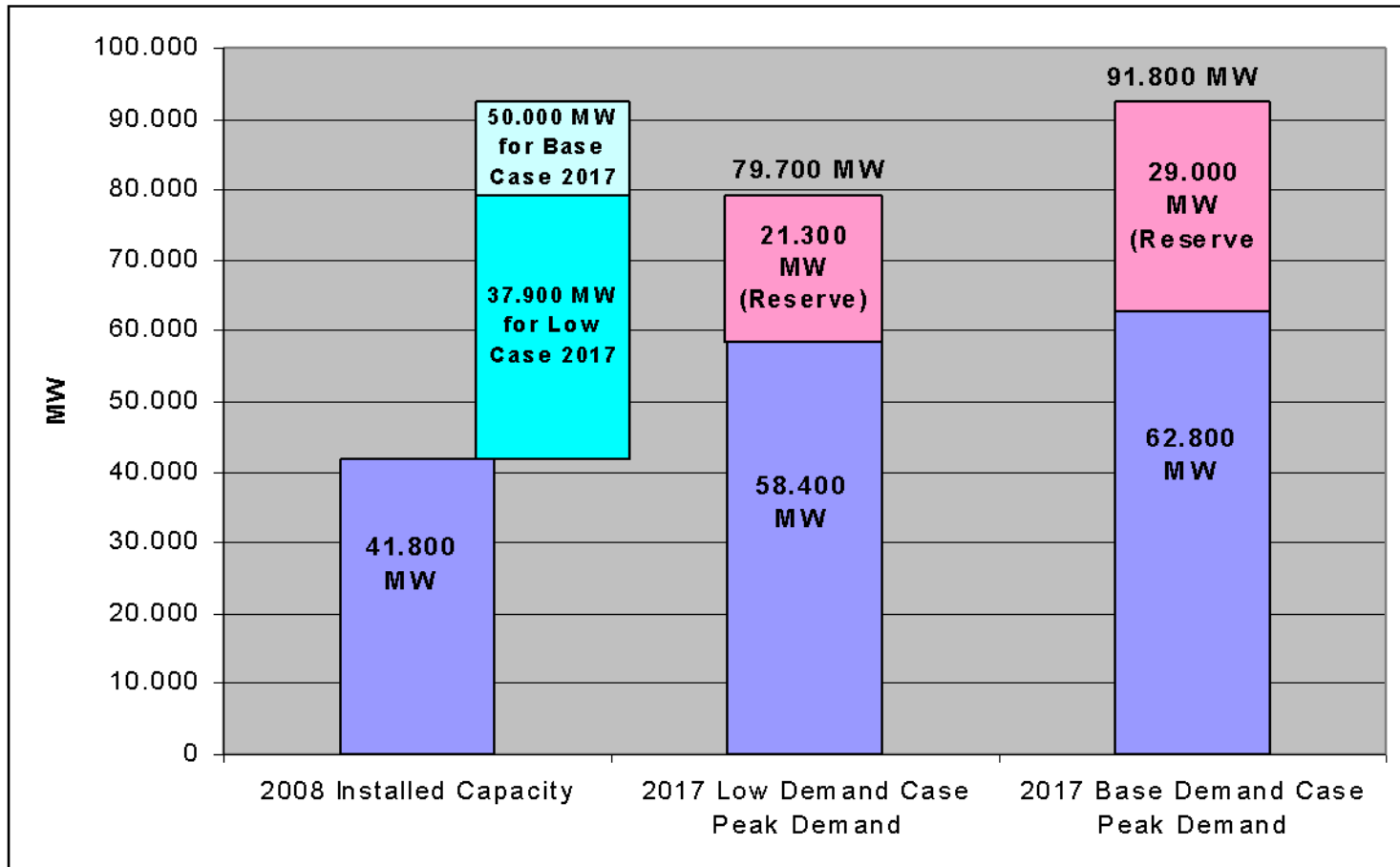
# Electricity Demand Projections (TEİAŞ)



# Capacity Projections (TEİAŞ)



# Capacity Projections



- Even in Low Demand Scenario 37.900 MW of new capacity is necessary till 2017 to avoid supply deficiency.

# Turkish Energy Policy

- Turkey is one of the fastest growing countries with young population and rapid industrialization,
- As a consequence, electricity demand is also increasing fast and necessitates around 4 GW capacity additions each year till 2017, which means **3 - 4 Billion USD** investment per year is required to avoid supply deficiency.
- Supply security is one of the key parameters in national security equation of Turkey,
- Also as a requirement of Kyoto Protocol, Turkey shall decrease its dependency to fossil fuels.
- New 2020 targets: a) Utmost utilization of natural resources mainly renewables, b) Reducing generation from natural gas to 30%, c) To have at least 5% generation from nuclear.
- In addition, state generation and distribution companies will be privatized to lead competitive, effective market structure.

# Potential of Renewables in Turkey

<b>Sources</b>	<b>Potential</b>		<b>Utilized</b>		<b>2020 Target</b>
	<i>TWh/year</i>	<i>GW</i>	<i>GW</i>	<i>GW</i>	<i>GW</i>
<b>Hydro</b>	<b>130</b>	<b>37</b>	<b>13</b>	<b>All potential</b>	
<b>Wind</b>	<b>150</b>	<b>48</b>	<b>0,5</b>	<b>20</b>	
<b>Geothermal</b>	<b>4,2</b>	<b>0,6</b>	<b>0,07</b>	<b>All potential</b>	
<b>Solar</b>	<b>380</b>	<b>200</b>	<b>~0</b>	<b>As Possible</b>	
<b>Biomass</b>	<b>196</b>	<b>25</b>	<b>~0</b>	<b>As Possible</b>	

*Other than hydro, natural resources are almost untouched*

# Incentives for Renewables

- Current feed-in- tariff for renewable energy is the same for all sources which is min. 5 and max. 5,5 €c/kWh for 10 years.
- Proposed feed in tariff differentiates guaranteed tariffs according to the sources. This proposal is still in discussion in the parliament and expected to be in force at the end of June.

Feed-In-Tariff in Proposed Law

Source	First 10 Years (€/kWh)	Second 10 Years (€/kWh)
Hydro	7	-
Onshore Wind	8	-
Geothermal	9	-
PV	28	22
CSP	24	20
Biomass (including LFG)	14	8
Tidal, Wave	16	-

# Other incentives for Renewables

- 85% deduction in treasury land usage fee for 10 years,
- 50% deduction in system usage fee for 5 years,
- Cost of railway relocation will be reimbursed by State Railway,
- Cost of system connection will be reimbursed by State Transmission Co. in 10 years after COD,
- Exemption from custom duties,
- VAT exemption for imported or locally delivered equipments.

# Opportunities in Turkish Electricity Sector

## ■ GENERATION:

- Privatization : PPs of EUAS will be privatized on portfolio base (~18.000 MW - first 140 MW portfolio is privatized in 2008),
- Huge unexploited renewable resources are excellent opportunities for developing Greenfield projects,
- Nuclear PPs,
- Merger, acquisition and joint ventures with licence holder companies are faster ways to develop projects.

## ■ DISTRIBUTION:

- 12 Distribution Companies (including the biggest cities İstanbul, İzmir) will be privatized in a year according to strategy paper.

## ■ EXPORT-IMPORT:

- Turkish electricity system will start parallel operation with European electricity system (UCTE) in a year. Then for projects in Turkey, market will enlarge while bringing opportunities for export-import activities.
- Export Import activity is also possible with east and south-east neighbors of Turkey under certain connection conditions.

# A Business Model – US&Turkish Partnership

## Advantages

- Combination of global experience and know-how with local expertise brings strong synergy.
- Financial strength leads investing to bigger projects and have bigger targets in sector,
- Global thinking; better evaluation of mid/long global trends such as fuel prices, carbon impact ,new trends-technologies etc.
- Enlargement of business network,
- Long term planning
- Better and easy understanding of local market through strong local partner



# [ A Business Model – US&Turkish Partnership ]

## Challenges

- Difference in good industry practices, such as technical standards, health and safety applications etc.
- Difference in decision making process mainly in new investment decisions due to long time requirements for technical, financial and legal due diligence studies,
- New projects in Turkey competing with other opportunities in the world.