

# COAL AND COAL BASED ENERGY IN TURKEY

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**September 15-18, 2013 Pittsburgh Coal Conference Beijing, China**

# **Introduction**

- **Coal and Energy in the World**
- **Coal Reserves and Production in Turkey**
- **Energy in Turkey**
- **Conclusions**

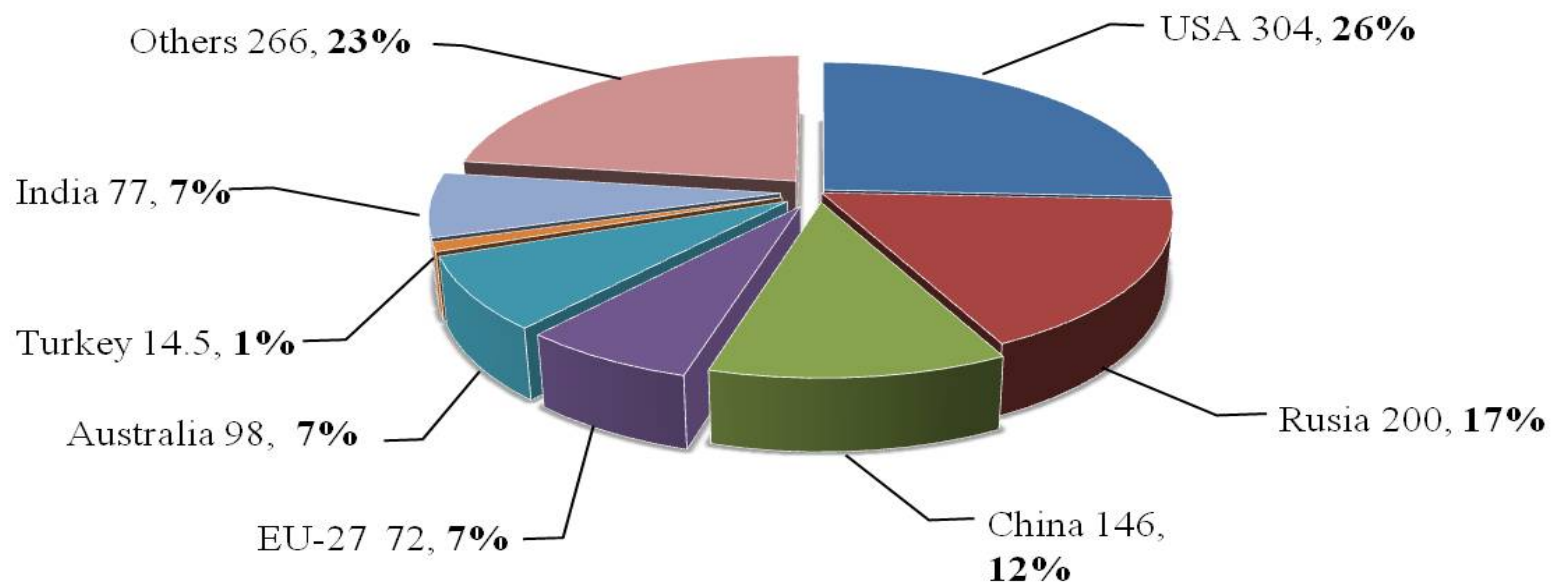
# **Coal and Energy in the World**

- **87% of world energy consumption is produced by fossil fuels (Coal, Oil and Natural Gas).**
- **The total world known coal reserves are 1.1 trillion tons. 66% of them is bituminous coal .**
- **Coal is the largest fossil fuel reserve. The life of coal reserve has been estimated to be 240 years.**

# Distribution of World Coal Reserves

Annual Report of Coal Enterprises of Turkey (2012)

**Total Reserve 1.1 Trillion Tons**

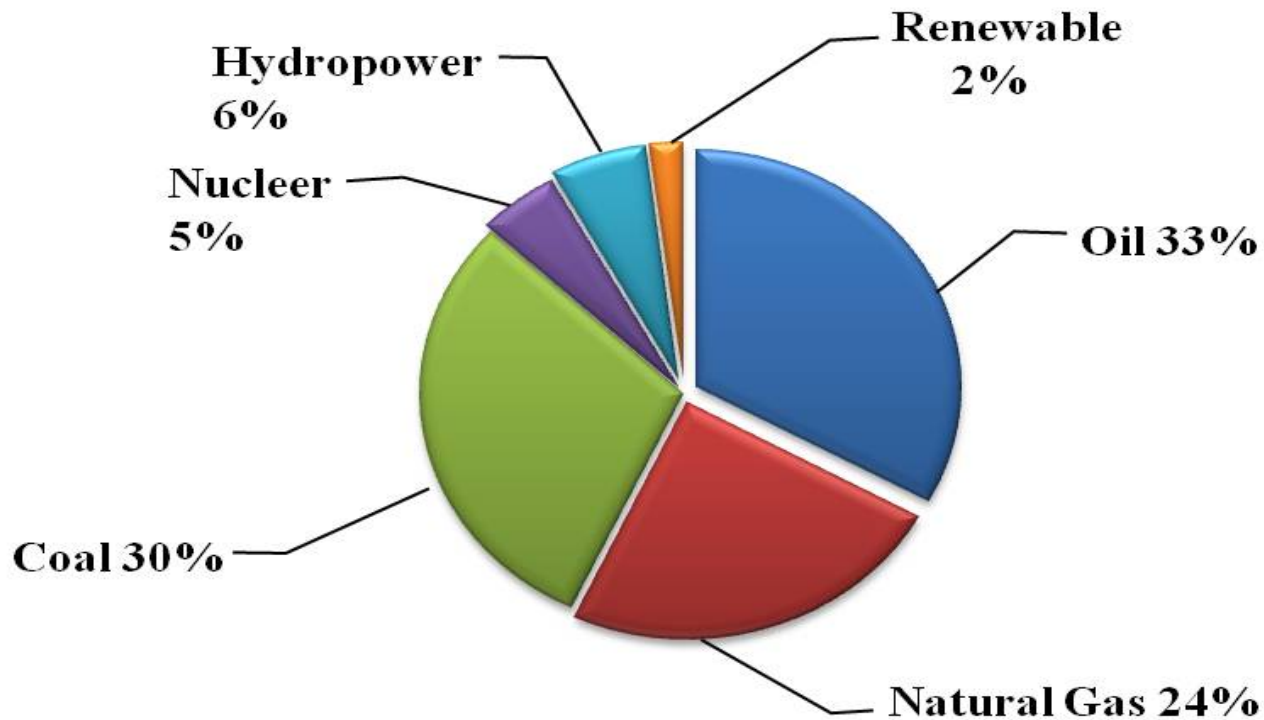


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- **The total world coal production was 7.6 billion tons in 2011.**
- **The share of the coal in the world energy consumption is ~ 30%.**
- **The share of the coal in electricity production is ~ 40%.**

# 2011 World Energy Productions

Annual Report of Coal Enterprises of Turkey (2012)



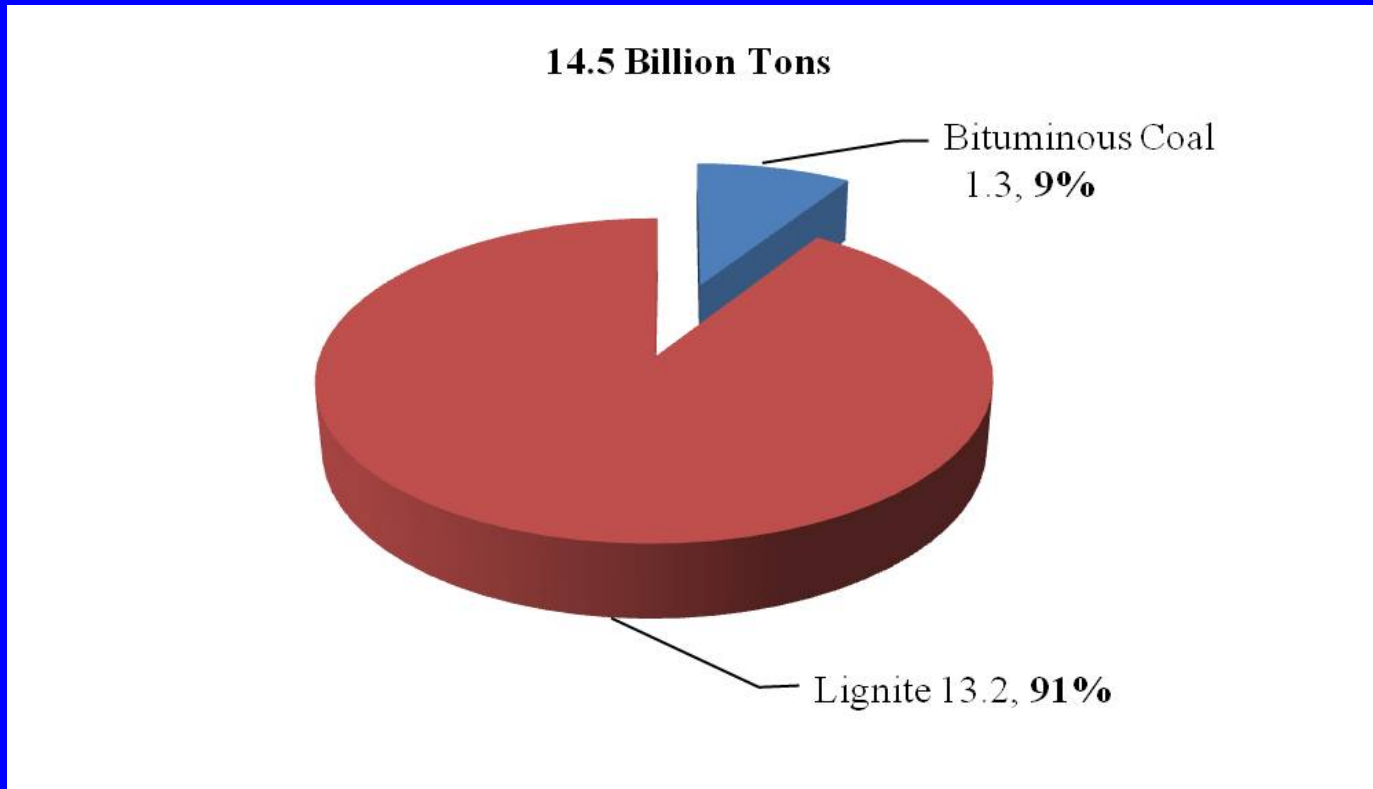
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# **Coal Reserves and Production in Turkey**

- **The total known coal reserve in Turkey is 14.5 billion tons of which 13.2 billion tons are lignite.**
- **Until today, only 40% of Turkey coal is explored.**
- **40 billion tons of potential coal are expected in Turkey.**

# The Distribution of Turkish Coal Reserves

Annual Report of Turkish Geological Survey (2012)

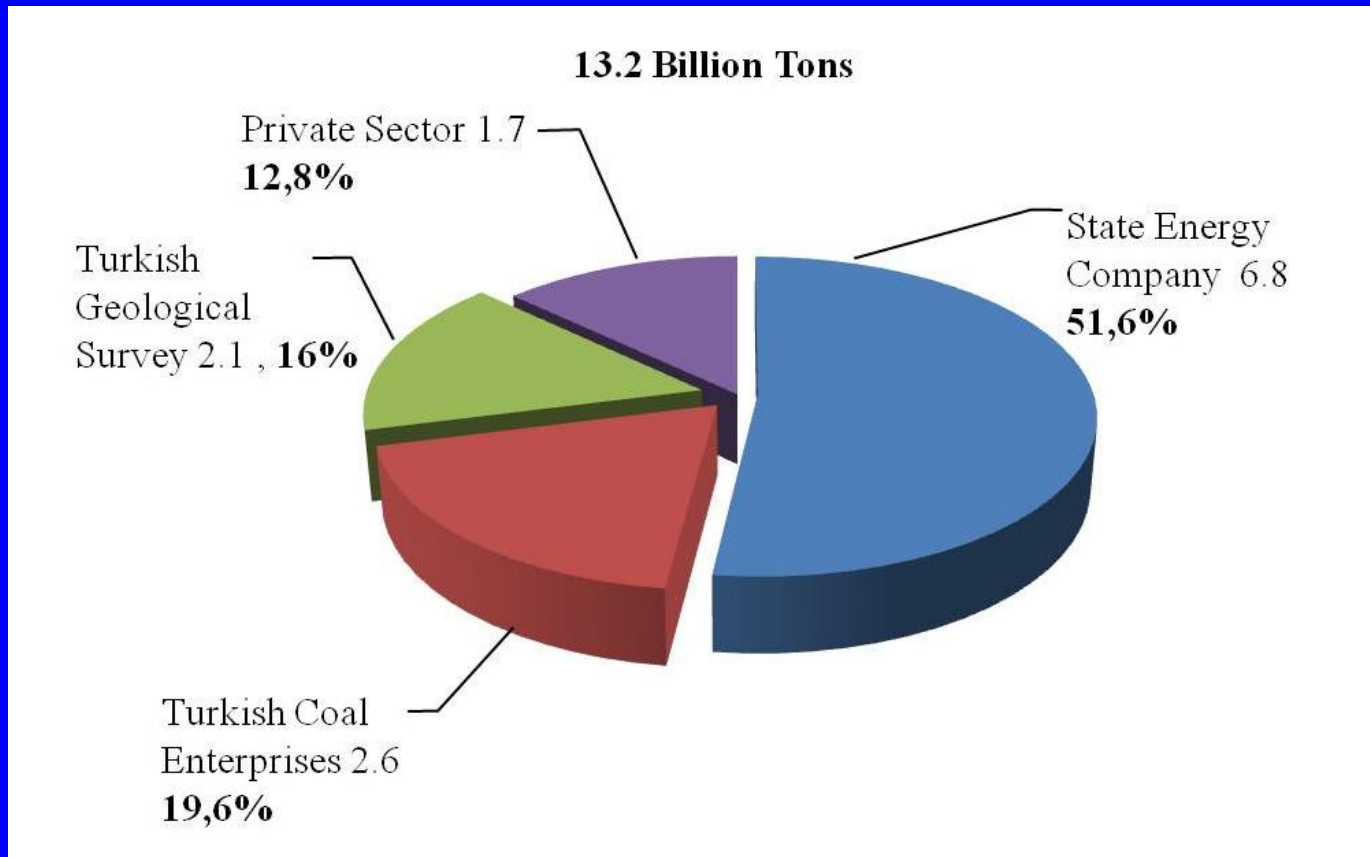


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# Owners of Turkish Lignite Reserves

Annual Report of Coal Enterprises of Turkey (2012)



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# Coal Consumption in 2012

Annual Report of World Energy Council Turkish National Committee (2012)

	%
<b>Domestic</b>	<b>10.9</b>
<b>Industrial</b>	<b>14.2</b>
<b>Electricity</b>	<b>74.9</b>

# Energy in Turkey

- **Turkey is dependent on other countries for 74% of its total energy and 57% of its electricity.**
- **Today, only 19% of total energy and 14% of electricity are produced by domestic coal. Additional ~ 10% of energy is produced by imported coal.**
- **In August 2013, the Installed Power in Turkey is 63,000 MW. It was only 53,000 MW in 2011.**

- **The most important raw material for energy in Turkey is coal followed by Hydro-energy. Oil and natural gas shares are very small.**
- **Coal production in Turkey was 76 million tons in 2012.**
- **Additional 30 million tons of coal were also imported.**

# Turkish Energy Sources, Reserve and 2011 Production

Annual Report of World Energy Council Turkish National Committee (2012)

<b>Sources</b>	<b>Reserve</b>	<b>2011 Production</b>
Bituminous Coal	1.3 billion tons	2.6 million tons
Lignite	13.2 billion tons	73.4 million tons
Raw Oil	44.4 million tons	2.4 million tons
Natural Gas	7.1 billion m <sup>3</sup>	0.8 billion m <sup>3</sup>
Hydro	170,000 GWh/Year	57,472 GWh/Year
Wind	48,000 MW	4,726 GWh/Year
Geothermal (Potential)	380 GWh	-

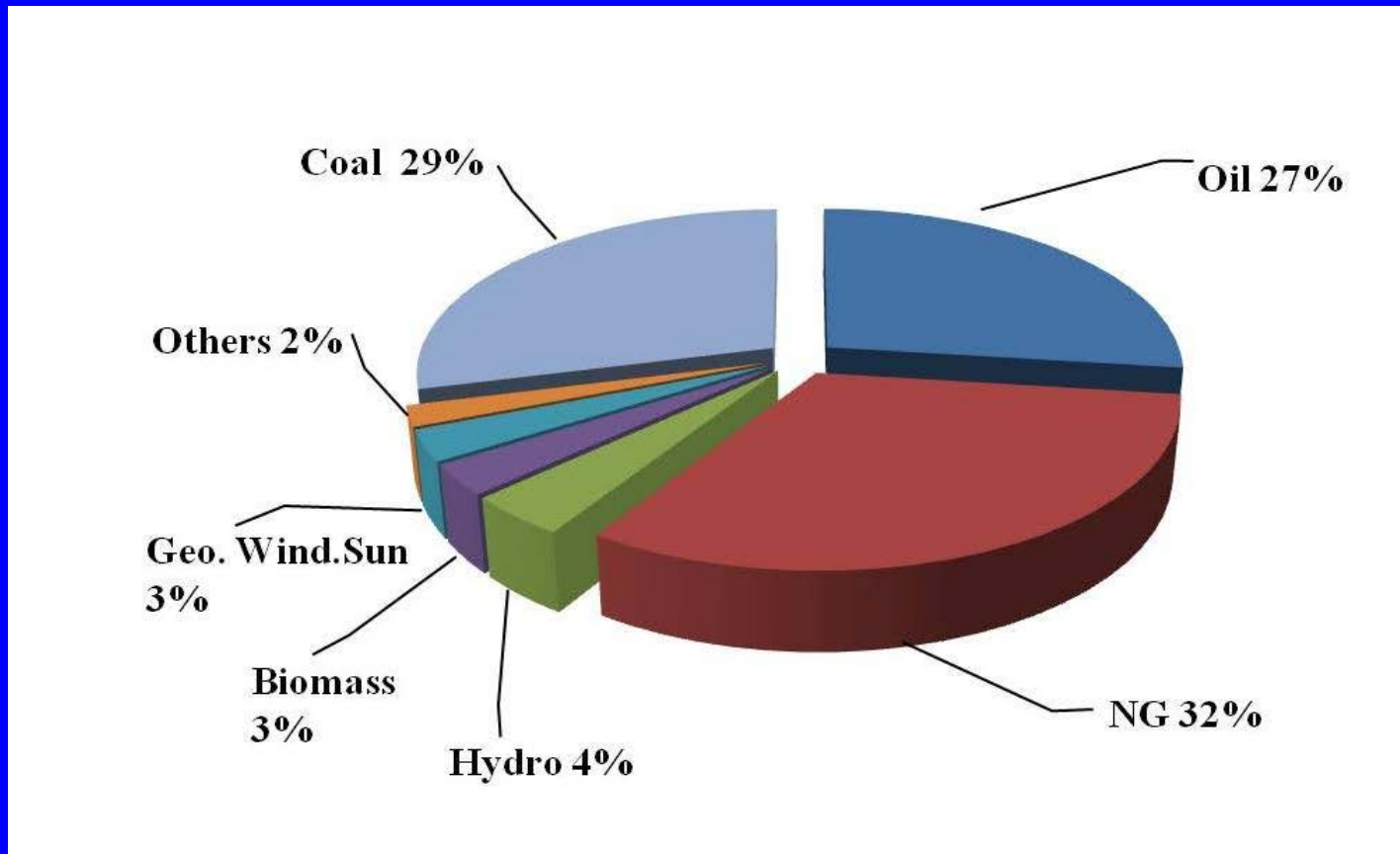
# Source Distribution of Turkish Energy Production

Ministry of Turkish Energy and Natural Resources (2012)

	2002 %	2006 %	2010 %	2011 %	2012 %
Domestic Coal	23.3	20.0	17.1	18.1	14.9
Imported Coal	1.5	6.3	9.0	10.0	6.9
NG + LNG	40.8	44.0	46.5	44.7	35.8
Hydro	26.0	25.1	24.5	23.2	34.3
Oil	8.3	4.2	1.0	1.6	3.6
Others (Geothermal+Wind Sun, etc.)	0.1	0.4	1.9	2.4	4.5
SUM	100.0	100.0	100.0	100.0	100.0

# General Energy Consumption of Turkey (2011)

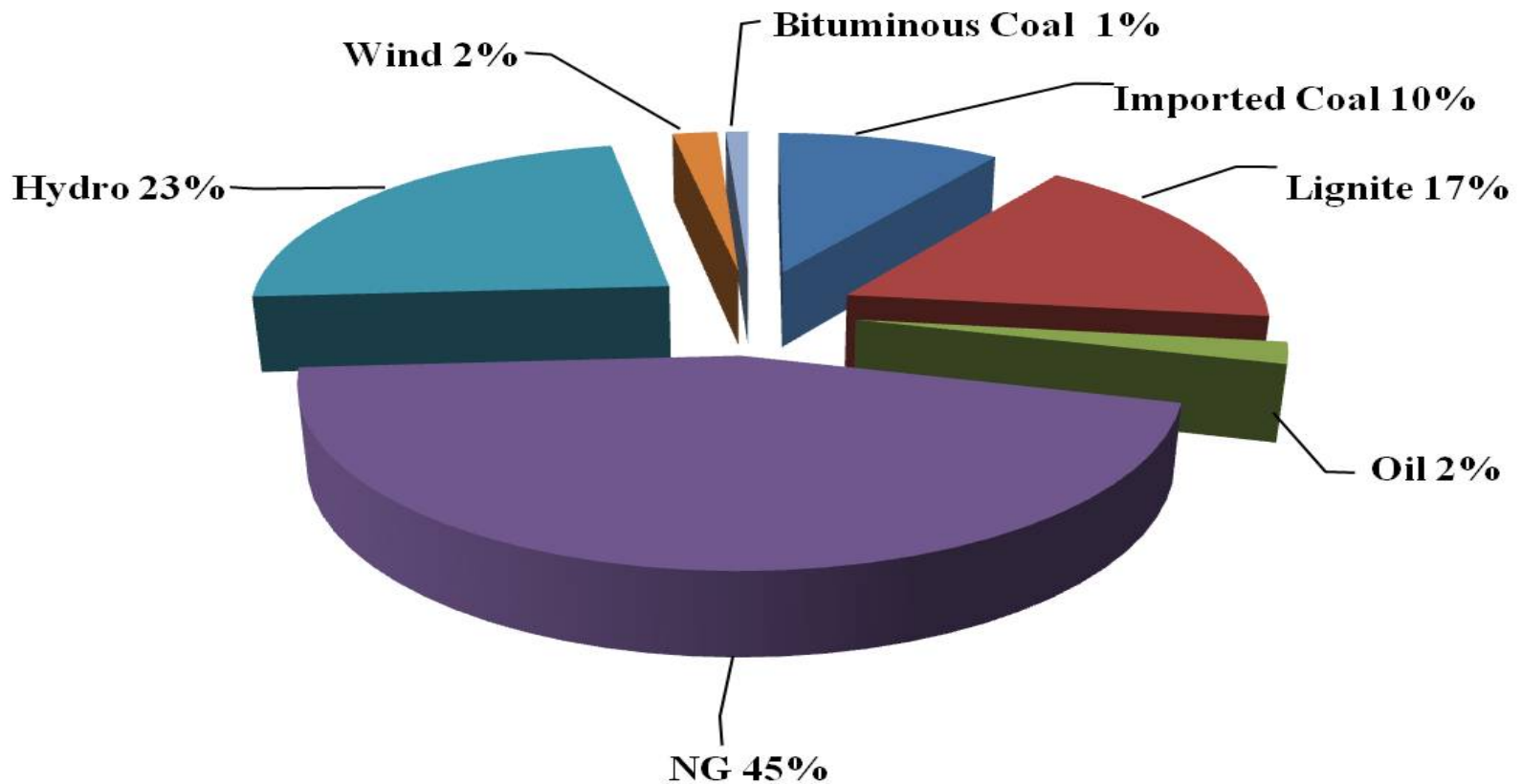
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# Electricity Consumption of Turkey (2011)

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# Installed Power in Turkey

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- **In 2012, the total installed power was 57,000 MW and the share of coal was 8,200 MW.**
- **In 2012, the energy consumption Per capita was 3,500 kWh/year. It was 1,550 kWh/year in 2000.**
- **In OECD countries, the energy consumption Per capita is 12,000 kWh/year.**

# Progress of Installed Power Capacity in Turkey

Annual Report of World Energy Council Turkish National Committee (2012)

Years	Installed Power MW
2009	44,761
2010	49,524
2011	53,211
2012	57,085
2013(August)	60,121

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# Installed Power Capacity in Turkey

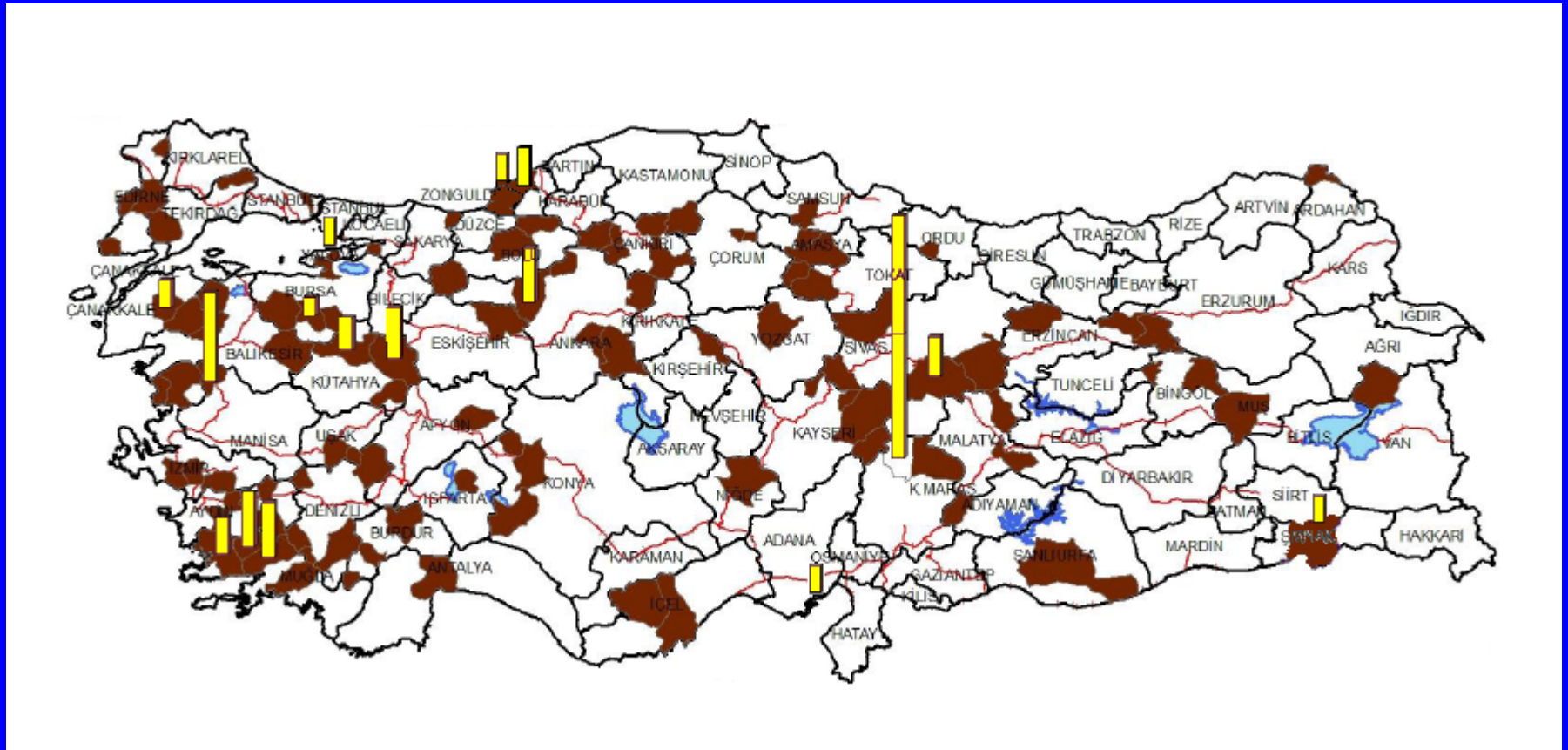
Annual Report of Coal Enterprises of Turkey (2012)



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# Coal Deposits and Coal Power Plants in Turkey

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# Conclusions

- **In 10 years, the coal reserves in Turkey will be increased to 20 billion tons.**
- **In 10 years, the coal production in Turkey will be increased to 200 million tons.**
- **In 10 years, the total electric energy in Turkey is planned to be 100,000 MW, of which the domestic coal contribution has to be 25,000 MW.**

- **One billion m<sup>3</sup> of coal gasification plant is planned by Turkish Coal Enterprises in Soma region .**
- **According to the Turkish Government's policy privatizations of coal power plants has started.**
- **In 10 years, some Coal-to-Liquid (CTL) plants are planned.**
- **All types of energy investments are expected by foreign capital.**

*Thank you for your attention...*