



Renewable Energy in Turkey

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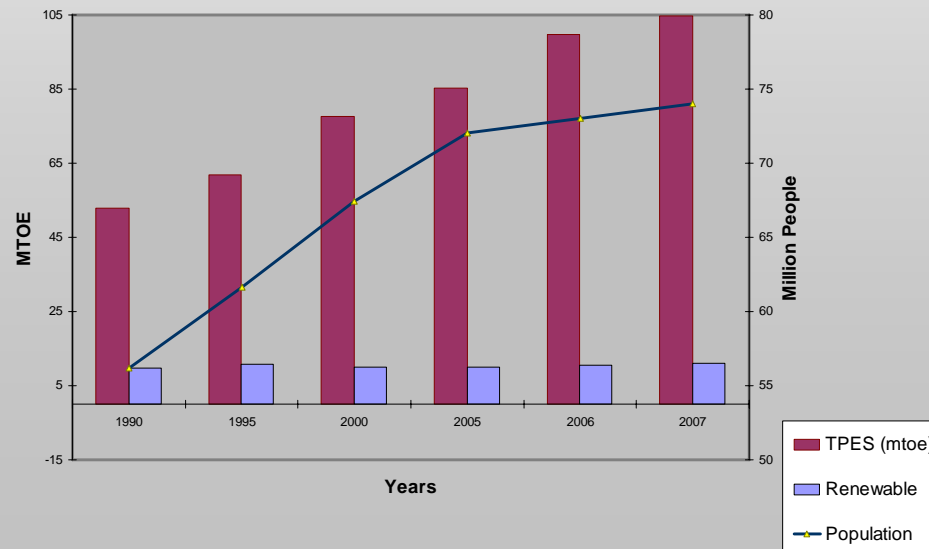
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Factors affecting energy consumption of Turkey

- Population: 70 million (2007); 65% below 34 years old, average age 28.
- GDP: 708,053 M\$; 15th largest economy of the world, 6th largest economy compared to the 27 EY countries in 2007 (IMF-WEO)

Between 2002-2007;

- GDP increased 187% with average growth rate 7%
- Exports increased 197% (107 billion USD in 2007)
- Foreign trade increased 216%
- Exports to neighboring countries rose 478%
- Imports from neighboring countries grew 340%



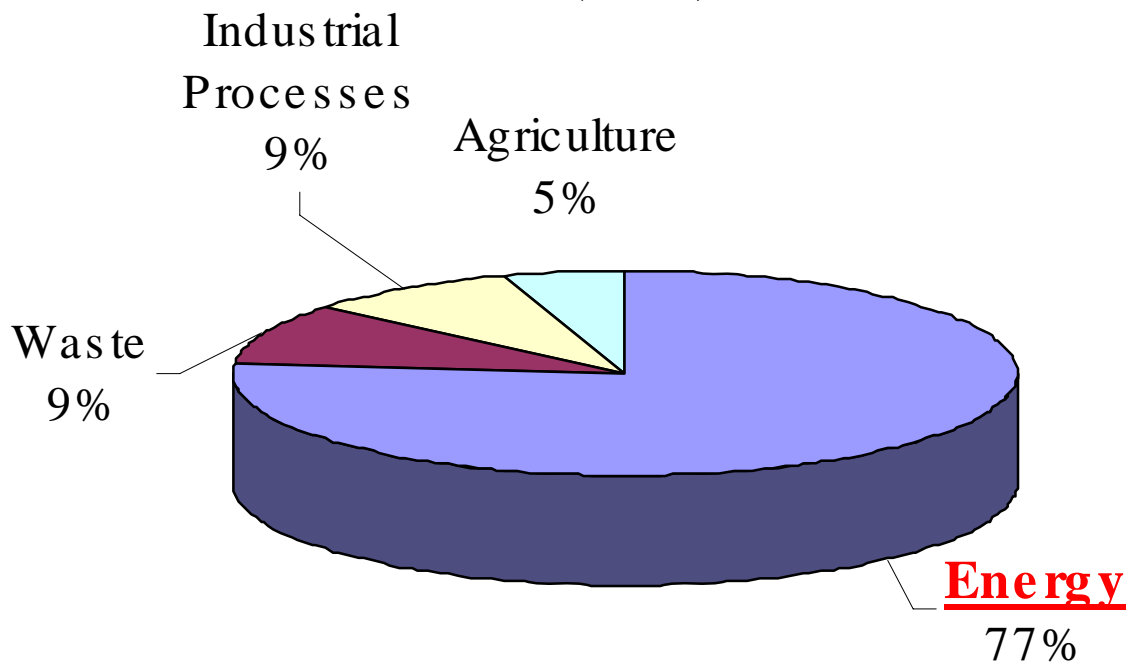
Import Dependency of Energy in Turkey

	2000	2001	2002	2003	2004	2005	2006	2007 ⁽¹⁾	2008 ⁽²⁾
Production (BTOE)	27.621	26.159	24.894	23.779	24.170	26.472	28.045	29.480	30.330
Consumption (BTOE)	81.193	75.883	78.322	83.936	87.778	90.077	99.313	106.289	111.645
Import Dependency (%)	66	66	68	72	72	71	72	72	73

(1) : *Approx. realization*

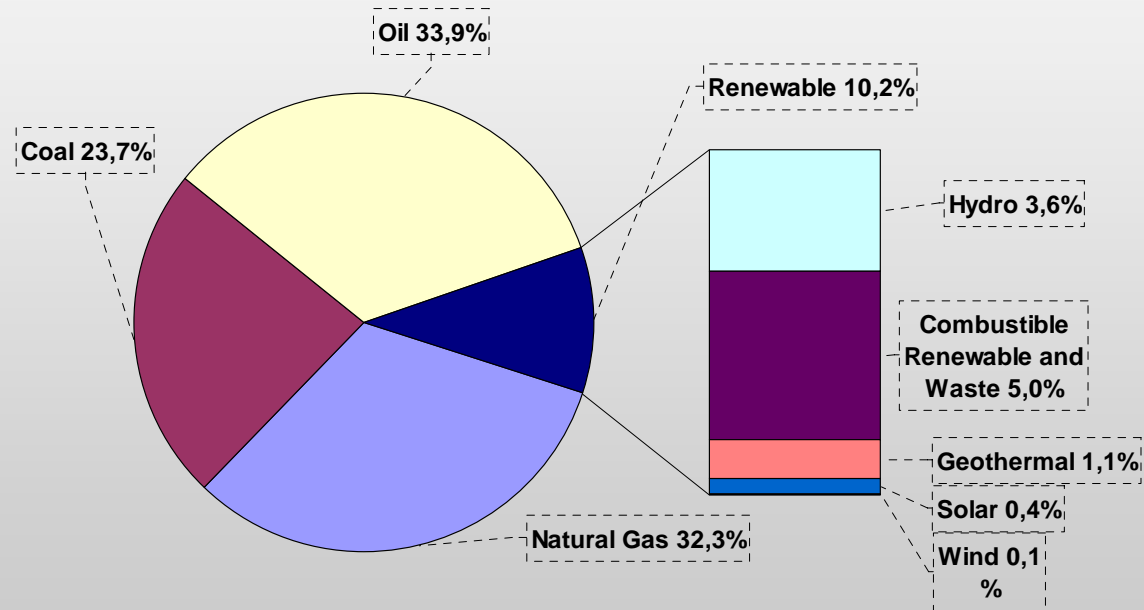
(2) : *Approx.*

Sectoral Distribution of CO2 Emissions in Turkey (2004)



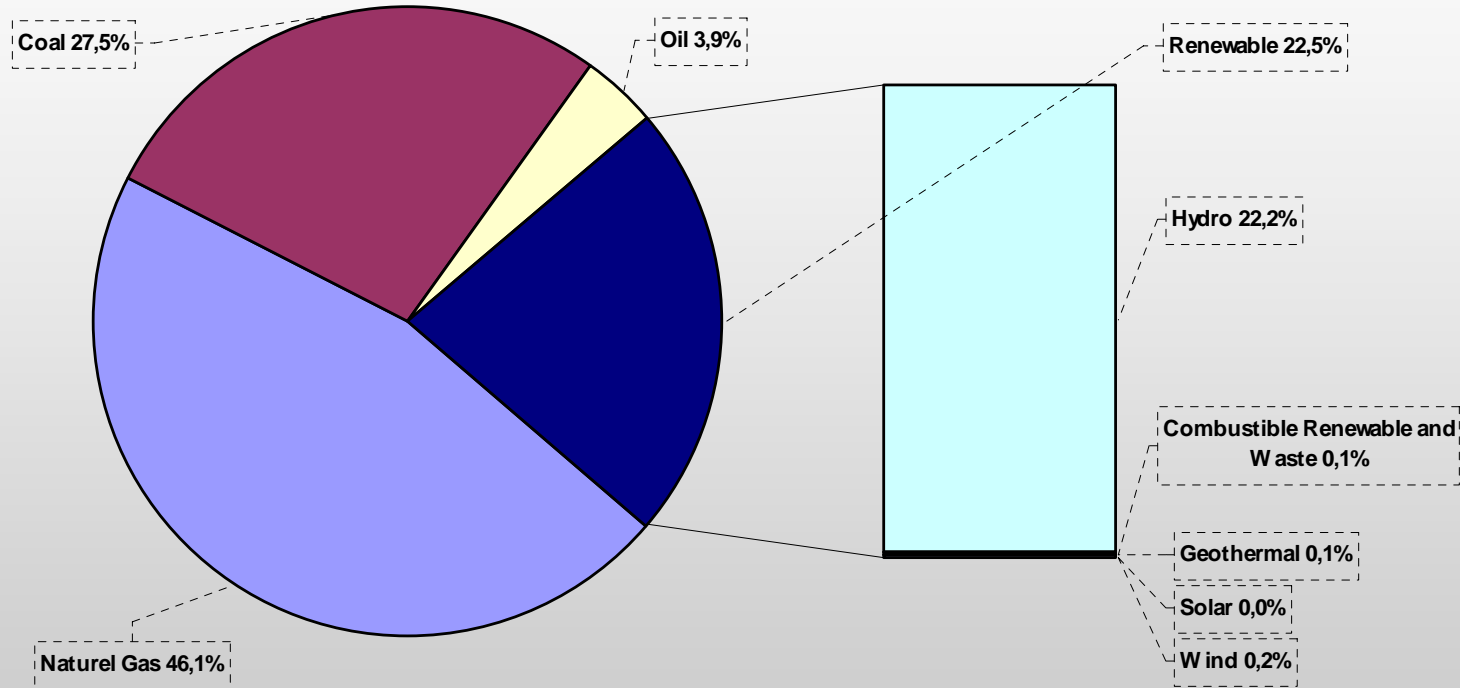
Present Status for Renewable Energy in Turkey

**Total Primary Energy Consumption
(104 MTOE) - 2007**



Present Status for Renewable Energy in Turkey

**Electricity Consumption
(187 756 GWh) - 2007**





Hydro Electrical Potential (GWh)

- Technical capacity : 432,986 GWh/y
- Economical capacity : 123,040 GWh/y
- In operation capacity : 34 729 MW



At the moment total license application:

- 1277 projects, 17 400 MW;
 - 334 projects, 8478 MW out of such project licenses have already been granted or found appropriate to be granted by EMRA (Energy Market Regulating Authority).
 - 256 projects, 4503 MW out of such projects have been taken under examination by EMRA.

Wind Energy Potential

- Technical capacity :100-120 GW
- Economical capacity :35-40 GW (excluding Offshore)
- 5000 MW with annual wind velocity at least 8.5 m/s ,
- 48 000 MW with annual wind velocity at least 7.0 m/s,
- Total installed capacity is 200 MW and 600 MW under construction,
- Total license applications have exceeded 85 000 MW, and 2126 MW of these applications have granted license.



Solar Energy Potential

Technical potential : 405 000 GWh

Economic potential : 131 000 GWh



- Solar energy is used especially as a thermal energy in Turkey
 - 400,000 Tonne solar heating produced by 11 million m² collectors, second in the world
 - annual production capacity is 1 million m²
- Total installed photovoltaics capacity is approximately 2 MW and But it is expected to increase PV usage in the future.

Geothermal Energy Potential

- Total geothermal potential: 31,500 MW and 500 MWe
 - Two geothermal electricity generation plants with capacity 23MW and 8 MW are in operation.
 - 52 MW is under construction.
 - In 2010: 500 MWe.



BioEnergy Potential

Biomass potential : 8.6 Mtoe/ year (6 Mtoe/year of this biomass potential is used in the rural areas for heating purposes. These fuels are burned in conventional heating systems)

Biodiesel (installed production capacity):1 million tonnes/year, annual production: 100 000 t

Biogas production potential : 1.5-2 Mtoe

Bioethanol production capacity: 3,5 million tonnes/year by 800.000 hectare beet and wheat agriculture. Total production capacity:135 000 tonnes/year



(+)

- RE Potential
- Increase in demand for energy
- Public acceptance
- Well distributed
- Well trained people, well developed sub-sectors.
- High sale price (not guaranteed, flexible)
- Laws; parallel to the EU

(-)

- Micro-siting, exploration
- Better investment environment
- Disadvantages of being late comer (delays in turbine, etc.delivery)
- Grid issues
- Less Bureaucracy
- Lack of long term implementation plans
- Foreign investment needs.

Thank You For Your Attention!

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