Renewable Energy in Turkey

Promotion of Renewable Energy in a Liberalizing Turkish Energy Sector
(2002-2012)

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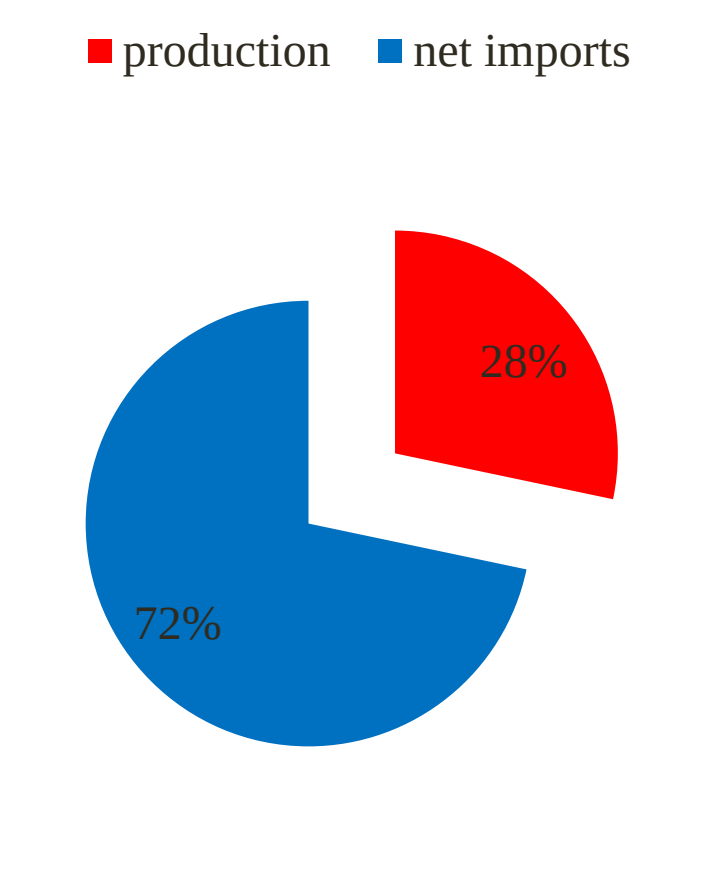
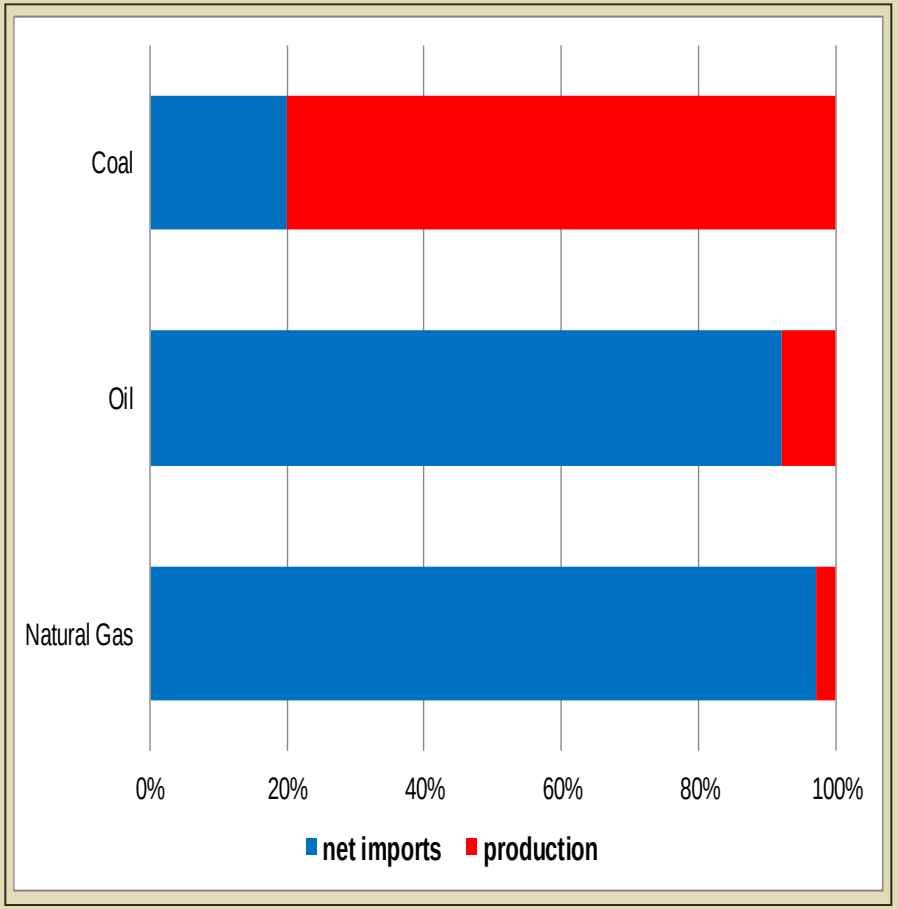
Import Dependency

Relative Insufficiency of Proven Indigeneous Resources

Primary Energy Supply





Figures are for year 2011.

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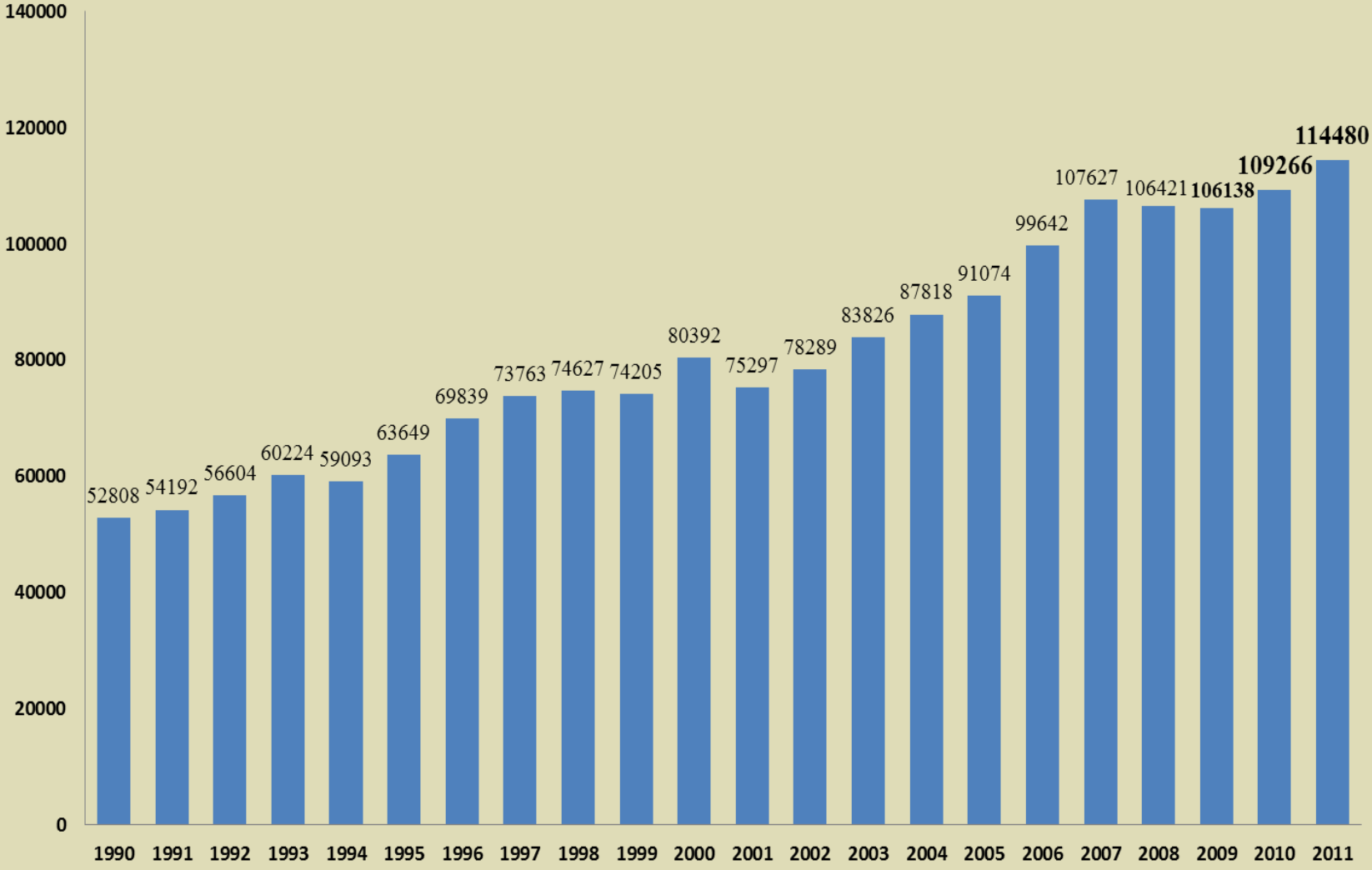
TOTAL PRIMARY ENERGY SUPPLY (kilo tonne oil equivalent –ktoe-)

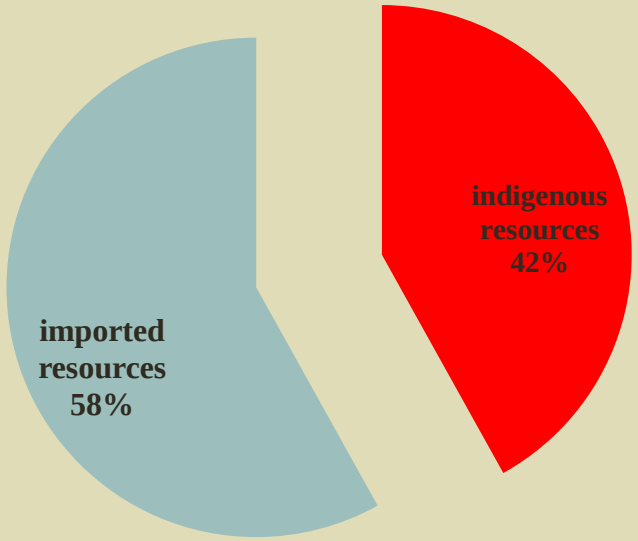


Approx. 100% increase in 20 years

TURKEY'S GROSS ELECTRICITY GENERATION BY PRIMARY ENERGY RESOURCES (2012)

	TOTAL (GWh)
Hard Coal + Imported Coal	30.659,6
Lignite	34.419,0
Liquid Fuels	3.596,4
Naturl Gas	103.248,8
Renew and Wastes	2.665,0
TERMİK THERMAL	174.588,8
HYDRO	57.812,7
GEOTHERMAL + WIND	6.699,4
GROSS GENERATION	239.101,0
IMPORTS	4.362,6
EXPORTS	1.489,3
GROSS DEMAND	241.974,3

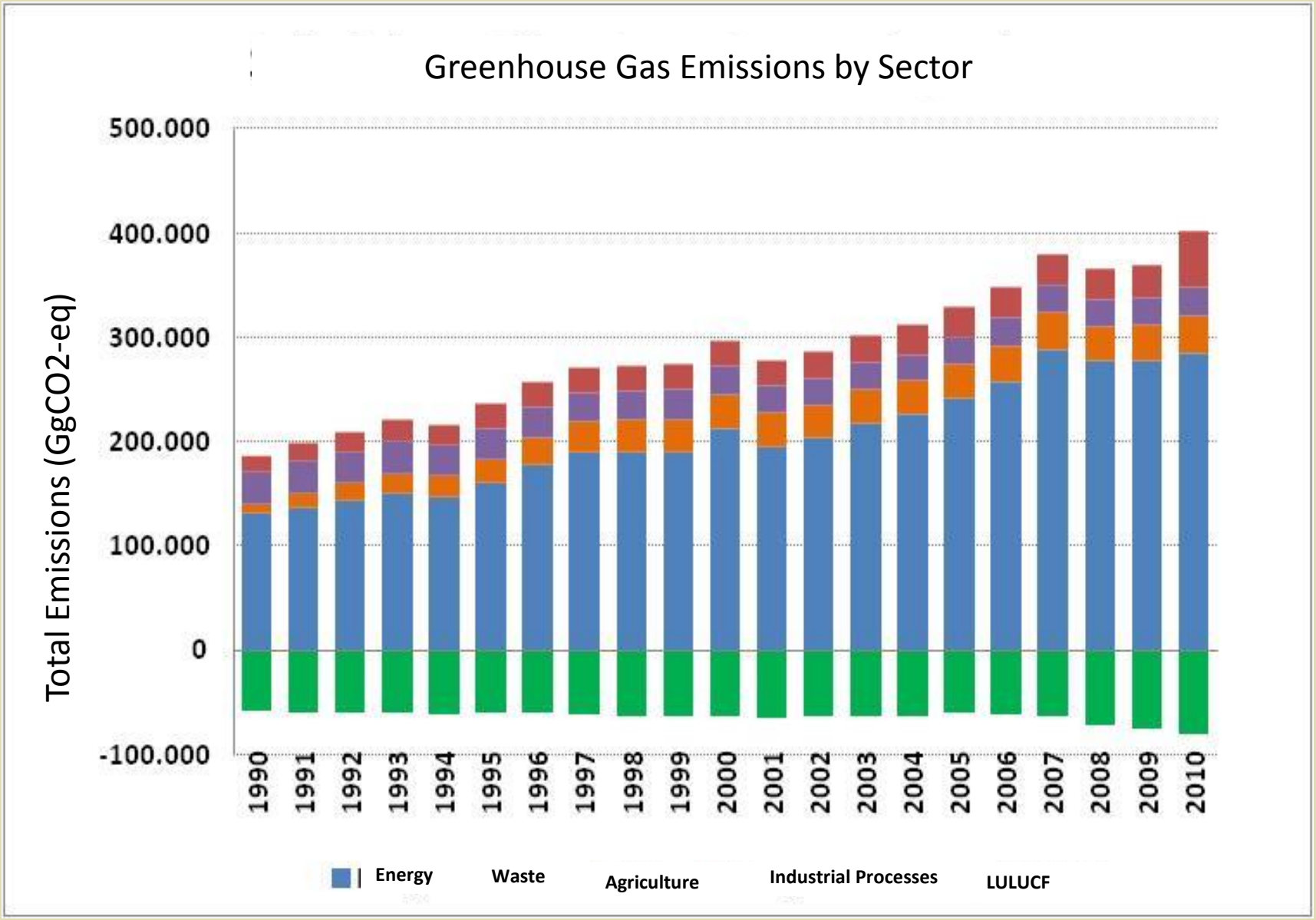
ELECTRICITY GENERATION



Resource potentials

Hydro	Billion kWh/year	135
Wind	Potantial (MW)	48.000
	2023 Target (MW)	20.000
	Under operation (MW) (April 2012)	2.260,5
	Production (2012)	5.581,5 GWh
Geothermal	MWt/year Production (2012) MW in operation MW under const.	31.500 850GWh 162,2 120
Biomass	MTOE/year MW operational	8 158,5
Solar	MTOE/year billion kWh/y tehnically	35 380

TURKEY'S GREENHOUSE GAS EMISSIONS INVENTORY



Main priorities in Turkish **energy policy**:

-to meet the energy demand by means of indigenous resources as much as possible;

-to diversify energy services, particularly encouraging harnessing of renewable resources in electricity production, and in other alternative areas;

-to increase efficiency in all segments of energy chain both in supply side and demand side;

- to encourage and intensify Research & Development in energy technologies such as hydrogen technologies;

-To liberalize the energy sector to increase productivity and efficiency, to create a competitive energy market, and provide transparency

- ....

Legal Infrastructure: Legislation

The Law of Utilization of Renewable Energy Resources in Electricity Generation, 2005 (Renewable Energy Law)

Main Goals:

- to expand the utilization of renewable sources for generating electrical energy,
- to benefit from these resources in secure,economic and qualified manner,
- to increase the diversification of energy resources,

Energy Policy: Strategy Paper

Revised Strategy Paper (2009) - Targets

2023 targets:

30% of total electricity production from renewable resources

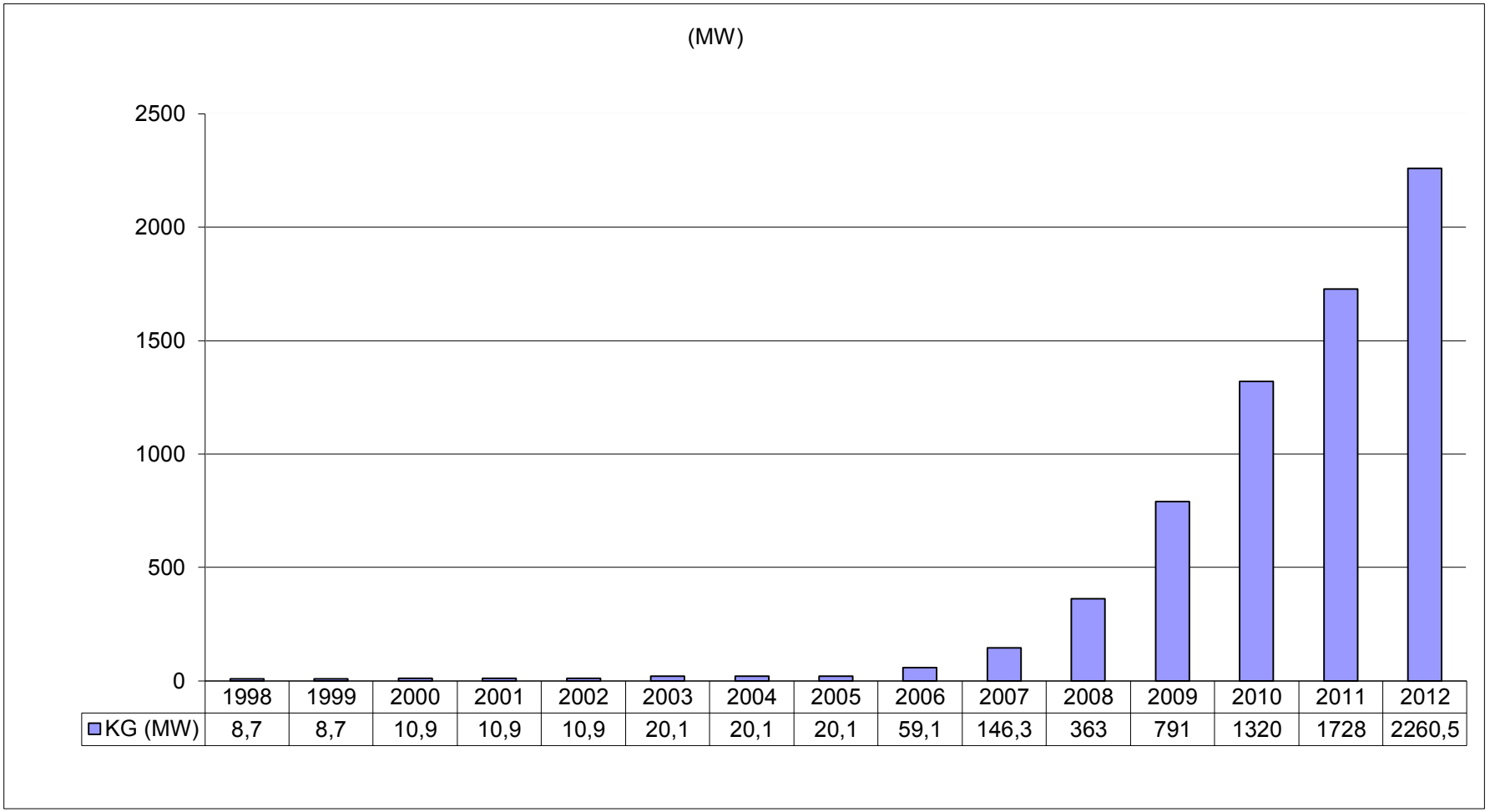
installed capacity for wind energy	20.000 MW
installed capacity for solar energy (min.)	3.000 MW
installed capacity for geothermal energy	650 MW

The whole economically usable hydropower potential of Turkey will be provided for electricity generation until 2023

REGD

Wind Energy – Wind Development

-By the end of december 2012-



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
KG (MW)	8,7	8,7	10,9	10,9	10,9	20,1	20,1	20,1	59,1	146,3	363	791	1320	1728	2260,5

Installed capacity, 1999-2012

Paving the way for a Sustainable Energy Future (an Effective Way: Feed-in-Tariff)

The Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity (Amendment –Dec.2010-)

Purchasing guarantee of a defined price has been given to the electricity generated from renewables (for 10 years after the plant is commissioned; the purchase guarantee is a price that Turkish Lira corresponding;

7.3 USDolarCent/kWh	Hydro
7.3 USDolarCent/kWh	Wind
10.5 USDolarCent/kWh	Geothermal
13.3 USDolarCent/kWh	Solar
13.3 USDolarCent/kWh	Biomass

Incentive for Local Content

The Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity provides an additional incentive for local content :

- additional tariff (Table: II, published as appendix of the law in the Offical Gazette) for domestictically produced mechanical parts for 5 years for the renewable based facilities (if it can be under operation before end of year 2015).

Promoting Renewable Energy -additional Incentives-

- Grid operators will be obliged in principle to provide access to the grid for renewable energy generators.
- A priority on allocations from the appropriate parts of treasury and forestry lands; and in allocations of forestry lands, a discount in the rate of 85 %t is applied in the costs of license, rent, servitude right and use permit during the first 10 years of the investment and operating periods of such plants. In the forestry lands, ORKÖY and Afforestation Special Appropriation Revenues are not collected.
- Purchase obligation for the retail sale companies in the market from renewable based electricity generation.

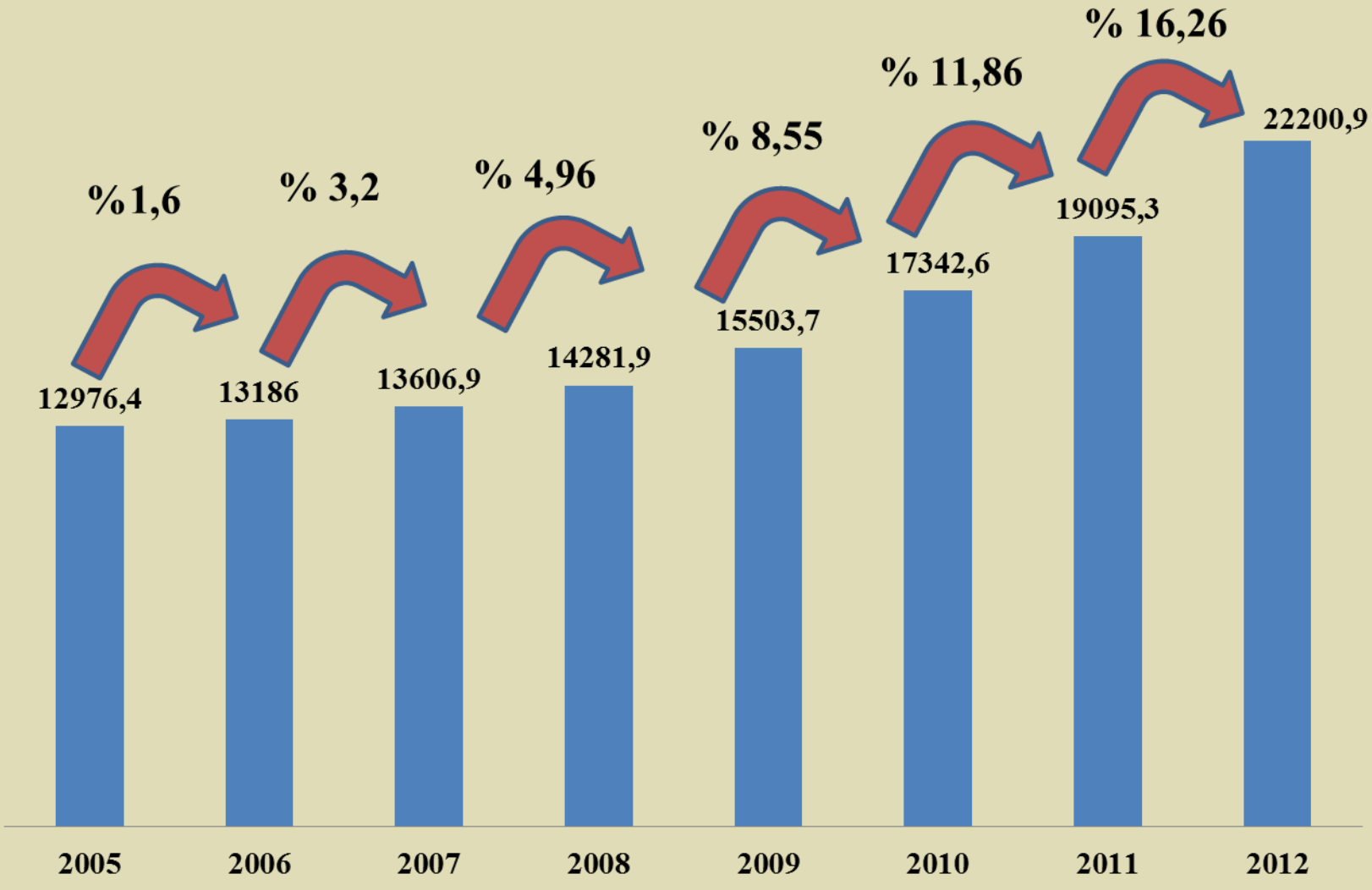
- Pay only 1% of the total licensing fee.
- Exemption from annual license fees for the first eight years following the facility completion date.
- Priority for system connection
- Renewable energy power plants exempt from the liability of being a Balancing Mechanism Entity.

Unlicensed Application for Renewable Energy:

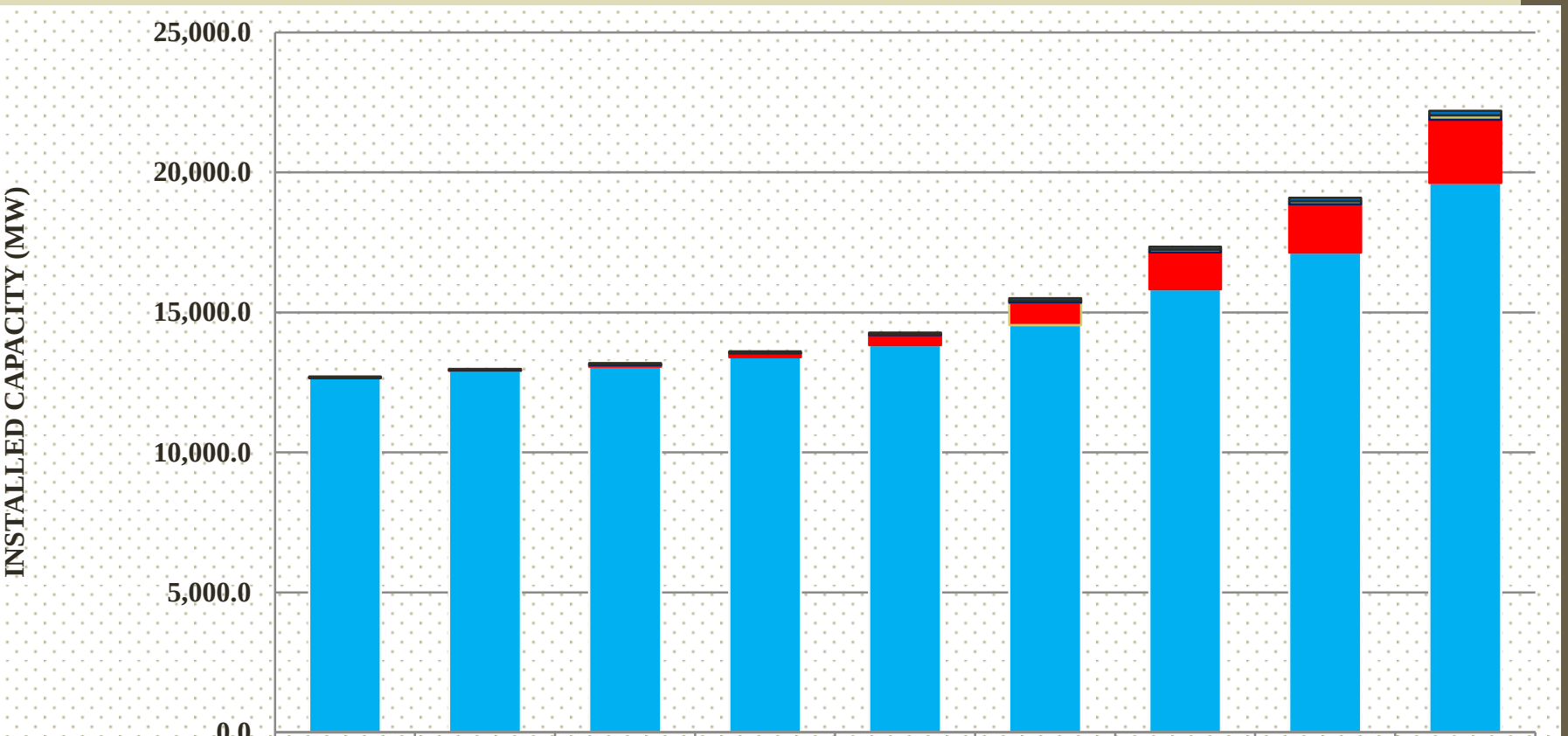
If the capacity is smaller than 1 MW
(It was 500 Kw before the last amendment):

•Real persons and legal entities who build generation facilities based on renewable energy resources with an installed power capacity of maximum 1 MW 500 and micro-cogeneration facilities shall be exempted from the obligation of obtaining license and establishing a company.

RENEWABLE ENERGY INSTALLED CAPACITY (MW)
-cumulative-

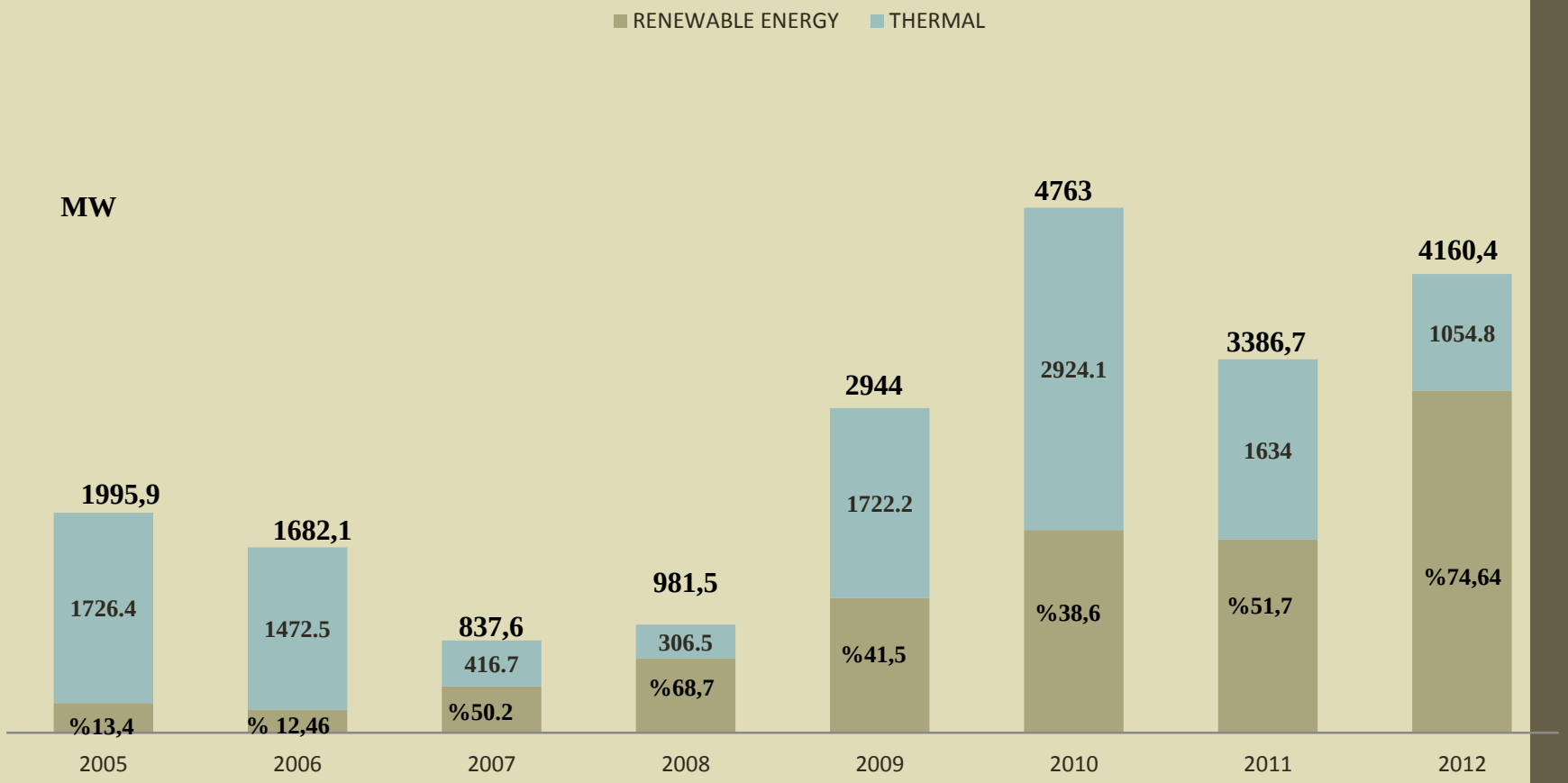


Renewable Energy Development in Years



	2004	2005	2006	2007	2008	2009	2010	2011	2012 *
OTHER + WASTE	27.6	35.3	41.3	42.7	59.7	81.5	96.9	115.4	158.5
GEOTHERMAL	15.0	15.0	23.0	23.0	29.8	77.2	94.2	114.2	162.2
WIND	18.9	20.1	59.0	146.3	363.7	791.6	1,320.2	1,728.7	2,260.5
HYDRO	12,645.4	12,906.0	13,062.7	13,394.8	13,828.7	14,553.4	15,831.2	17,137.1	19,619.7

*December 2012



	2005	2006	2007	2008	2009	2010	2011	2012
ADDED CAPACITY	1995,9	1682,1	837,6	981,5	2944	4763	3386,7	4160,4
Renewable	269,5	209,6	420,9	675	1221,8	1838,9	1752,7	3105,6
Thermal	1726,4	1472,5	416,7	306,5	1722,2	2924,1	1634	1054,8

Component Production in Turkey:
(Progress in Parallel Development in Installed Capacity in Renewable Energy)

- For Wind Farms:
- For Solar Electricity Generation Plant:
- For Hydroelectricity Facilities:

Thank You for your attention..

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Turkey