



Power Production in Hungary

by

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ELTE University / Environmental Education Network

Low Carbon Societies Network Seminar

October 5, 2010

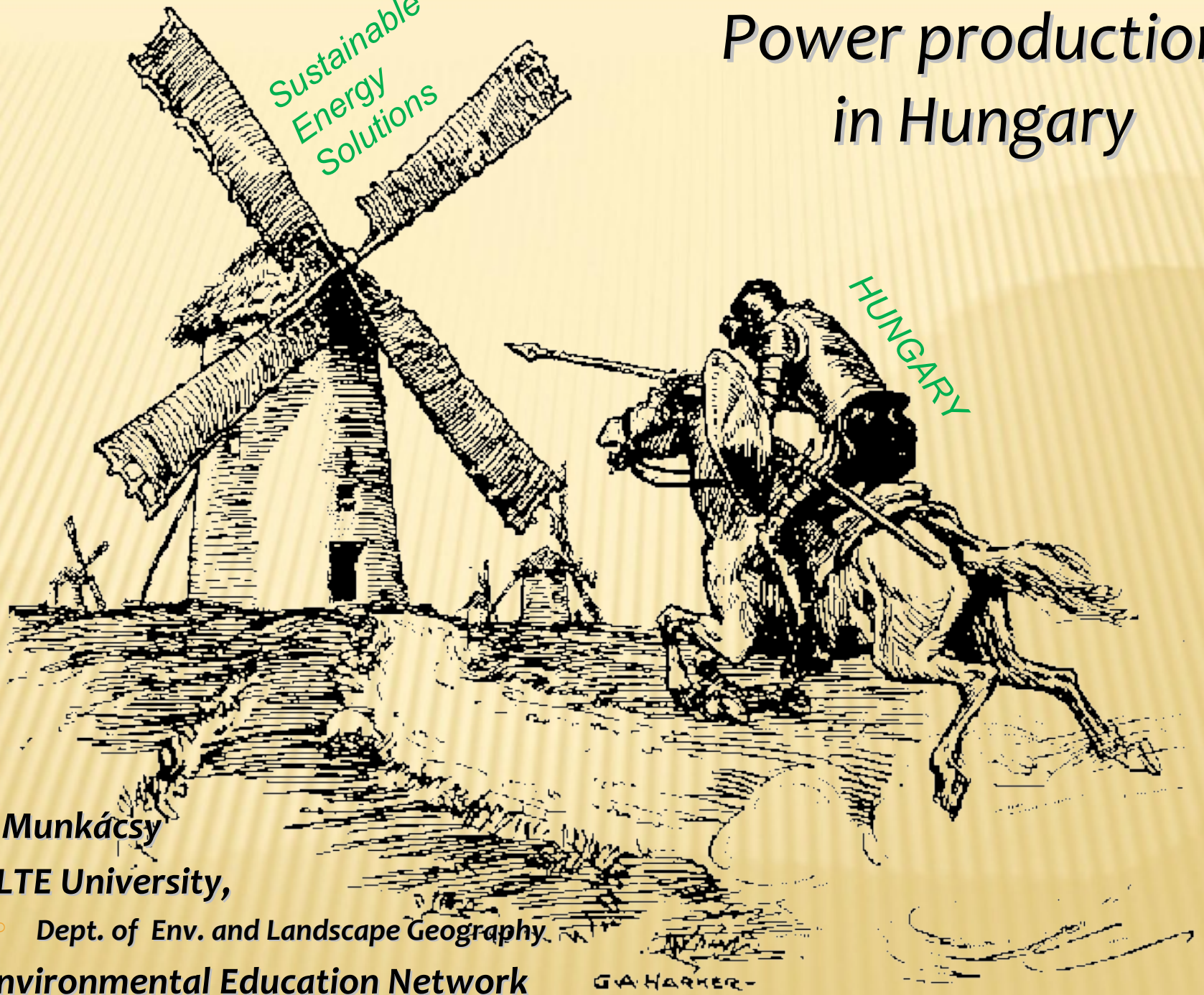
Centre for Alternative Technologies (CAT), Wales, UK

<http://lowcarbon-societies.eu/index.php?id=42>

Power production in Hungary

Sustainable
Energy
Solutions

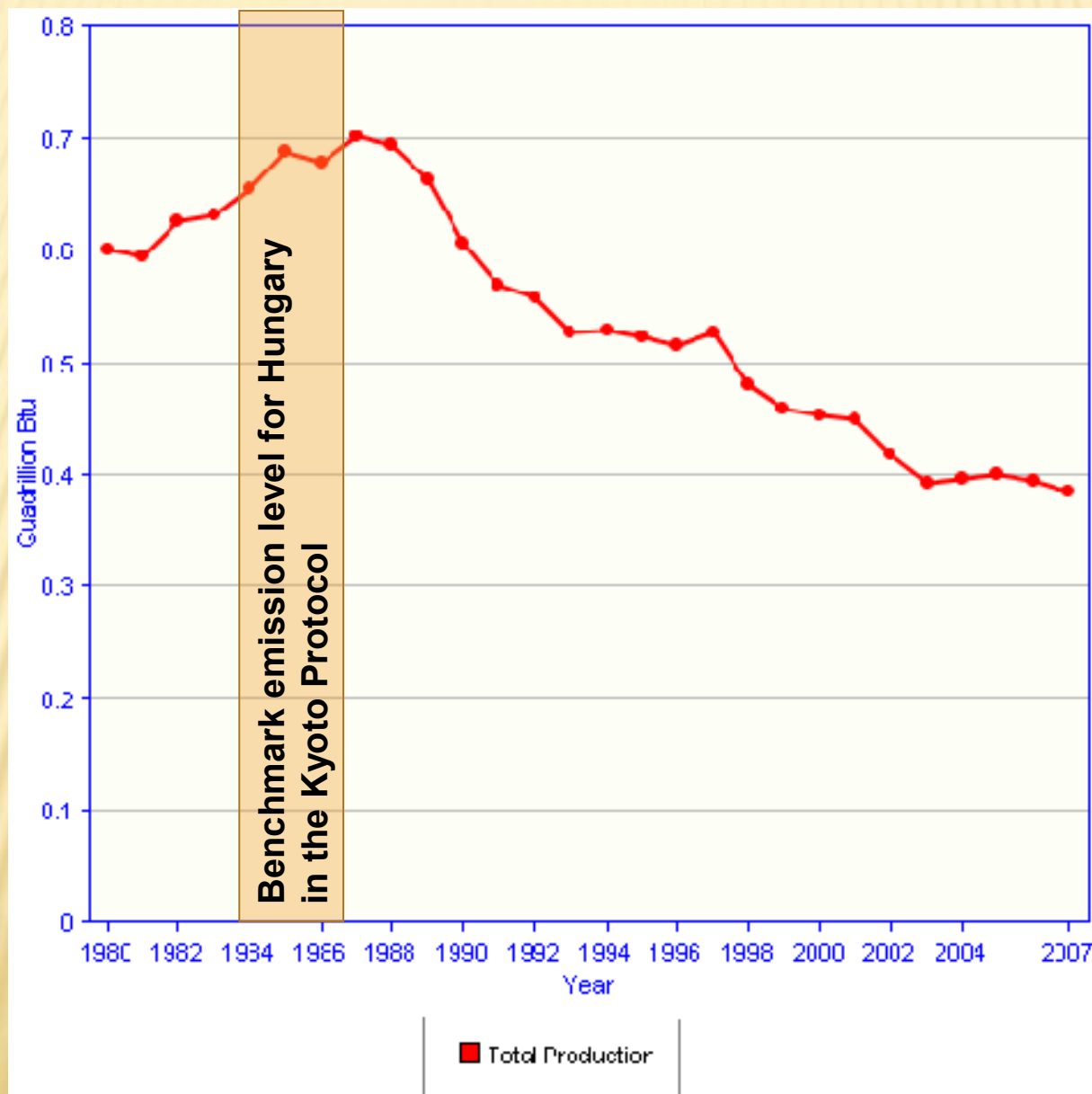
HUNGARY



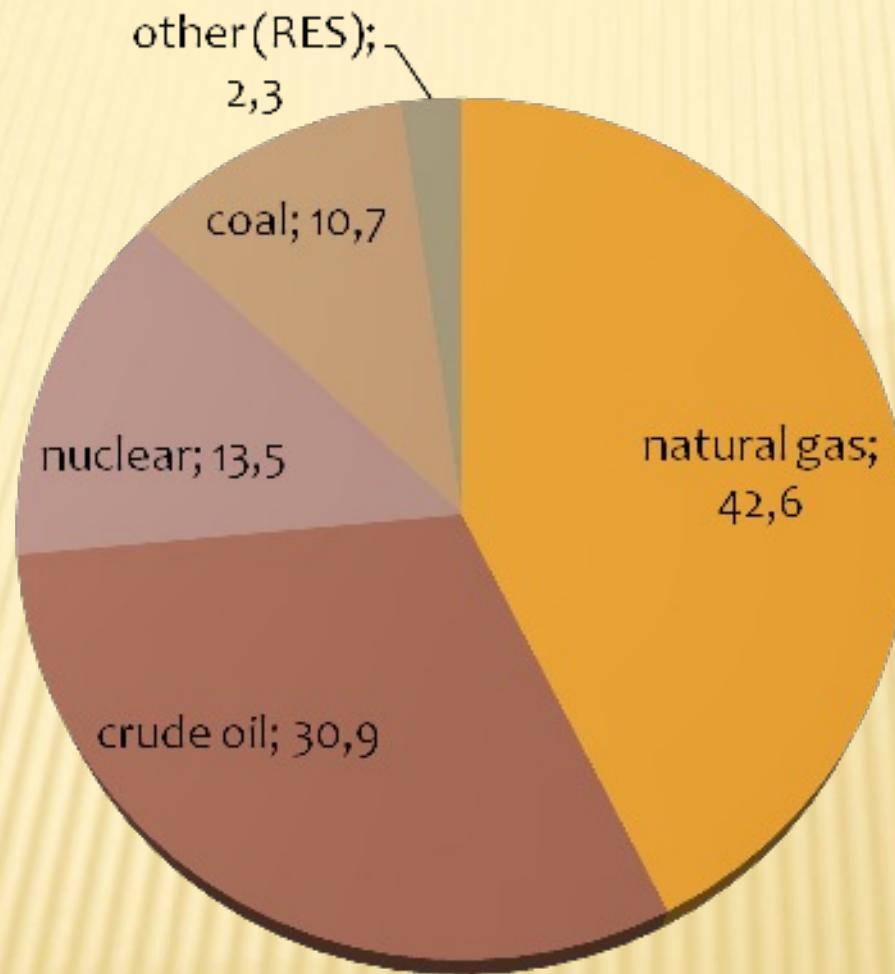
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 - **Dept. of Env. and Landscape Geography**
- **Environmental Education Network**

Total Primary Energy Production in Hungary (1971-2007)



Sources of primary energy in 2009 (%)



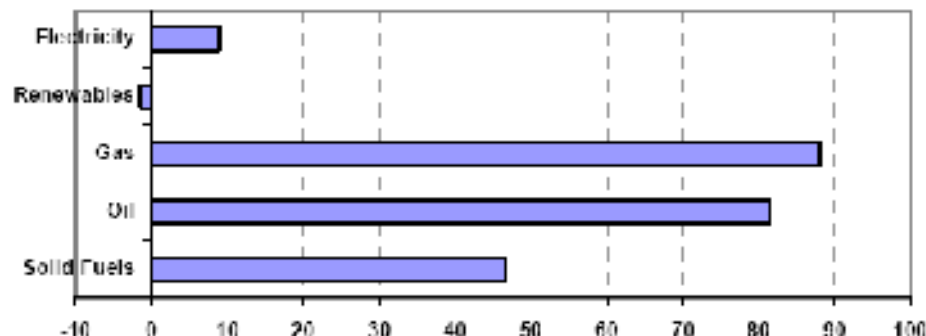
Dependence on import energy sources

Hungary



HU, IMPORT DEPENDENCY (%)

2008

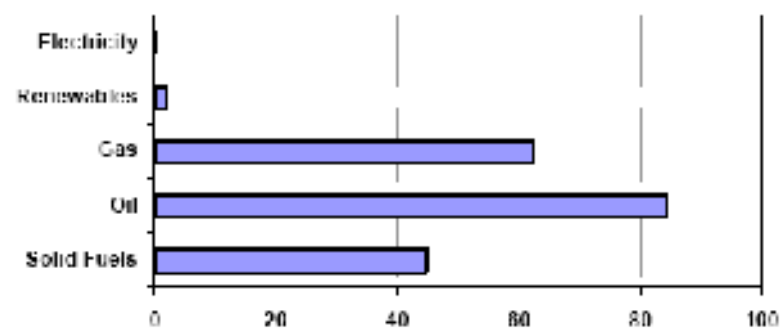


EU-27

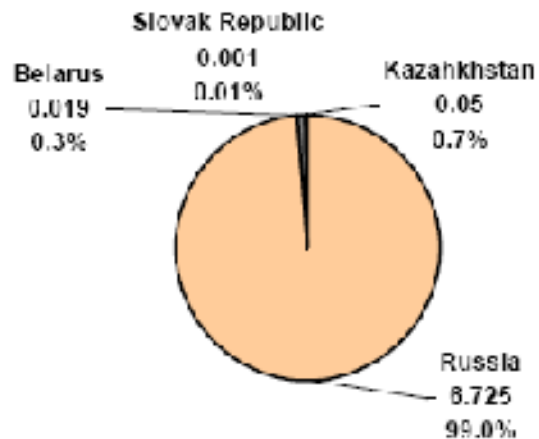


EU27, IMPORT DEPENDENCY (%)

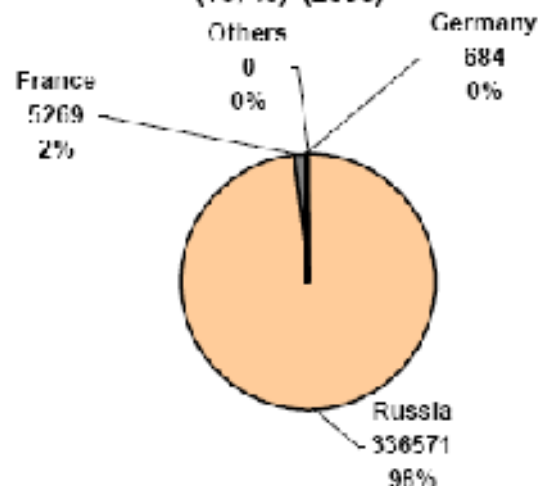
2008



HU, IMPORTS OF CRUDE OIL (Mio tonnes, %) (2008)

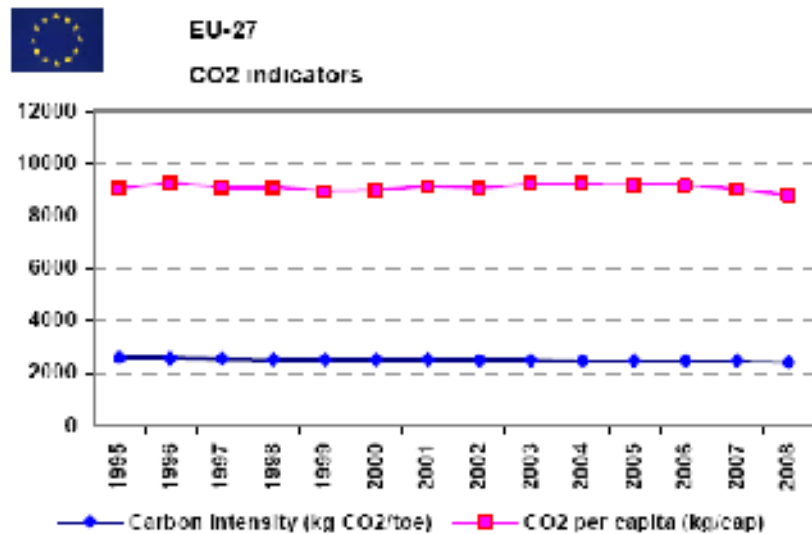
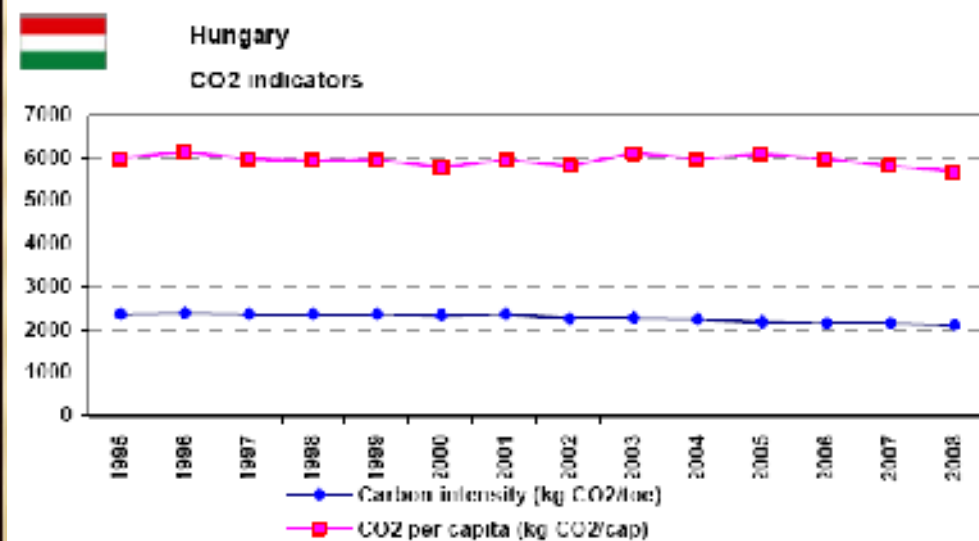
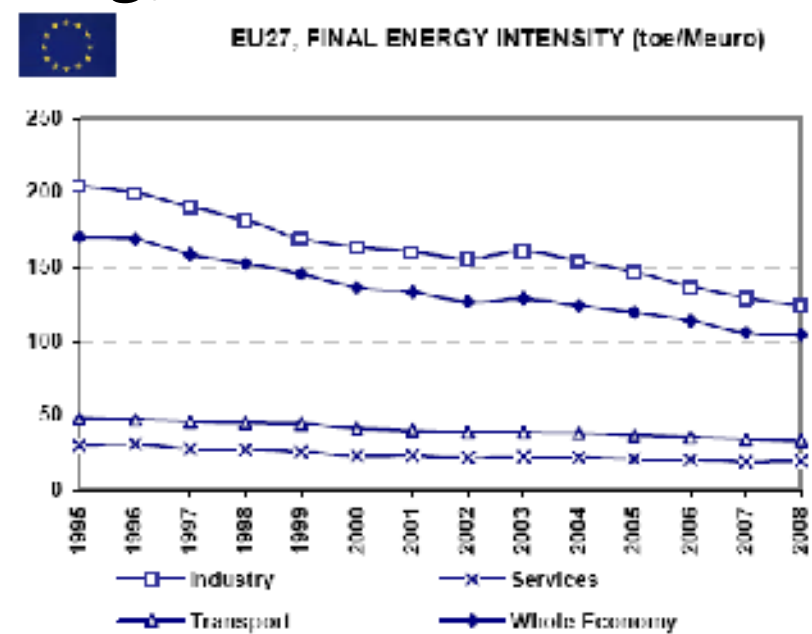
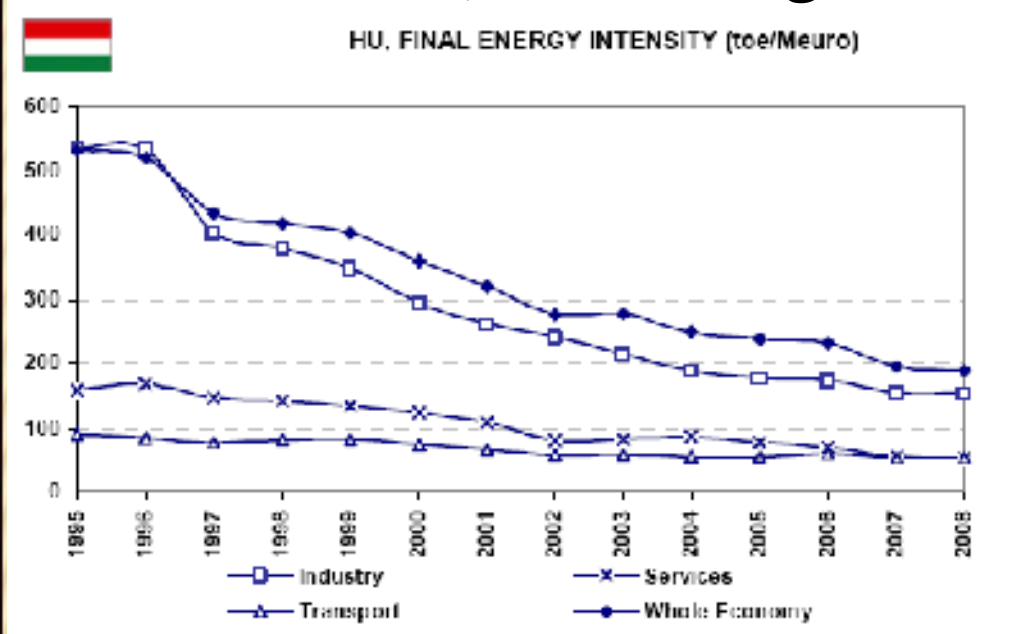


HU, IMPORTS OF NATURAL GAS (TJ, %) (2008)

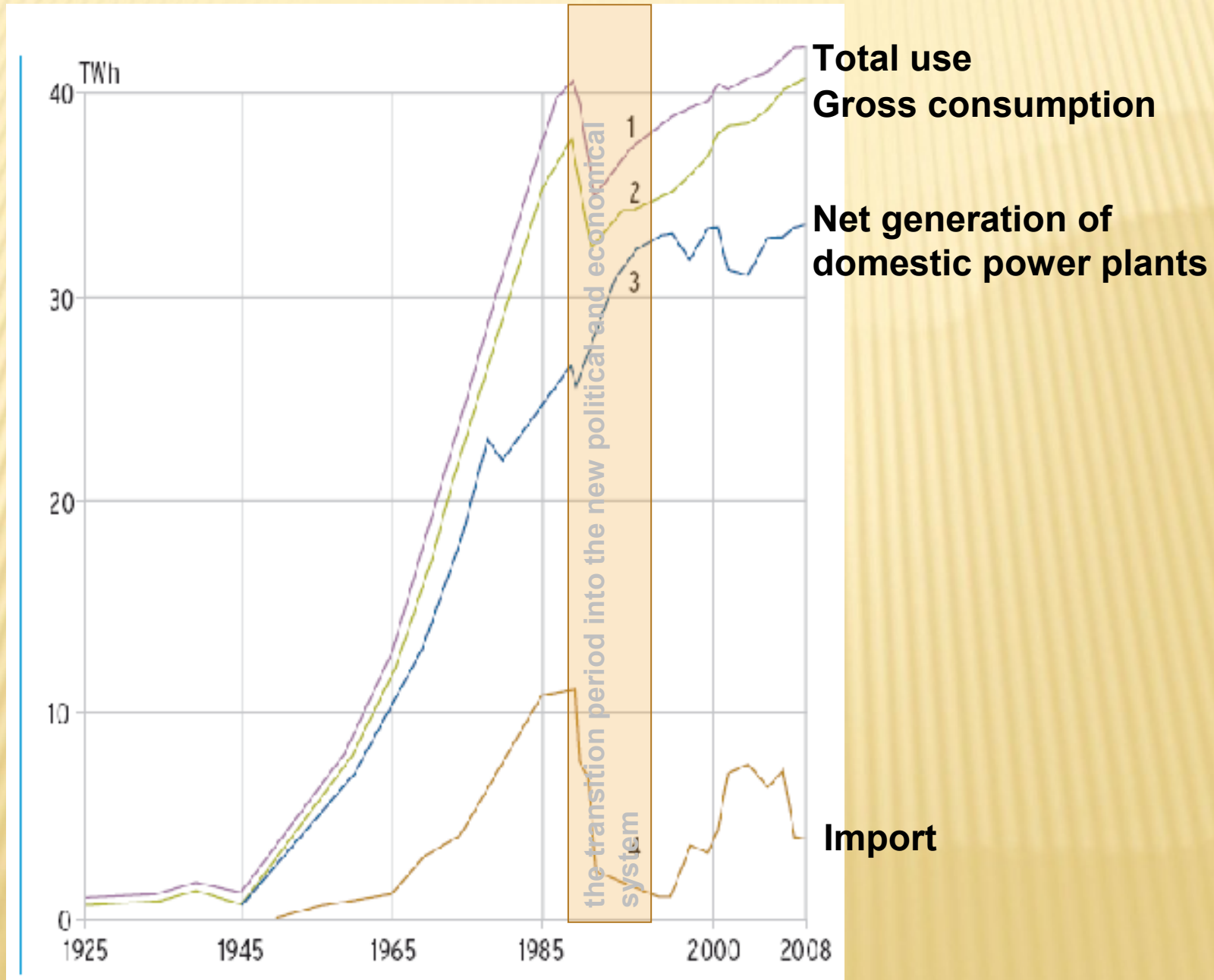


Source:
European Commission,
DG Energy, 2010

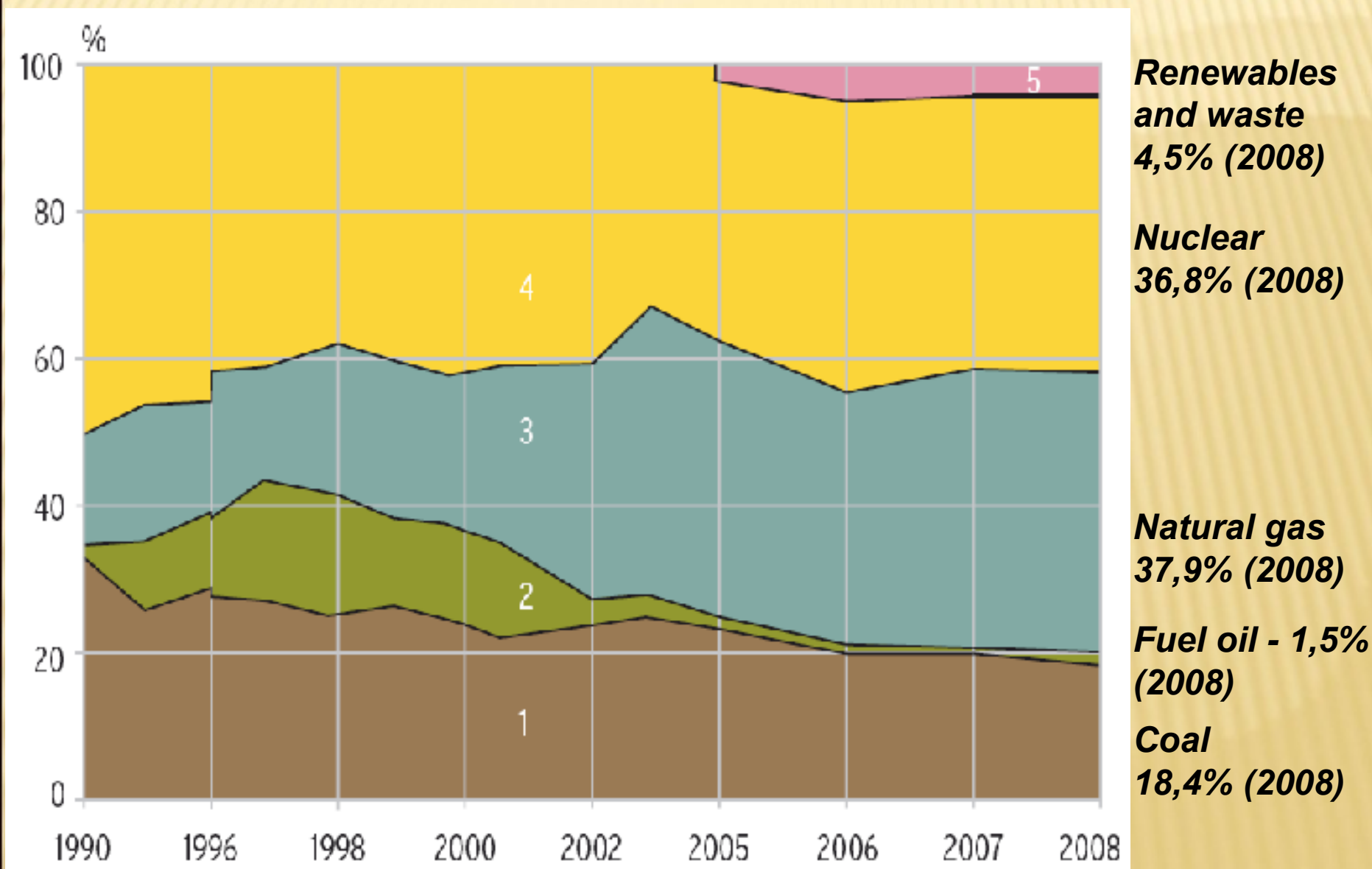
Some of the main characteristics of the Hungarian energy sector



Power Consumption between 1925-2008



Electricity production in Hungary by sources - % (1990-2007)

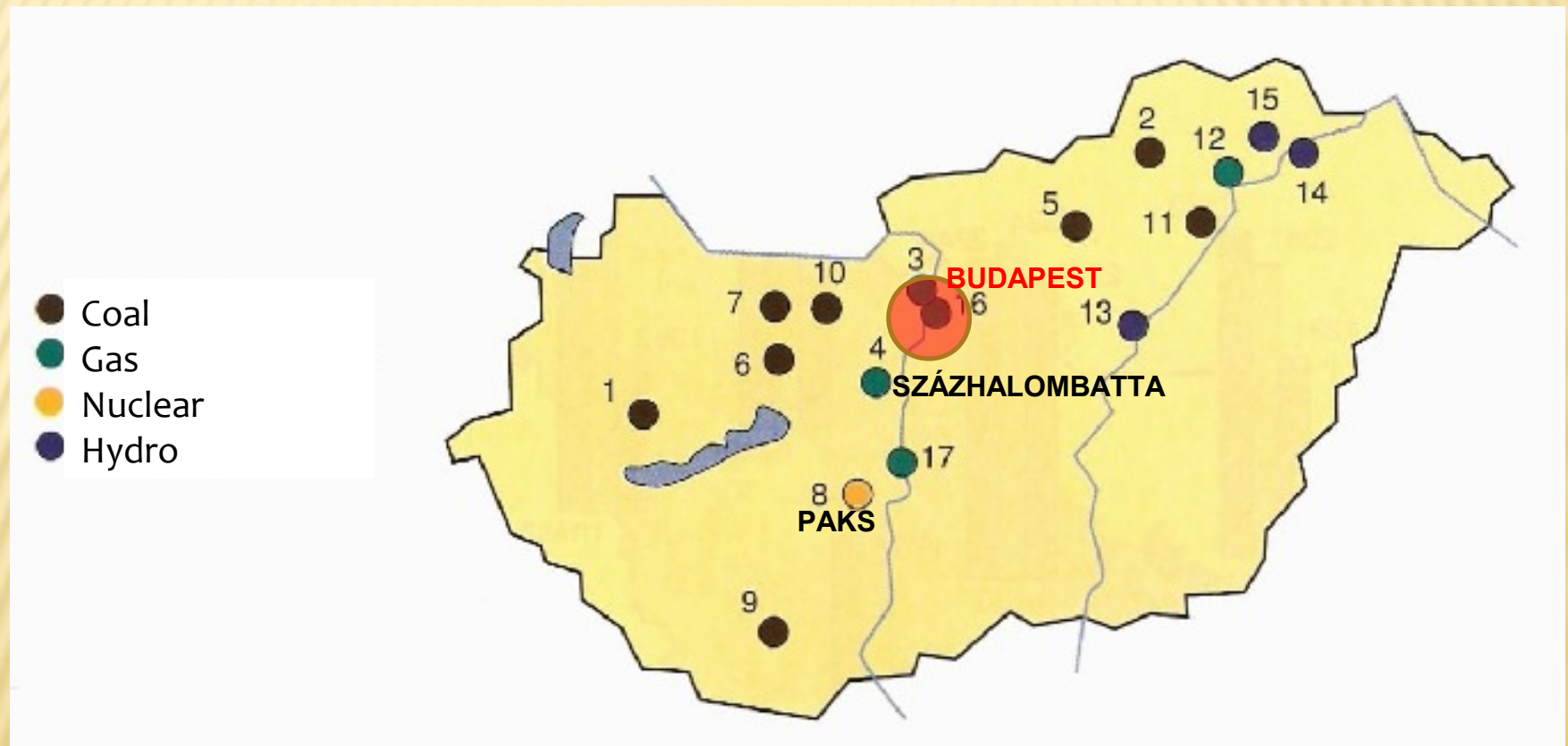


Main characteristics of power production

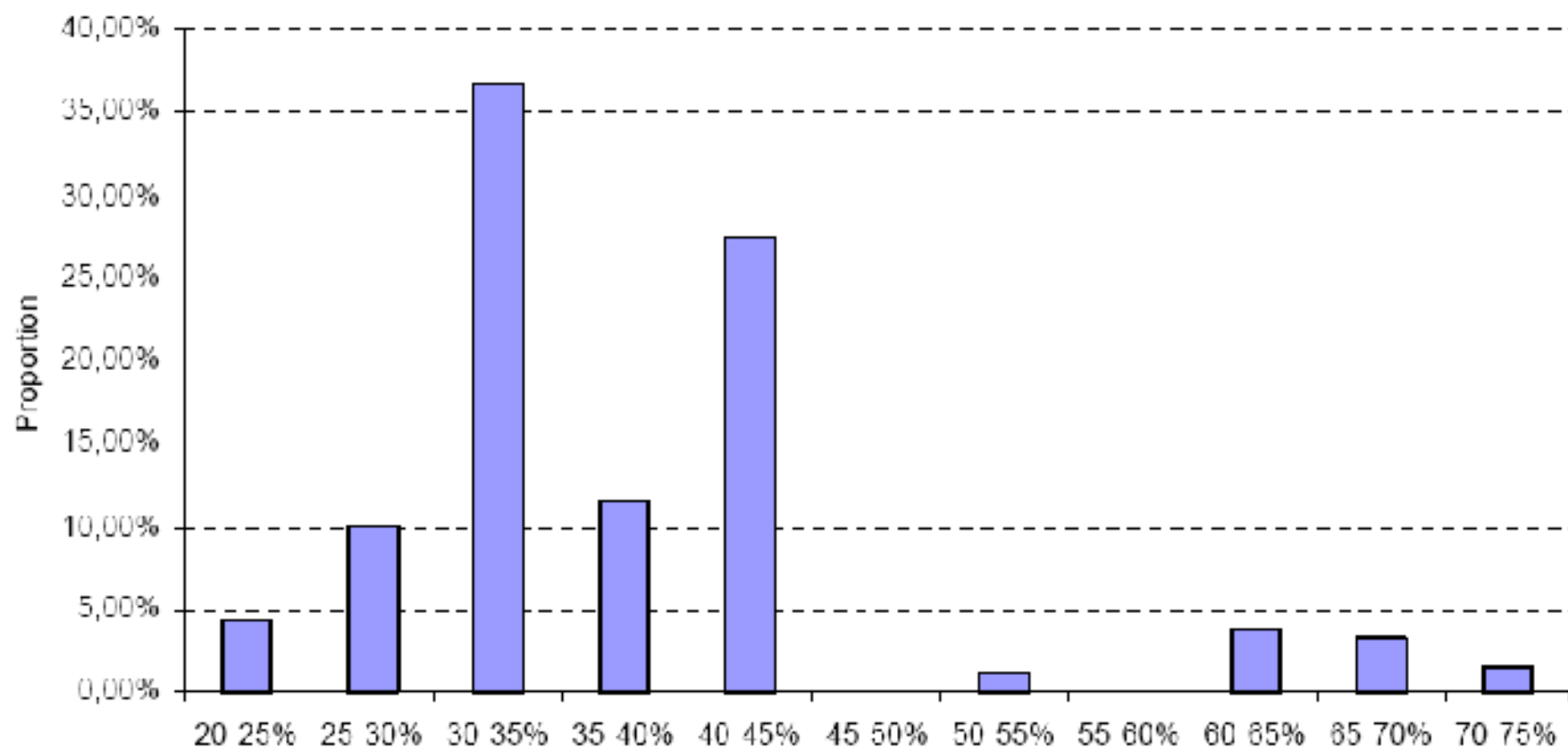
- ✘ total power production capacity **~9140 MW**
- ✘ 18 major power stations (> 50 MW) provide **93%** of the domestic production
- ✘ the 6 biggest provide 70%
- ✘ **the 2 biggest provide 45%**
 - ✘ Paks Nuclear Power Station (~2000 MW)
 - ✘ Százhalombatta Gas Turbine Power Station (~2150 MW))

Unit size	Number of units	MW	%	Average (MW)
under 50 MW	529	2,087.8	22.85	3.9
between 51-100 MW	15	1,033.0	11.3	68.9
over 100 MW	30	6,019.0	65.85	200.6
Power System total	574	9,139.8	100	15.9

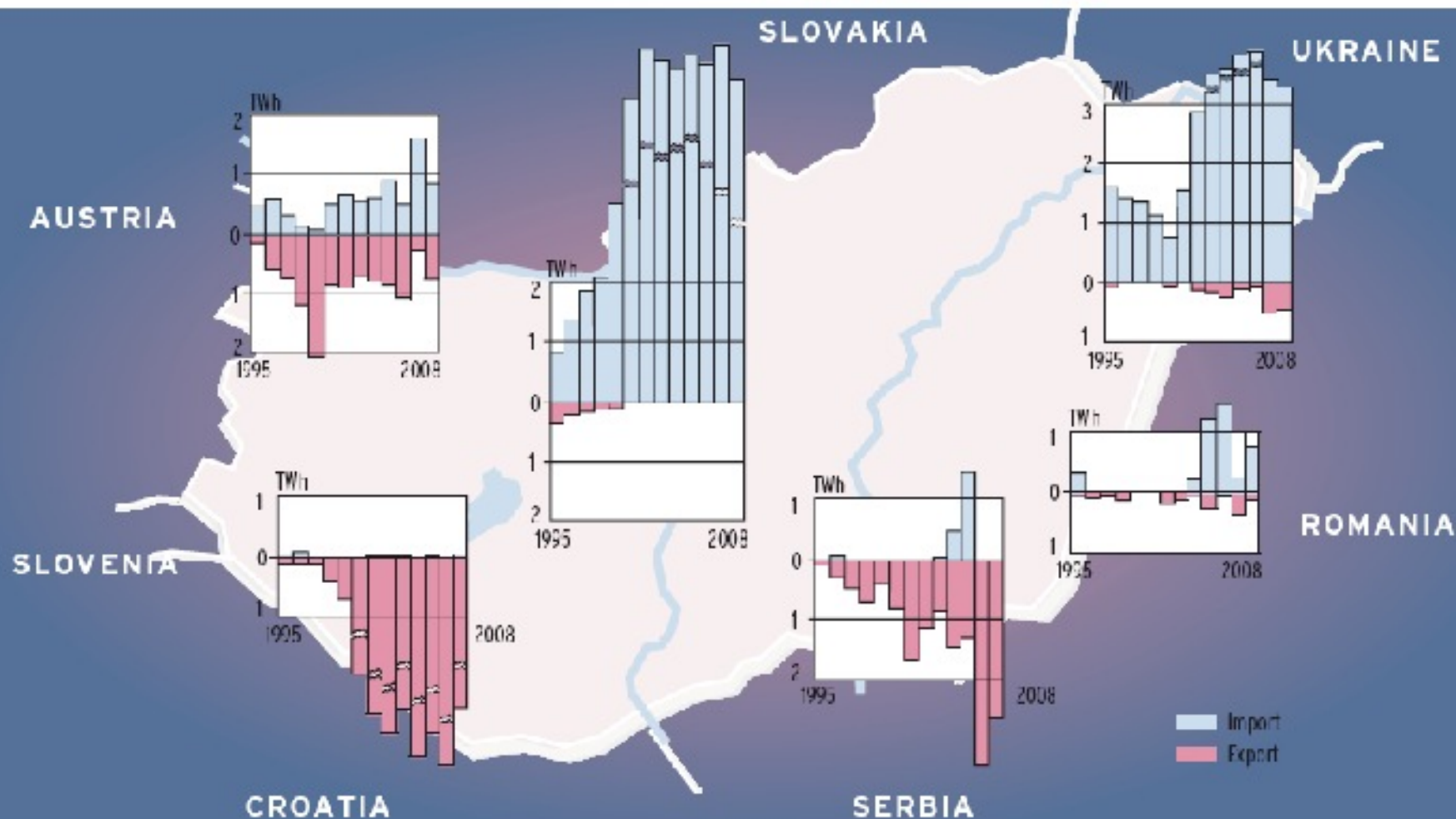
Geographical location of the main power stations



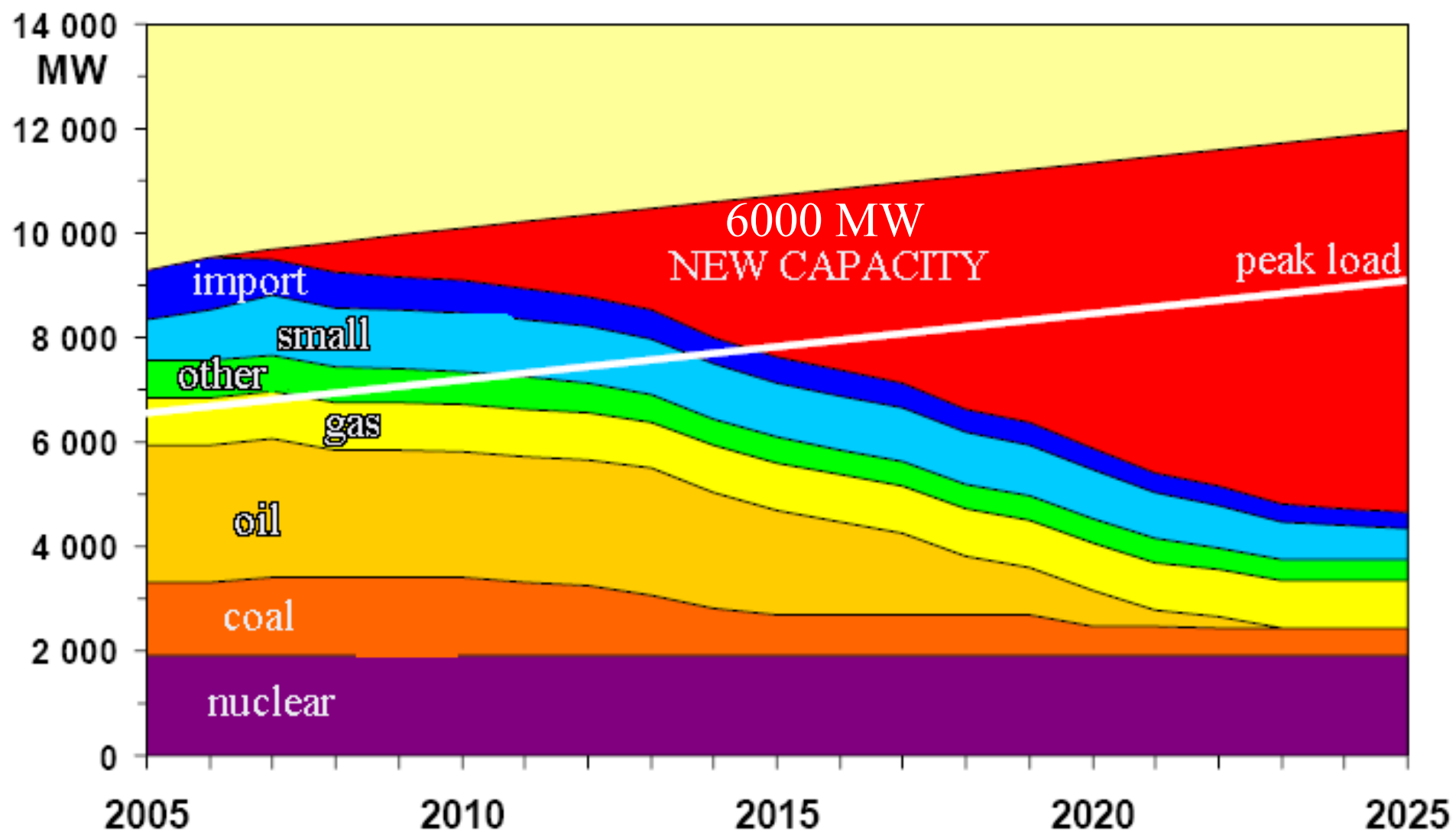
The distribution of Hungarian power plant capacities according to efficiency



INTERNATIONAL EXCHANGE OF ELECTRICITY IN THE HUNGARIAN POWER SYSTEM, 1995–2008

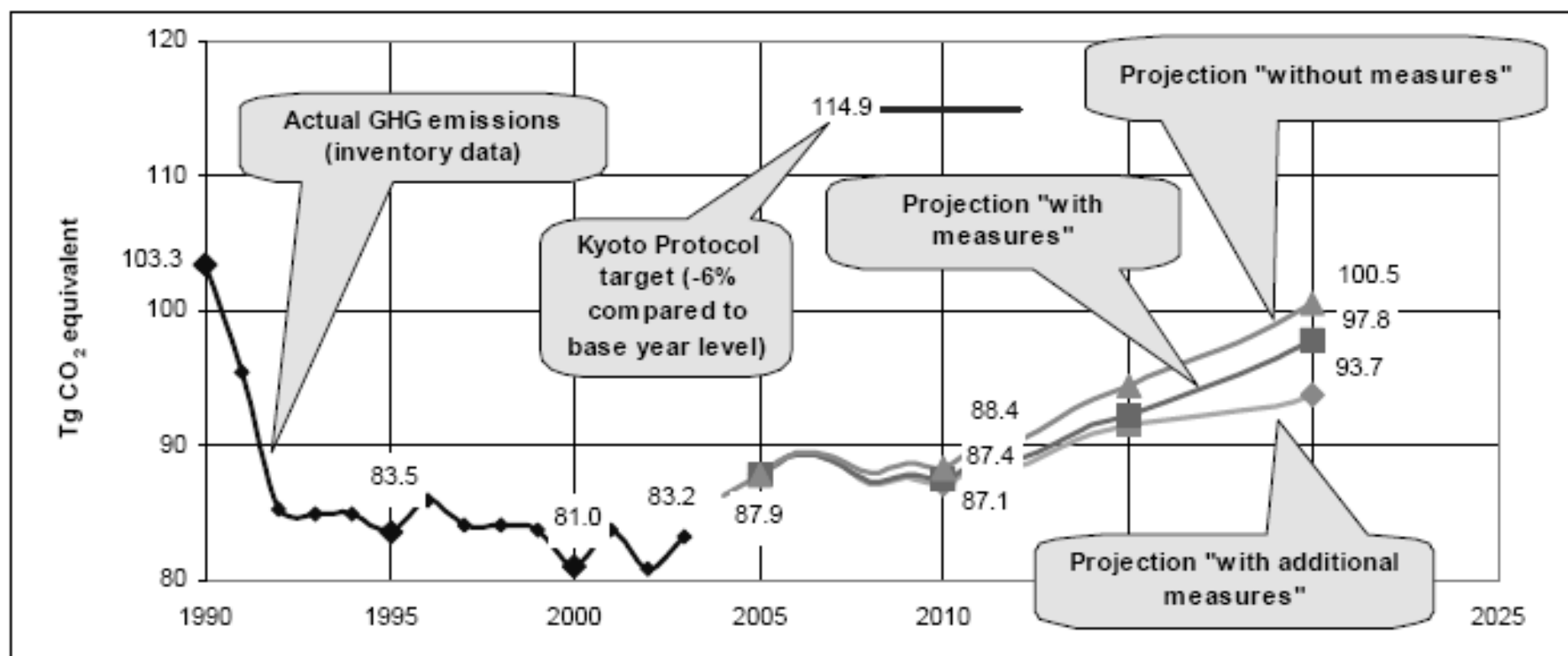


Hungarian power sector in the future – official view



Official projections for greenhouse gas emission by 2020

Figure 1. Greenhouse gas emission projections for Hungary



Source: Hungary's NC4; the projections are for GHG emissions without LULUCF.

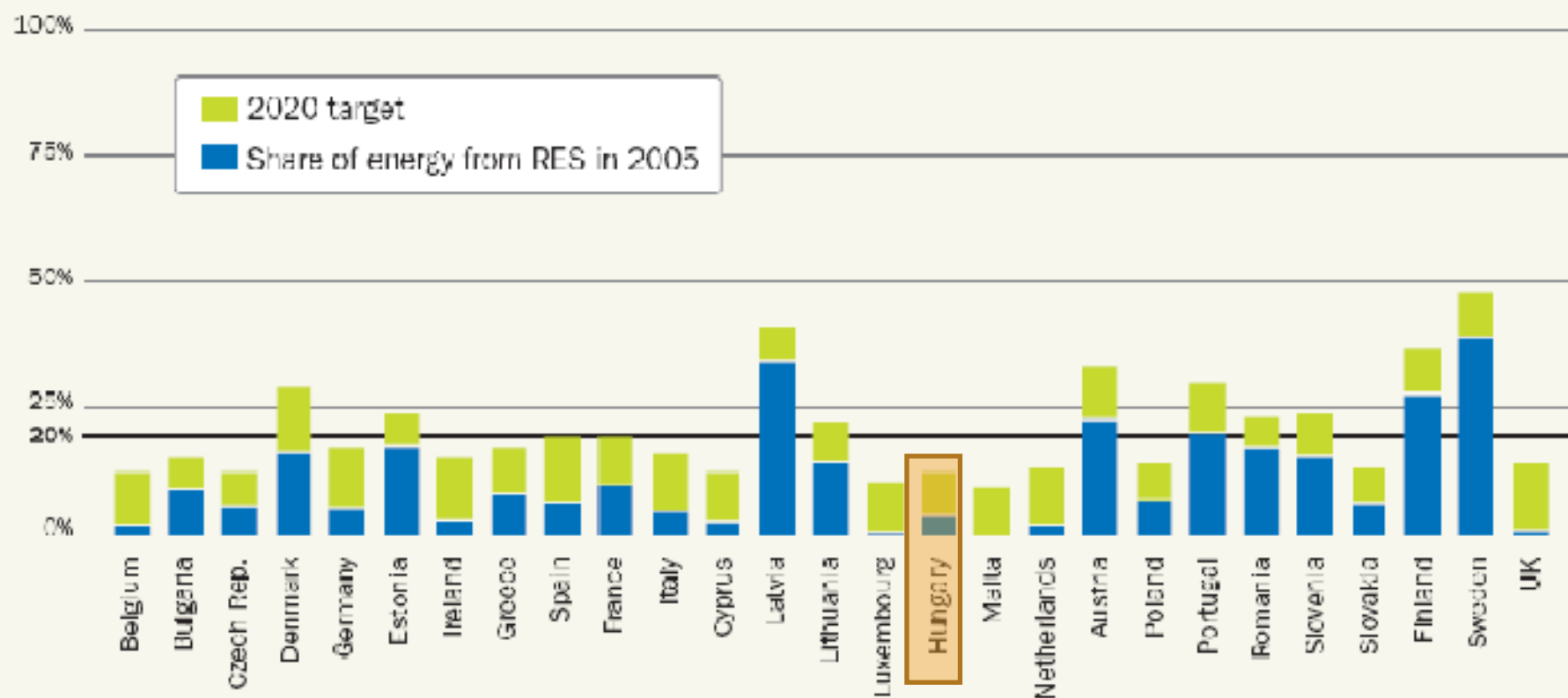
Note: The ERT noted that the sum of sectoral projections, given in annex 2 to the NC4, differs slightly from the national totals given in that annex. In the graph above, the ERT used the sums of sectoral projections calculated based on annex 2.

Sustainable Energy Management in Hungary

Our NGO Vision vs. Official Concept

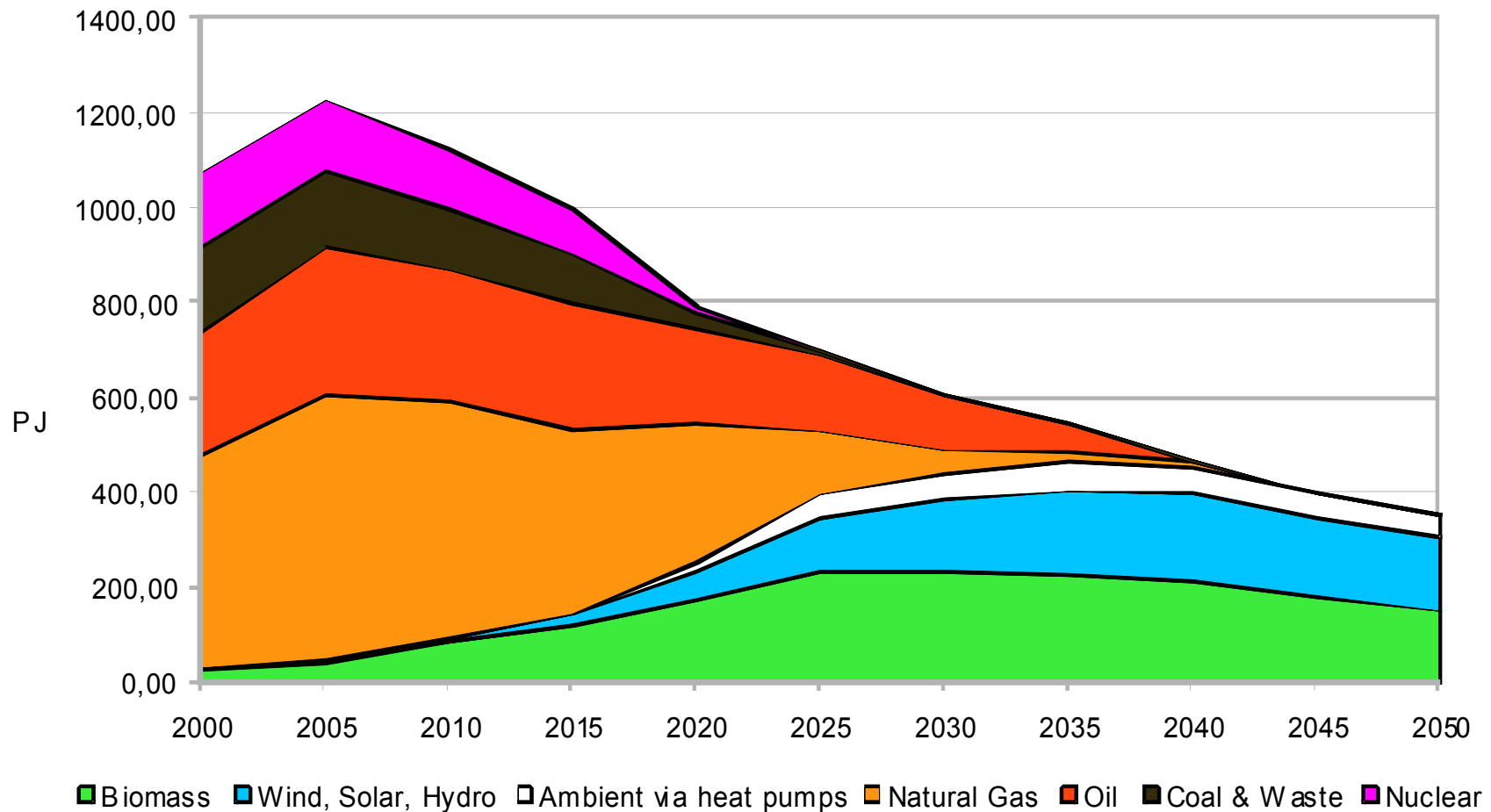
Renewable energy sources in final consumption fact (2005) and target (2020)

FIG 6.1: National overall targets for the share of energy from RES in final consumption of energy 2020



Source: European Commission draft proposal for a Directive on the promotion of the use of energy from renewable sources

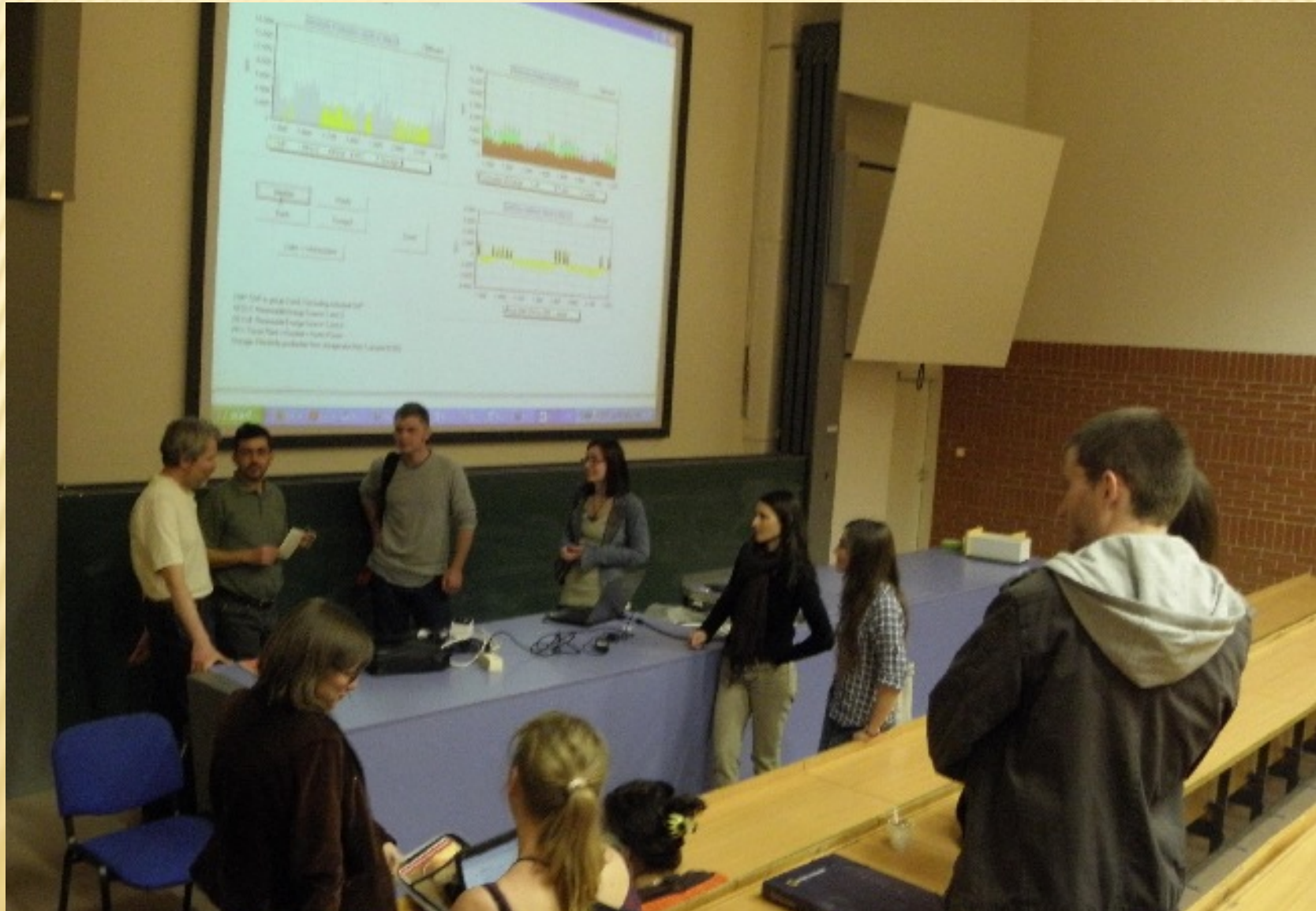
Increased Energy Efficiency (by Factor 2) in Our Vision - maybe not ambitious enough-



Working Group in Hungary



Working Group in Hungary

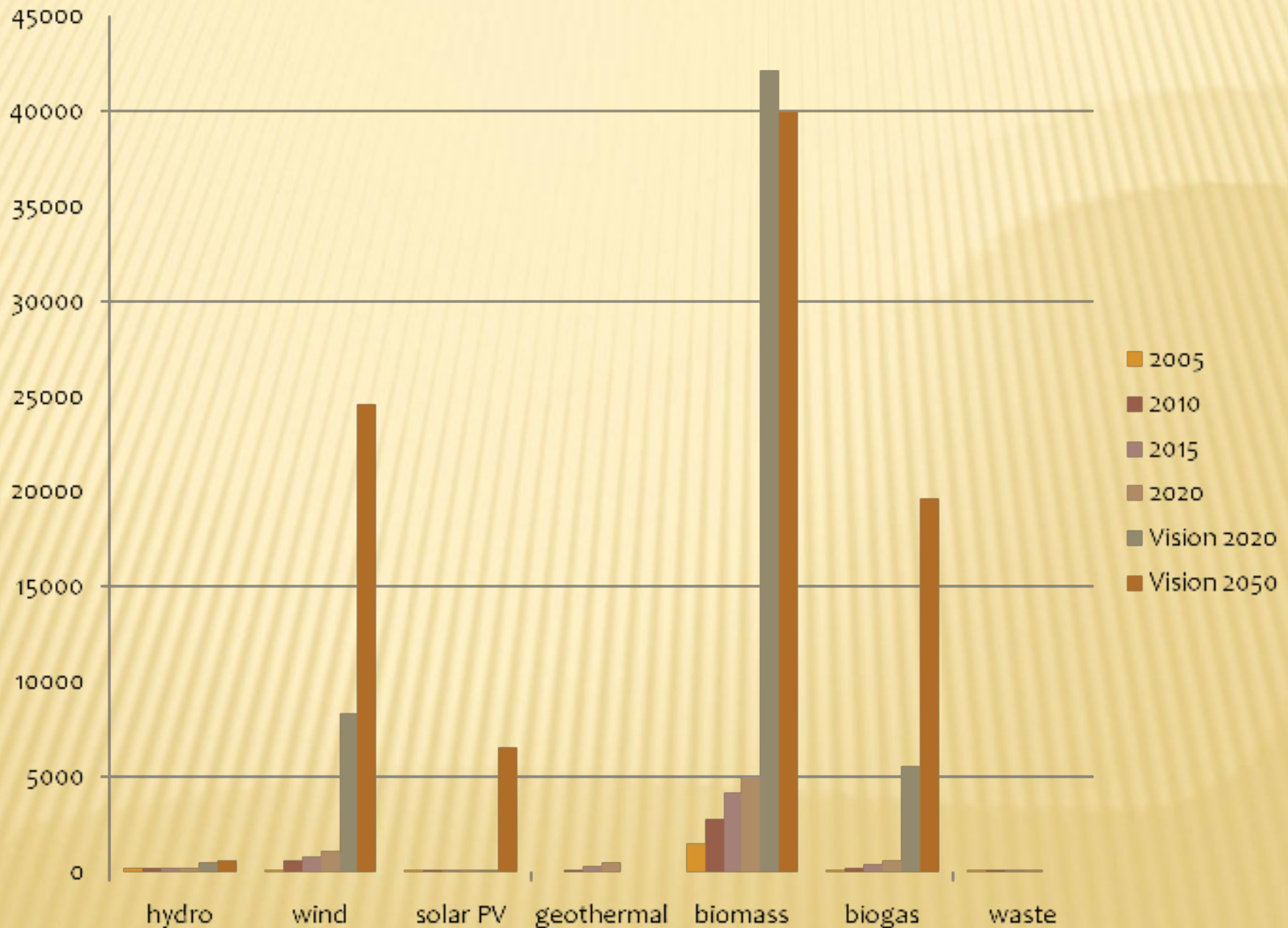


Electricity production from renewables (GWh)

	Fact 2005	Official 2010	Official 2015	Official 2020	Vision 2020	Vision 2050
hydro	202	196	219	243	517	555
wind	10	560	741	1122	8333	24542
solar PV	0,1	0,3	0,4	0,5	44,4	6500
geothermal	0	128	331	520	0	0
biomass	1506	2809	4140	4982	42083	39 917
biogas	25	178	381	547	5555	19 555
waste	59	100	121	142	0	0

Electricity production from renewables (GWh)

according to the Official view and our Vision



NEW (SUSTAINABLE) power production capacities by 2020 in **official documents** and in our “**VISION 2050**” scenario

✗ **Hydro: 9 MW ↔ 0 MW**

- + by 2020 the current capacity [~50 MW] remains
- + sustainable potential 60 MW

✗ **Wind: 920 MW ↔ 3655 MW**

- + currently ~300 MW
- + sustainable potential 12360 MW ~ 1% of the whole territory

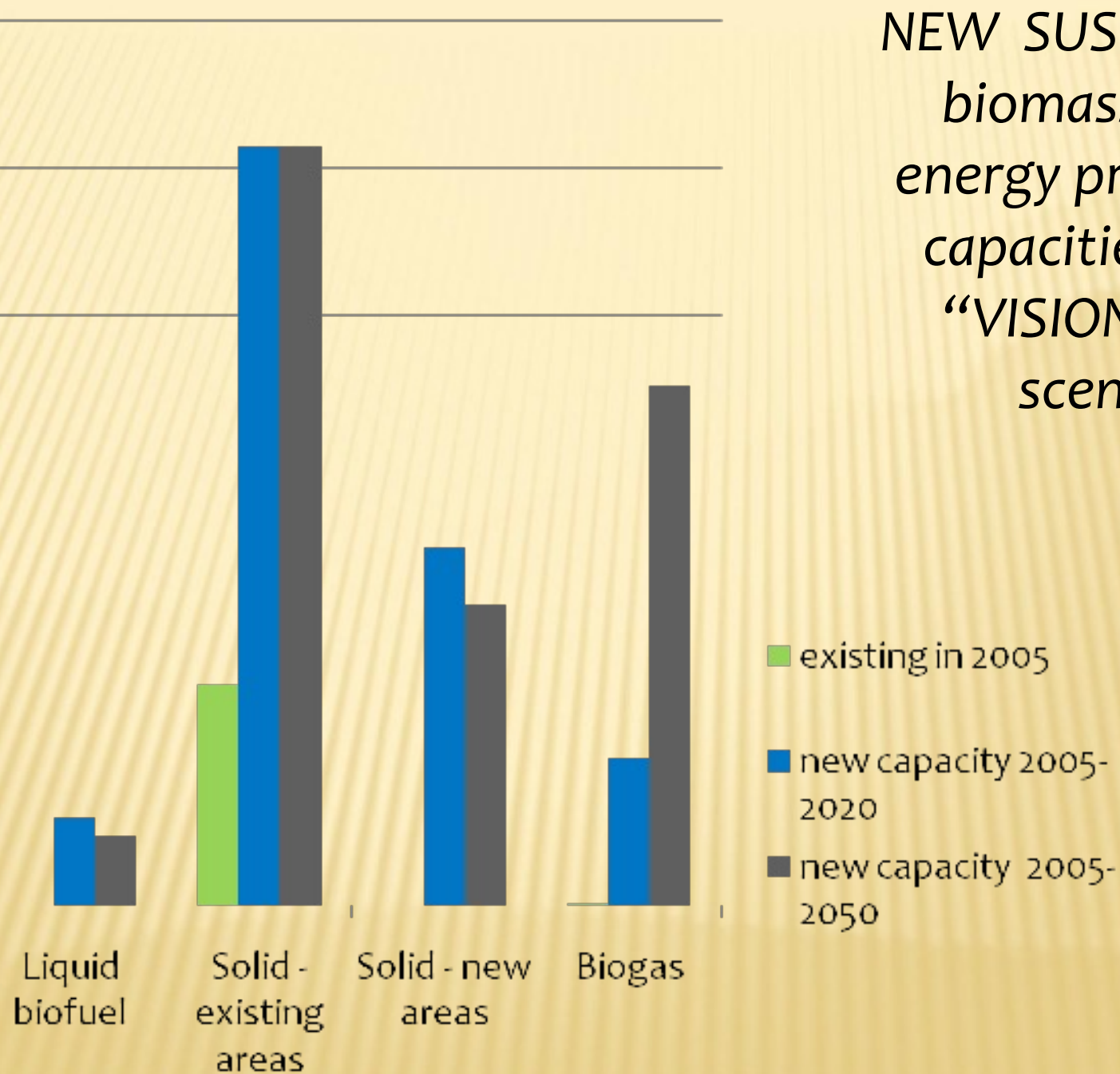
✗ **Solar PV: 0,32 MW ↔ 40 MW (400 000 m²)**

- + sustainable potential: 80 million m² (10 TWh) - 65% covered by PVs=52 000 000 m² = **5 200 MW by 2050**

✗ **Geothermal: 164 MW ↔ 0 MW**

- + the water temperature is not high enough to produce electricity

*NEW SUSTAINABLE
biomass based
energy production
capacities in our
“VISION 2050”
scenario*



Total renewable energy utilisation		2005	2010	2015	2020
Total	PJ	49.92	103.66	149.54	186.28
Biofuel	PJ	0.21	10.46	16.27	19.55
Total (without biofuel)	PJ	49.71	93.20	133.27	166.73
Hydro	PJ	0.73	0.71	0.79	0.88
Wind	PJ	0.04	2.02	4.04	6.12
Solar (TH+PV)	PJ	0.08	0.53	1.10	1.66
Geothermal	PJ	3.63	5.60	8.40	11.36
Biomass	PJ	43.56	78.08	107.04	130.81
Biogas+biomethane	PJ	0.30	3.90	9.06	12.57
Renewable from waste	PJ	1.38	2.35	2.84	3.33

Electricity production from renewables		2007-2013	2013-2020	Total
Additional capacity installed	MW	934	976	1,910
Hydro	MW	3	6	9
Wind	MW	448	472	920
Solar PV	MW	0.17	0.15	0.32
Geothermal	MW	64	100	164
Biomass	MW	369	340	709
Biogas	MW	44	50	94
Renewable from waste	MW	6	7	14

Table 5.19. Electricity production from renewables in the WAM scenario

Renewable electricity –fact (2005) and target (2010)

