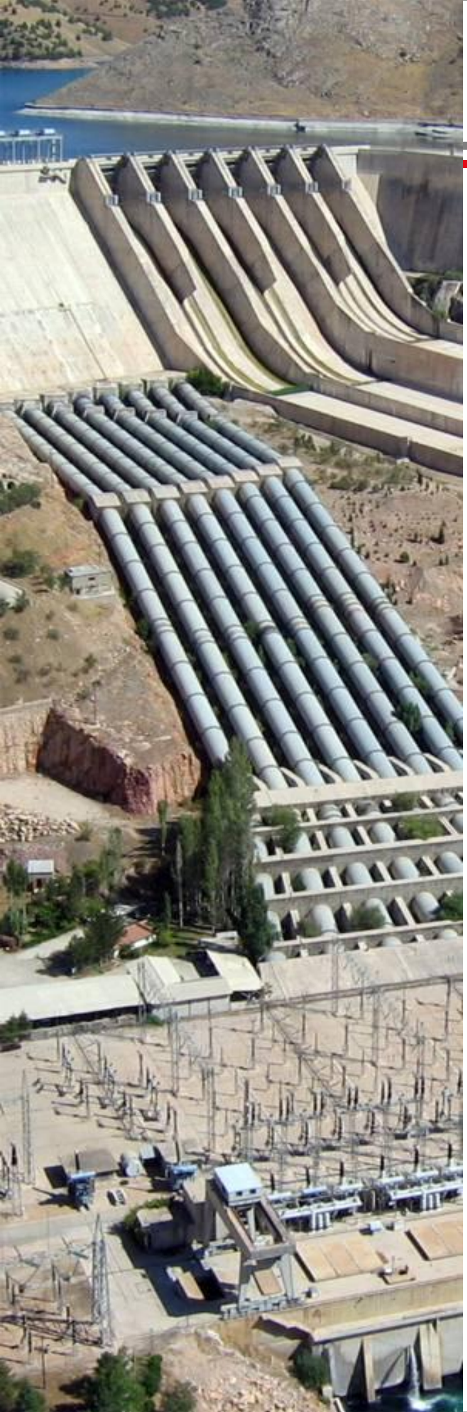
Privatization of Electricity Generation Sector in Turkey

October 2011

Republic of Turkey
Privatization Administration



Agenda

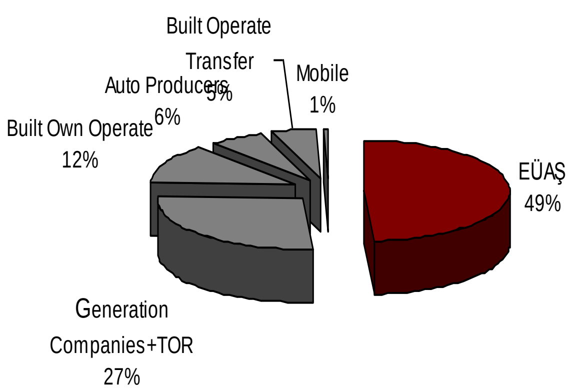
- **Overview of Electricity Generation Company**
- **Privatization Portfolio**

  -Priority Power Generation Plants
  -Plants with Capasity Expansion Potential
  -Design of Portfolio Groups
  -Portfolio Groups
- **Important Issues**
- **Conclusion**

EÜAŞ produced 46% of the electricity consumed in 2010

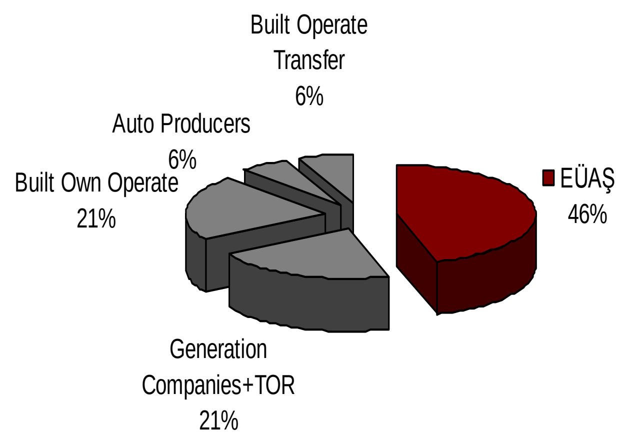
Distribution of the installed capacity in 2010

100% = 49,5 GW



Distribution of electric energy produced in 2010

100% = 211.208 GWh



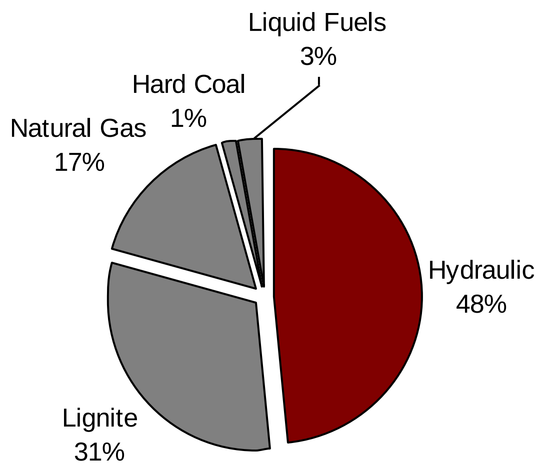
Source: EÜAŞ

EÜAŞ has generated 57% of its output from thermal power plants which constitute 52% of its installed capacity

Percent, 2010

Breakdown of installed capacity by fuel type

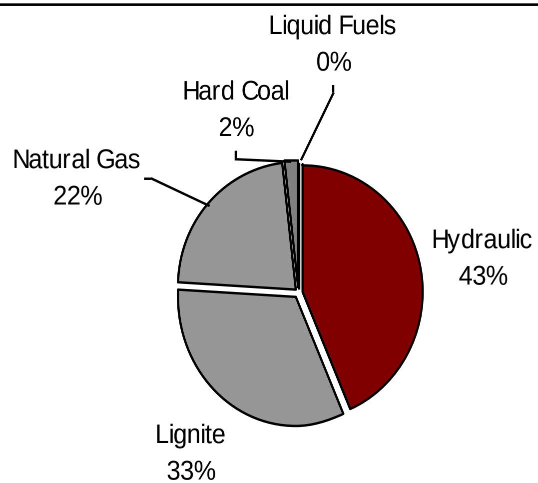
100% = 24,2 GW



Thermal power plants represent 52% of EÜAŞ installed capacity

Breakdown of energy production by fuel type

100% = 95.532 GWh

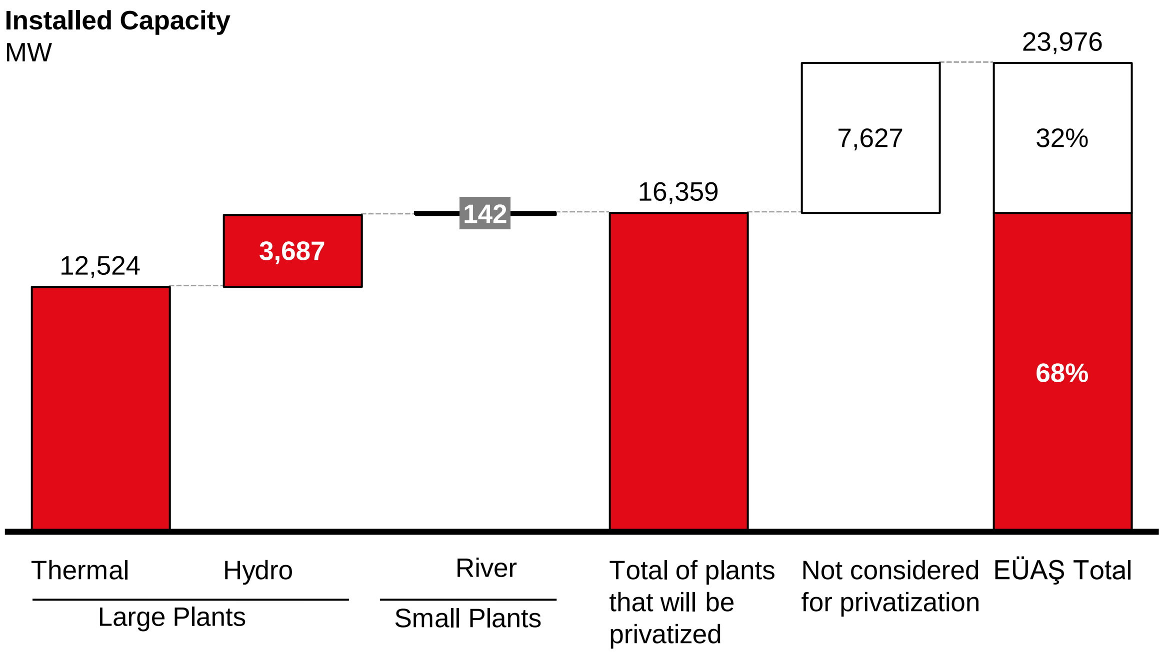


Thermal power plants represent 57% of EÜAŞ generation

SOURCE: EÜAŞ

Total installed capacity of the plants that will be privatized, is over 16 GW

Going to be privatized



	Thermal	Hydro	River	Total of plants that will be privatized	Not considered for privatization	EÜAŞ Total
Number of Plants	18	27	53	98	21	119
Minimum ins.capacity MW	50	26.2	<0.1	<0.1	6	<0.1
Maksimum ins.capacity MW	1,440	702.6	51.2	1,440	2,405	2,405

- Total of plants that are going to be privatized, makes up the 68% of EÜAŞ installed capacity and 39% of total installed capacity in Turkey
- Plants that are not planned to be privatized:

Name	**Installed Cap.** MW
Atatürk	2,405.0
Karakaya	1,800.0
Keban	1,330.0
Berke	510.0
Borçka	300.0
Sır	283.5
Batman	198.0
Muratlı	115.0
Dicle	110.0
Torul	103.2
Kralkızı	94.5
Kadıncık 1	70.0
Seyhan 1	60.0
Kadıncık 2	56.0
Ş.Urfa	51.0
Manavgat	48.0
Karacaören 2	46.4
Kepez 1	26.4
Seyhan 2	7.5
Kepez 2	6.0
Yüreğir	6.0

Source: EÜAŞ, Privatization Administration

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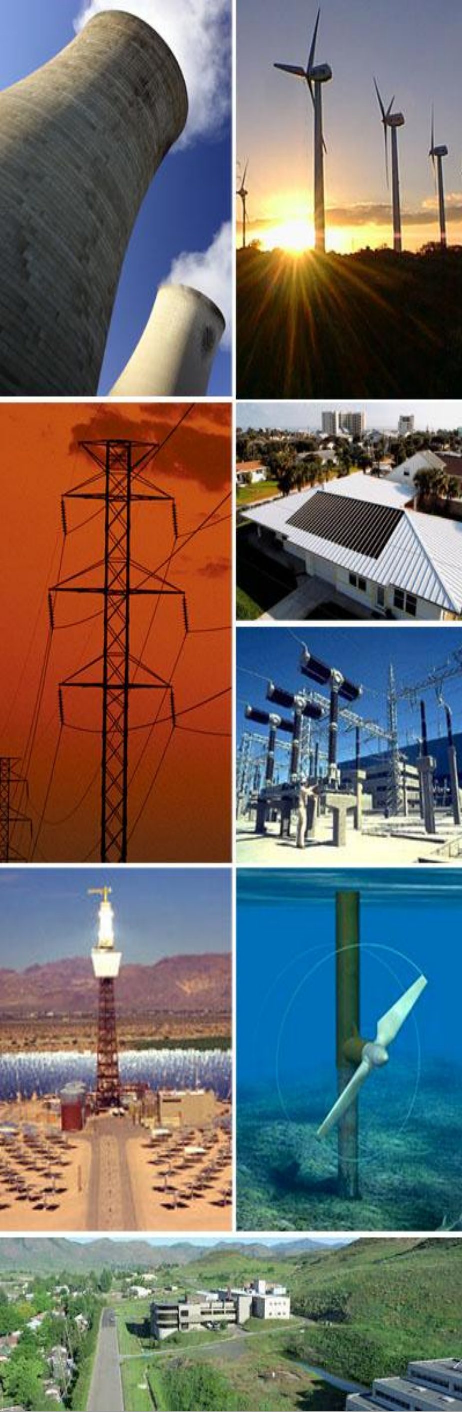

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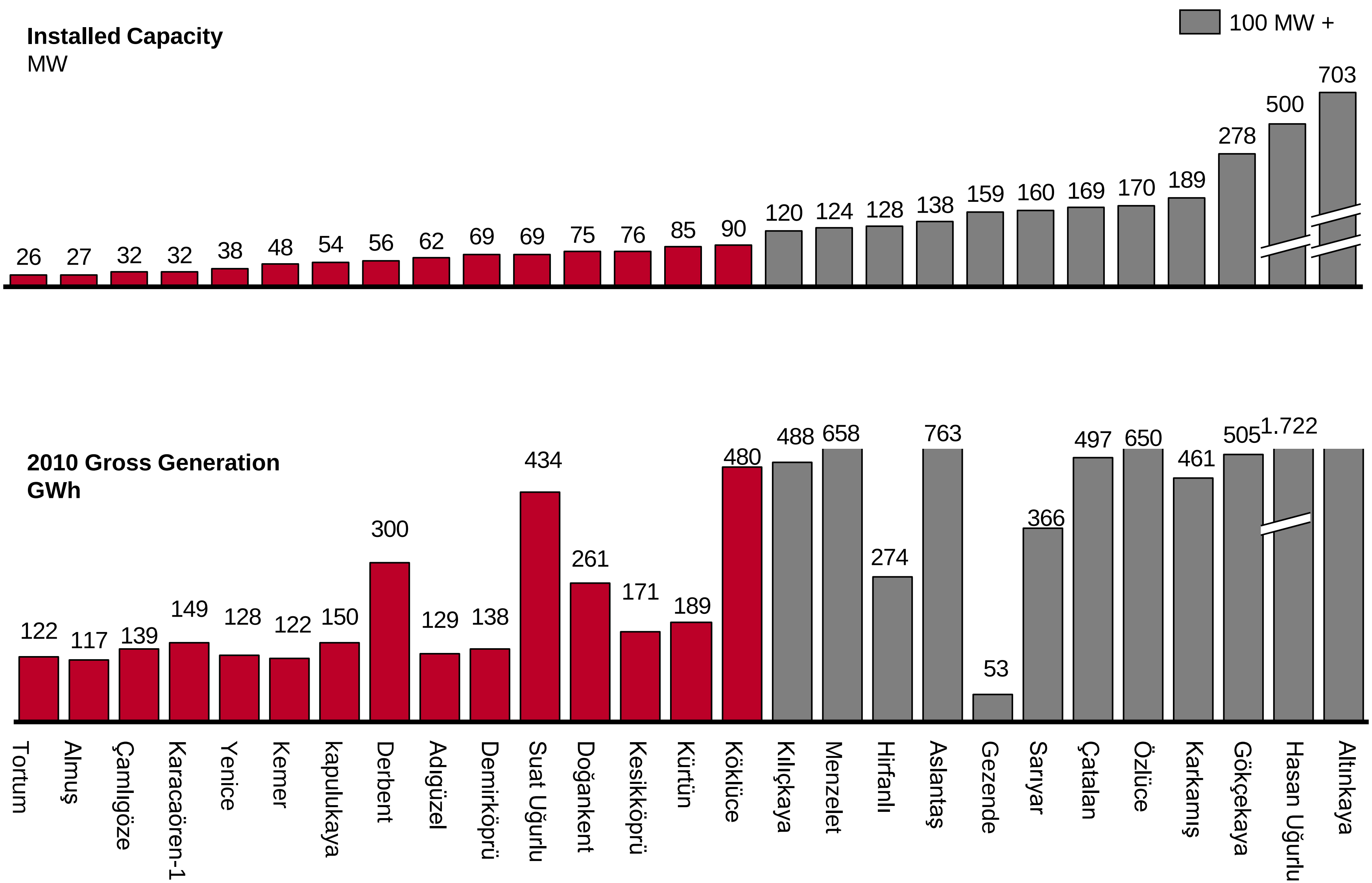
12 hydroelectric power plants out of 27 have installed capacity over 100 MW



Source: EÜAŞ -2010

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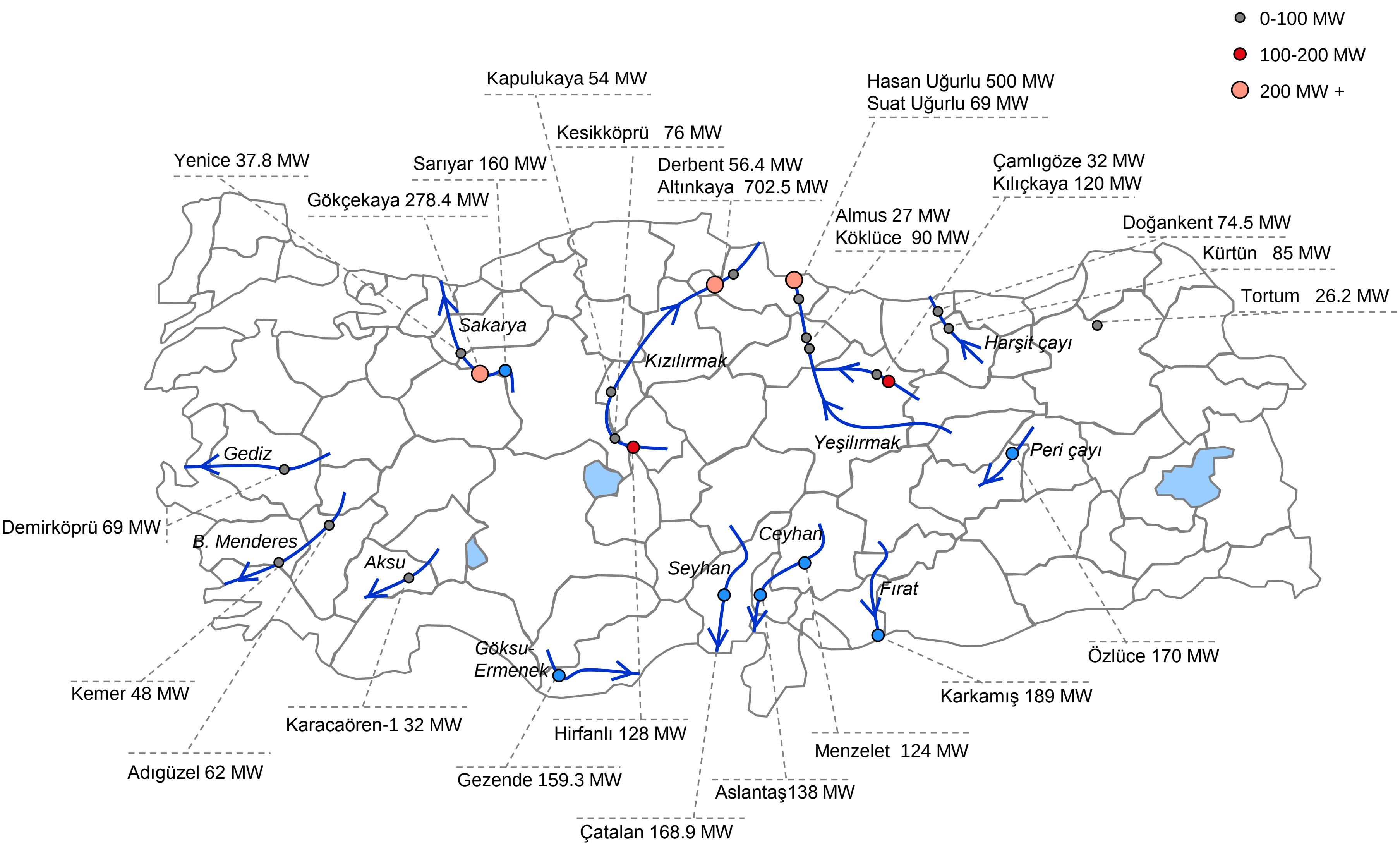
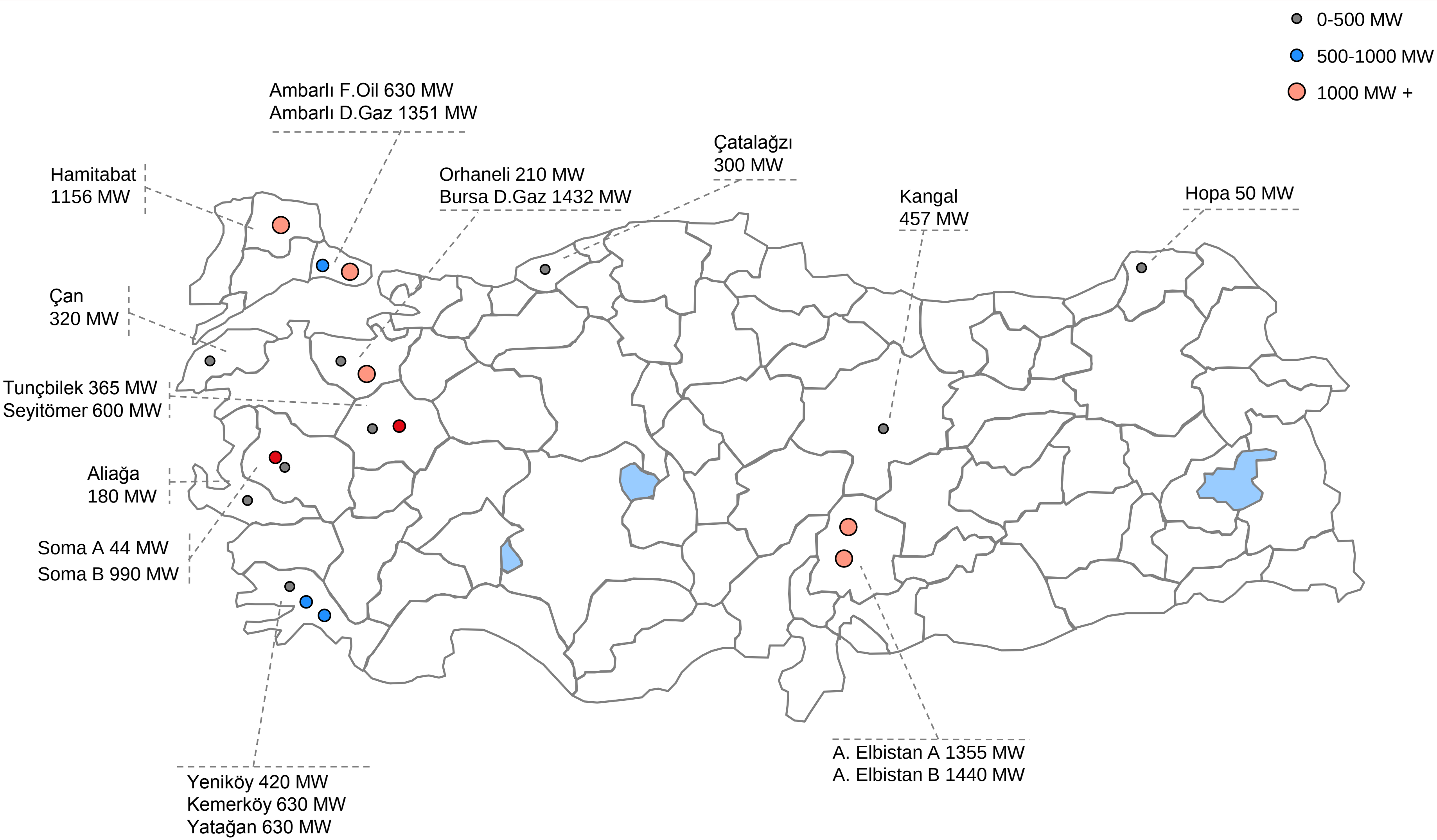
High-capacity hydro plants are concentrated in central and eastern regions of Turkey



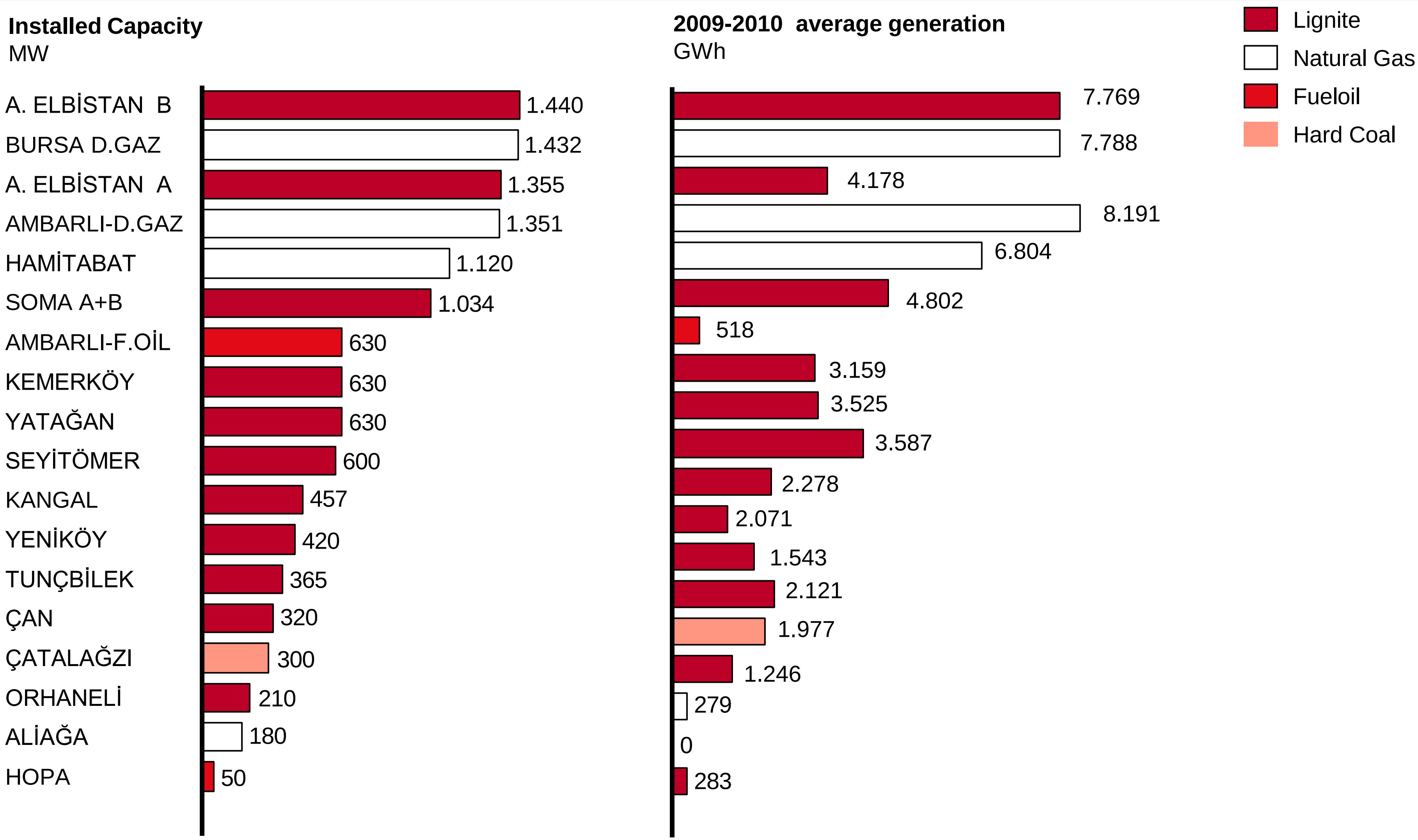
Source: EÜAŞ

Most of the 18 thermal plants are located in western regions of Turkey



Source: EÜAŞ

The largest thermal power plants are using natural gas.



Total:

58.391 GWh

2010 data was used
Source: EÜAŞ

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Generation Assets Privatization Process

	Explanation	Current status
1 **ADÜAŞ**	▪ Generation assets of 141 MW have been privatized for $510 million	▪ Completed
2 **53 small hydrolic plants**	▪ 50 run-of-river plants have been tendered in 19 portfolio groups	▪ 9 portfolios have transferred to the private sector. Rest of the portfolios are expected to be transferred in the coming months.
3 **Priority assets privatization**	▪ 4 priority power plants (all thermal) are to be privatized before the portfolio groups	▪ The privatization tender of Hamitabat Combined Cycle Natural Gas Plant with 1,156 MW installed capacity was launched on March 21, 2011. Six potential investors had pre-qualified and the deadline for the bids was September 23, 2011, but the tender is cancelled. For the others; strategy has been determined and final arrangements are in progress.
4 **Portfolio groups**	▪ 12 thermal and 27 hydrolic power plants are to be privatized in 9 portfolios	▪ Strategy has been determined and final arrangements are in progress

Priority Power Generation Plants

Priority Power Plants which will be privatised in advance are not included in the Portfolio Groups.

Plant	Fuel Type	Location	Installed Capacity (MW)	2010 Gross Generation (GWh)
Hamitabat	Natural Gas	Lüleburgaz, Kırklareli	1.156 [1]	5.750
Kangal	Lignite	Kangal, Sivas	457	2.313
Seyitömer	Lignite	Seyitömer, Kütahya	600	3.623
Soma A-B	Lignite	Soma, Manisa	1.034	3.897
		Total	3.247	15.583

These four power plants represent 29% of gross generation of EÜAŞ thermal plants as of 2010

Source: EÜAŞ.
(1) Installed capacity has been incresed from 1,120 MW to 1,156 MW followed by the rehabilitations works between 2007 and 2010.

Plants With Capacity Expansion Potential

Lignite reserves to support additional capacity in Soma, Tunçbilek, Seyitömer and Orhaneli coal mines

Plant Name	Fuel Type	Location	Installed Capacity (MW)	Feasible Additional Capacity (MW)
Soma	Lignite	Soma, Manisa	1.034	500
Tunçbilek	Lignite	Tunçbilek, Kütahya	365	400
Seyitömer	Lignite	Seyitömer, Kütahya	600	150
Orhaneli	Lignite	Orhaneli, Bursa	210	100
		Total	2,209	1,150

A total of 1.150 MW additional capacity is feasible for these 4 thermal plants

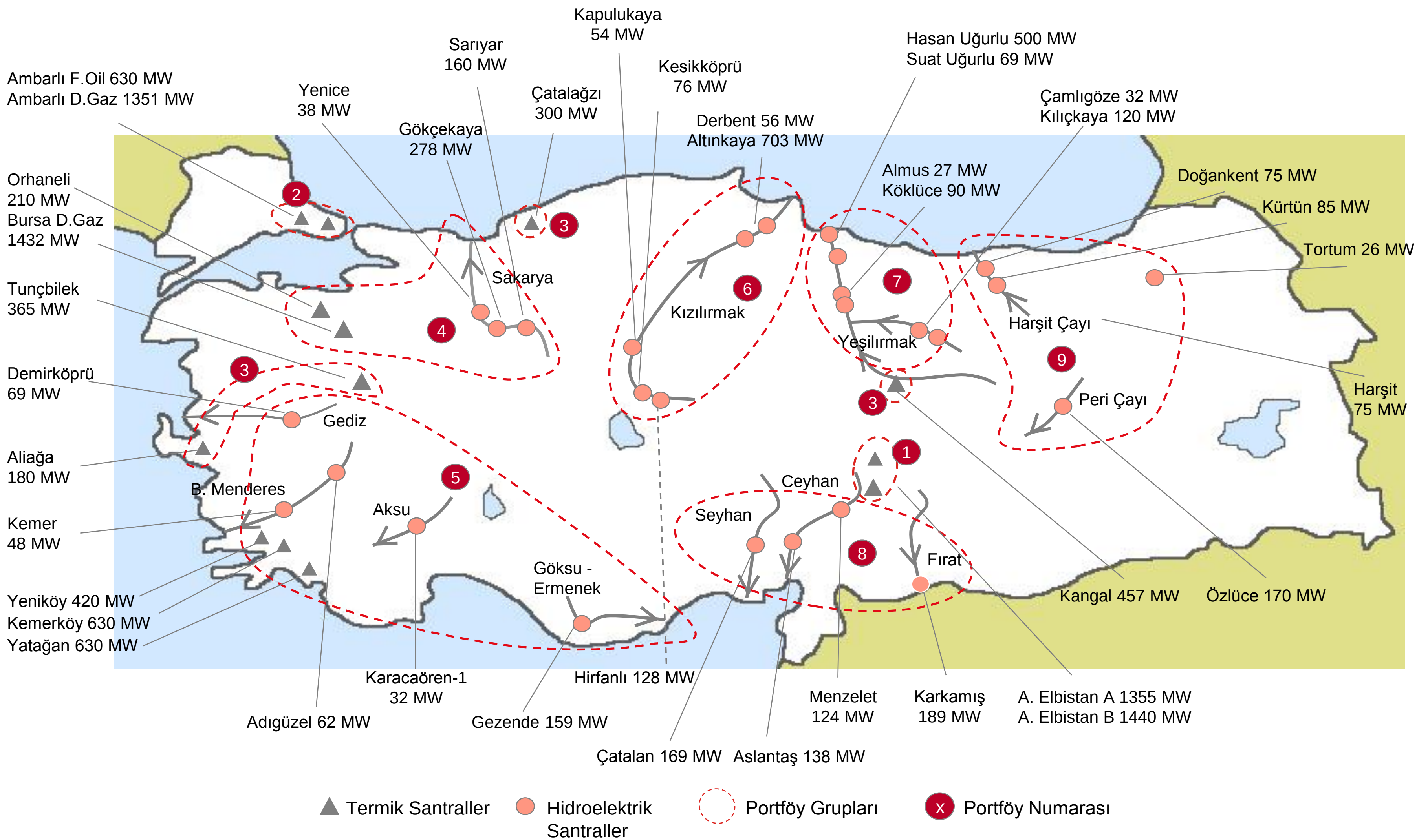
SOURCE: McKinsey Strategy Report

Design of Portfolio Groups

Portfolios have been designed to accomodate different interests and attract a diverse group of prospective investors

- Geographical location has been considered in order to preserve operational synergies and economies of scale
- Certain power plants have to be grouped together due to some characteristics (common personnel, same subsidiary, common mining field, etc.)
- Hydrolic power plants on the same river have been placed in the same portfolio to allow integrated management and operational efficiencies
- 9 portfolios, 356 MW to 2.795 MW in size have been formed:
  - 3 portfolios of themal power plants only
  - 2 mixed portfolios of themal and hydrolic plants
  - 4 portfolios of hydrolic power plants only

Geographical distribution of 9 portfolio groups



SOURCE: EÜAŞ.

EÜAŞ Privatisation: Portfolio Groups (1)

	Plant	Fuel Type	Location/River	Installed Capacity (MW)	Total (MW)	2010 Gross Generation (GWh)	Total (GWh)
1	A. Elbistan A	Lignite	Afşin, K.Maraş	1.355	Total: 2,795	2.042	Total: 9.736
	A. Elbistan B	Lignite	Afşin, K.Maraş	1.440		7.694	
2	Ambarlı D.Gaz	Natural Gas	Ambarlı, İstanbul	1.351	Total: 1,981	7.941	Total: 8,003
	Ambarlı F.Oil	Fuel-Oil	Ambarlı, İstanbul	630		62	
3	Aliağa	Natural Gas	Aliağa, İzmir	180	Total: 865	251	Total: 4.052
	Çan	Lignite	Kangal, Sivas	320		2.141	
	Tunçbilek	Lignite	Tunçbilek, Kütahya	365		1.659	
4	Bursa D.gaz	Natural Gas	Ovaakça, Bursa	1.432	Total: 2,118	7.098	Total: 9.270
	Orhaneli	Lignite	Orhaneli, Bursa	210		1.174	
	Gökçekaya	Hydro	Sakarya	278		505	
	Sarıyar	Hydro	Sakarya	160		366	
	Yenice	Hydro	Sakarya	38		128	
5	Kemerköy	Lignite	Milas, Muğla	630	Total: 2,050	2.720	Total: 7.218
	Yatağan	Lignite	Yatağan, Muğla	630		2.599	
	Yeniköy	Lignite	Milas, Muğla	420		1.308	
	Demirköprü	Hydro	Gediz	69		138	
	Adıgüzel	Hydro	Büyük Menderes	62		129	
	Kemer	Hydro	Büyük Menderes	48		122	
	Karacaören-1	Hydro	Aksu	32		149	
	Gezende	Hydro	Göksu, Ermenek	159		53	

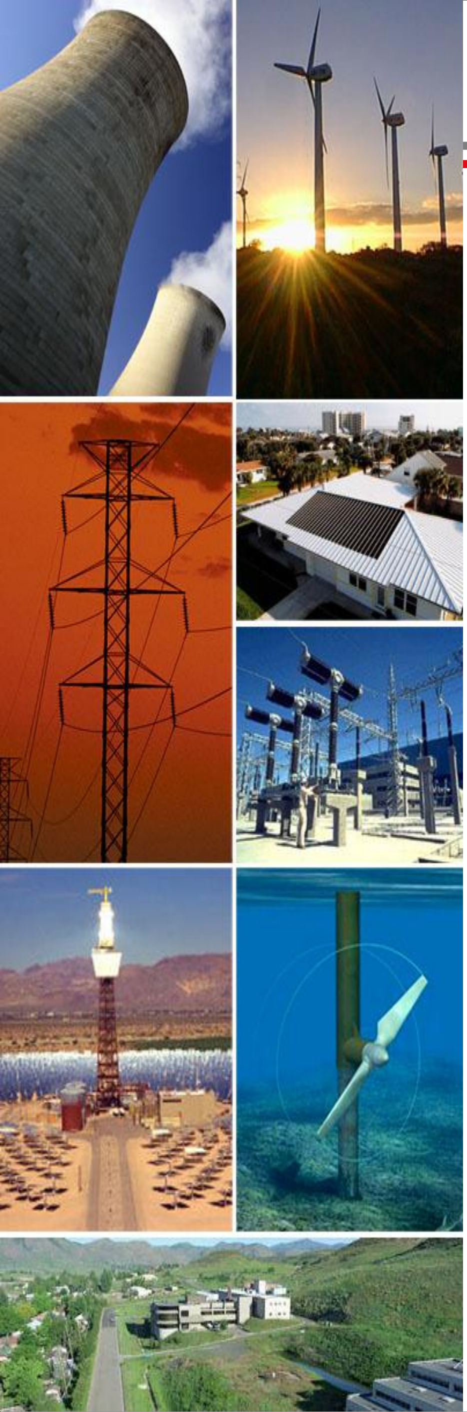
Source: EÜAŞ.

(1) Four priority plants to be privatised in advance and Hopa, which is non-operational since 2003, are not represented in the above portfolios. Additionally, Çatalağzı, which to be privatized separately, is taken out of Portfolio 3.

EUAŞ Privatisation: Portfolio Groups (1) (Cont'd)

Group	Plant	Fuel Type	Location/River	Installed Capacity (MW)	2010 Gross Generation (GWh)
6	Altınkaya	Hydro	Kızılırmak	703	1.372
	Derbent	Hydro	Kızılırmak	56	300
	Hirfanlı	Hydro	Kızılırmak	128	274
	Kesikköprü	Hydro	Kızılırmak	76	171
	Kapulukaya	Hydro	Kızılırmak	54	150
				Total: 1,017	Total: 2.267
7	Hasan Uğurlu	Hydro	Yeşilırmak	500	1.722
	Suat Uğurlu	Hydro	Yeşilırmak	69	434
	Almuş	Hydro	Yeşilırmak	27	117
	Köklüce	Hydro	Yeşilırmak	90	480
	Kılıçkaya	Hydro	Yeşilırmak - Kelkit	120	488
	Çamlıgöze	Hydro	Yeşilırmak - Kelkit	32	139
				Total: 838	Total: 3.380
8	Çatalan	Hydro	Seyhan	169	497
	Aslantaş	Hydro	Ceyhan	138	763
	Menzelet	Hydro	Ceyhan	124	658
	Karkamış	Hydro	Fırat	189	461
				Total: 620	Total: 2.378
9	Doğankent	Hydro	Harşit Çayı	75	275
	Kürtün	Hydro	Harşit Çayı	85	189
	Tortum	Hydro	Tortum Gölü	26	133
	Özlüce	Hydro	Peri Suyu	170	650
				Total: 356	Total: 1.248

Source: EÜAŞ.
(1) Four priority plants to be privatised in advance and Hopa, which is non-operational since 2003, are not represented in the above portfolios.



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Important Issues

The Privatisation Administration and Ministry of Energy and Natural Resources are currently working to address the following key considerations.

Fuel Supply

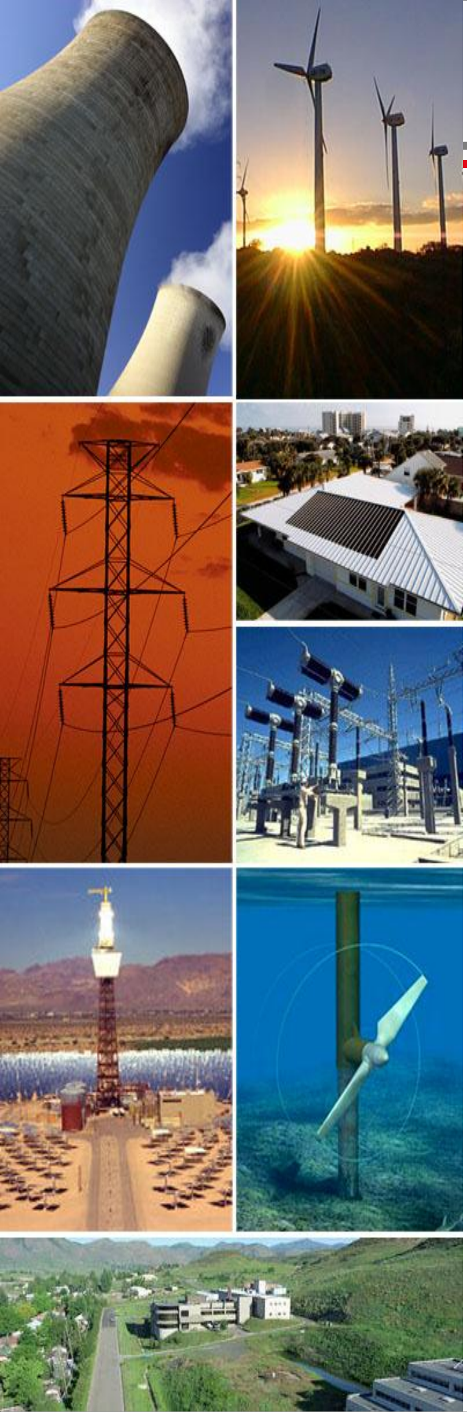
- **Natural Gas** → Natural gas is supplied by BOTAŞ,
- **Lignite / Coal** → It is planned that the power plants will handover with coal areas.
- **Water** → Preparatork work ongoing for signing water usage agreements with DSİ.

Transaction Structure →

- Share sale of Portfolio Companies to be incorporated
- Portfolio Companies will have Operating Rights for HPPs and ownership of the Thermal assets

Environmental Compliance →

- Investors will have enough time for completion of the environmental investments.



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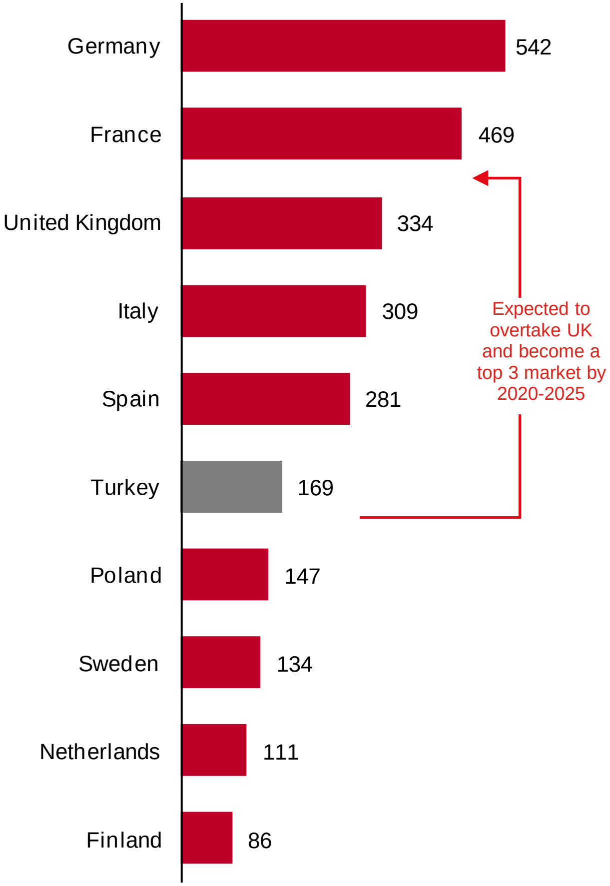
Attractive Market Fundamentals

Given the size and current growth rate and potential, Turkish electricity market is one of the most attractive electricity markets in Europe, expected to become a top 3 market by size in the next 10-15 years.

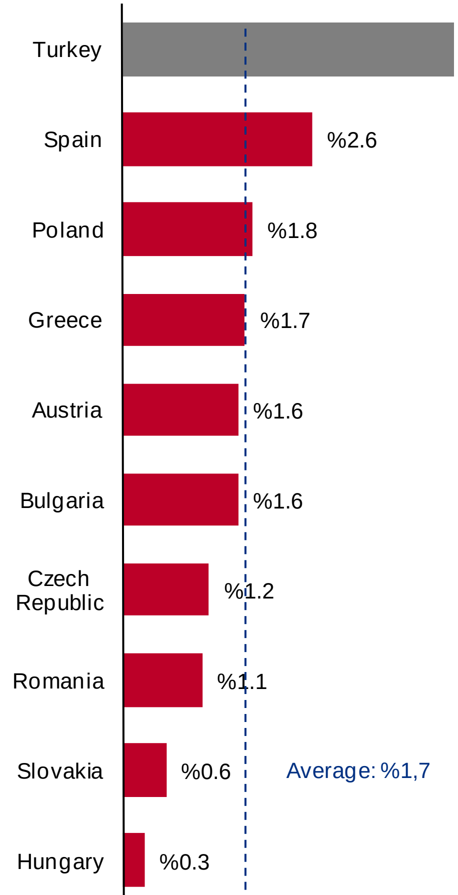
Significant Market Size (2010)

Annual Consumption (TWh) (1)



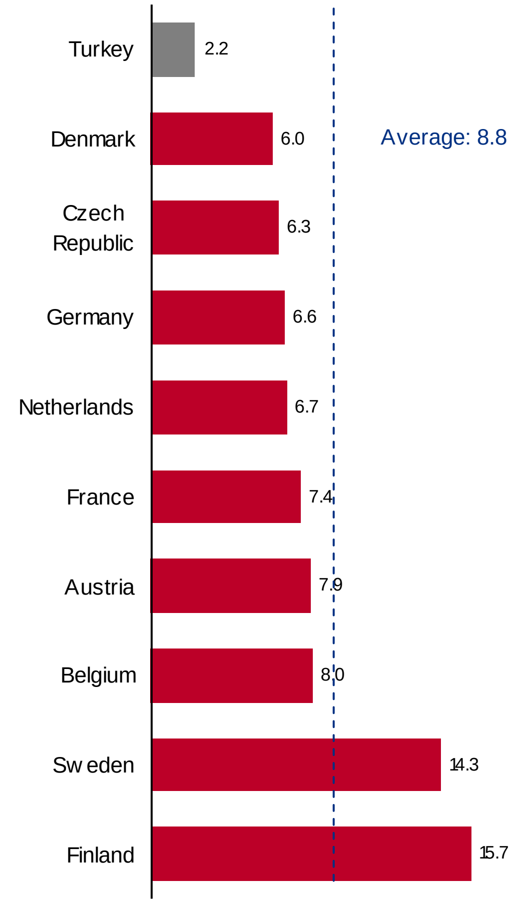
High Growth Potential …

Consumption Growth Rate (2)



… From a Low Starting Point (2010)

Per Capita Power Consumption (3)



Source: EIU. (1) Net consumption for Turkey in 2010 is calculated by using 2009 net consumption figure and 2009-2010 gross consumption growth rate. For other countries EIU forecasts are used.
(2) Growth rates are based on 2006 – 2010 period.
(3) Net consumption for Turkey in 2010 is calculated by using 2009 net consumption figure and 2009-2010 gross consumption growth rate Per capita consumption is calculated by dividing this number by population. For other countries EIU forecasts are used.

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Conclusion

The Turkish Power Market represents a strong and sizeable growth opportunity for strategic and financial players.

- **Turkey has one of the largest and fastest growing power markets in the CEEMEA * region**
- Electricity demand growth is expected to outpace real GDP growth as a result of population growth, urbanisation, industrialisation and economic growth
- Turkey, as the sixth largest electricity generating country in Europe, has a per capita power consumption level well below Western European markets
- As well as enhancing competition and efficiency, the ongoing liberalisation process is also expected to bring the Turkish power market in line with EU market structures
- Opportunities to create vertically-integrated operations in the sector are expected to increase

- **Share of private players in the market is increasing**

- **EÜAŞ privatisation process is of critical importance due to the contribution it will make to mobilise the growth potential of the sector .**

- EÜAŞ generation assets' privatisation process reflects a structure which will address the ongoing issues in the energy sector and serve the objectives of the privatisation. As such, EÜAŞ privatisation is an important opportunity for the investors
- With this perspective, we:
  - Have selected the priority assets of EÜAŞ and formed the portfolio groups, and
  - Have the determined the right strategy to tackle key issues

- **We believe that the privatization process of EÜAŞ assets will be beneficial in ensuring supply security, enhancing efficiency and competition in the Turkish electricity market structure and activities**

* CEEMEA: Central and Eastern Europe, Middle East, Africa

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Thank You

Arzu ATİK
aatik@oib.gov.tr
Tel : + 90 430 45 60