THE CONTRIBUTION OF NUCLEAR ENERGY TO THE DEVELOPMENT OF THE BULGARIAN ENERGY SECTOR

Eng. Dr. Bogomil Manchev,
Chairman of the board of directors
of the Bulgarian Atomic Forum

Nuclear energy in Europe

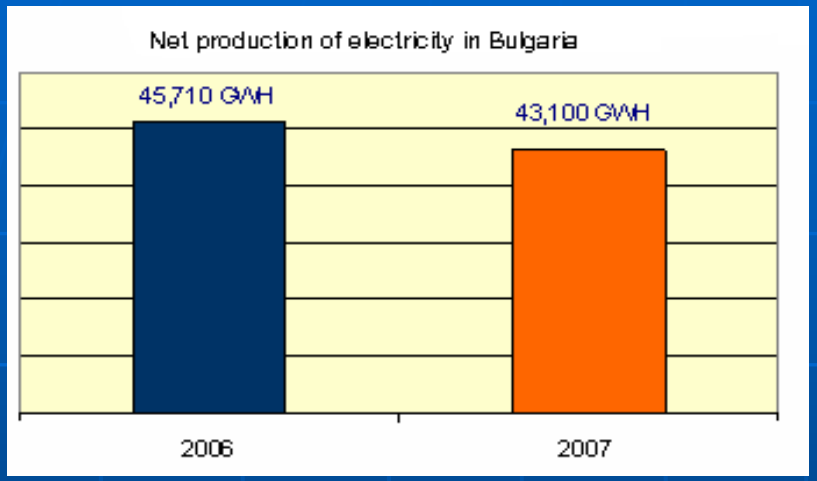
Bulgaria

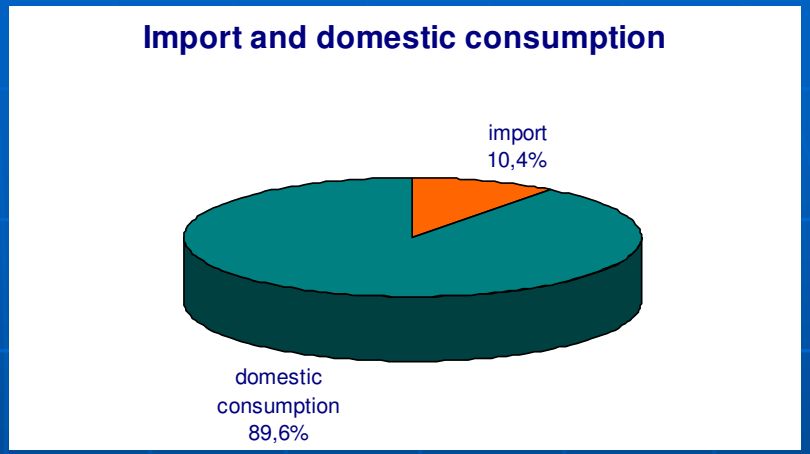
- Kozloduy NPP - 6 units with total installed capacity 3760 MW
  - 4 x 440 MW shut down in 2002-2006
  - 2 x 1000 MW in operation
  - A total of 141 reactor-year operation experience
- Belene NPP – 2 units planned to be built 1000 MW each

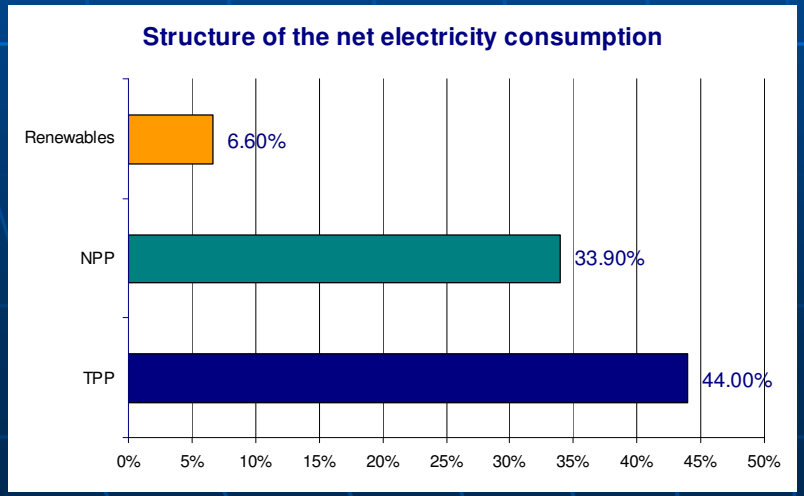
European

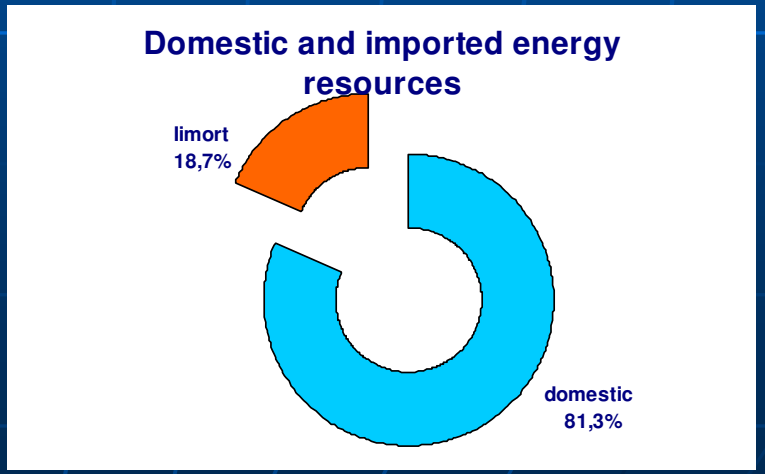
- 18 countries have nuclear plants
- 198 NPPs with a total installed capacity ~ 170 000 MW
- 15 of 27 countries in the EU operate 146 nuclear reactors and provide1/3 of Europe's electricity
- During the period 2001 – 2007 the EU started the construction of 4 third generation reactors
- The plans to build 11 new reactors in the EU countries include :
  - Finland (2 PWRs)
  - The Czech Republic (2 PWRs)
  - The Baltic states (1 PWR)
  - Slovakia (мин. 2 PWRs)
  - Slovenia (2 PWRs)
  - Romania (2 pressurized deuterium reactors)

The Bulgarian case

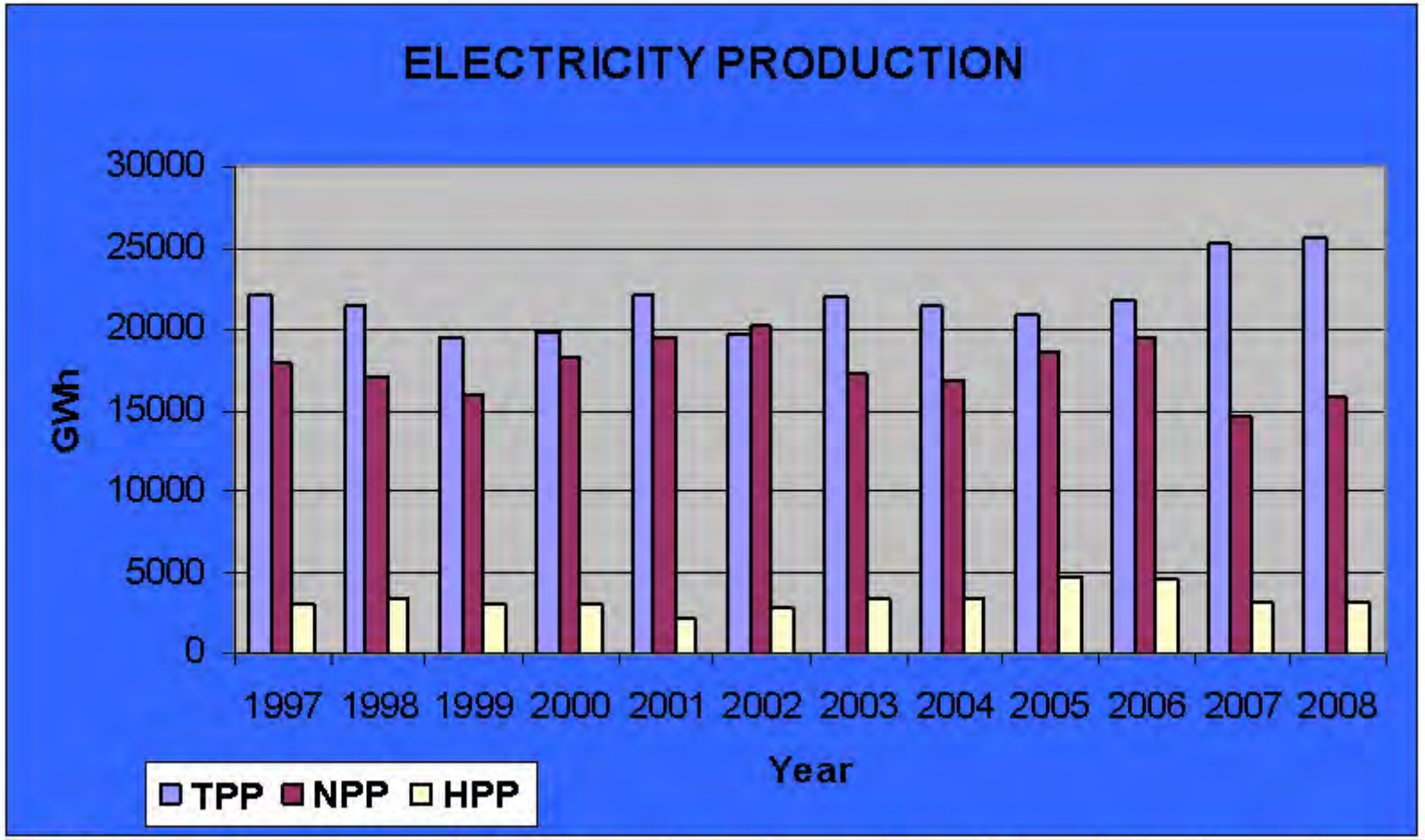








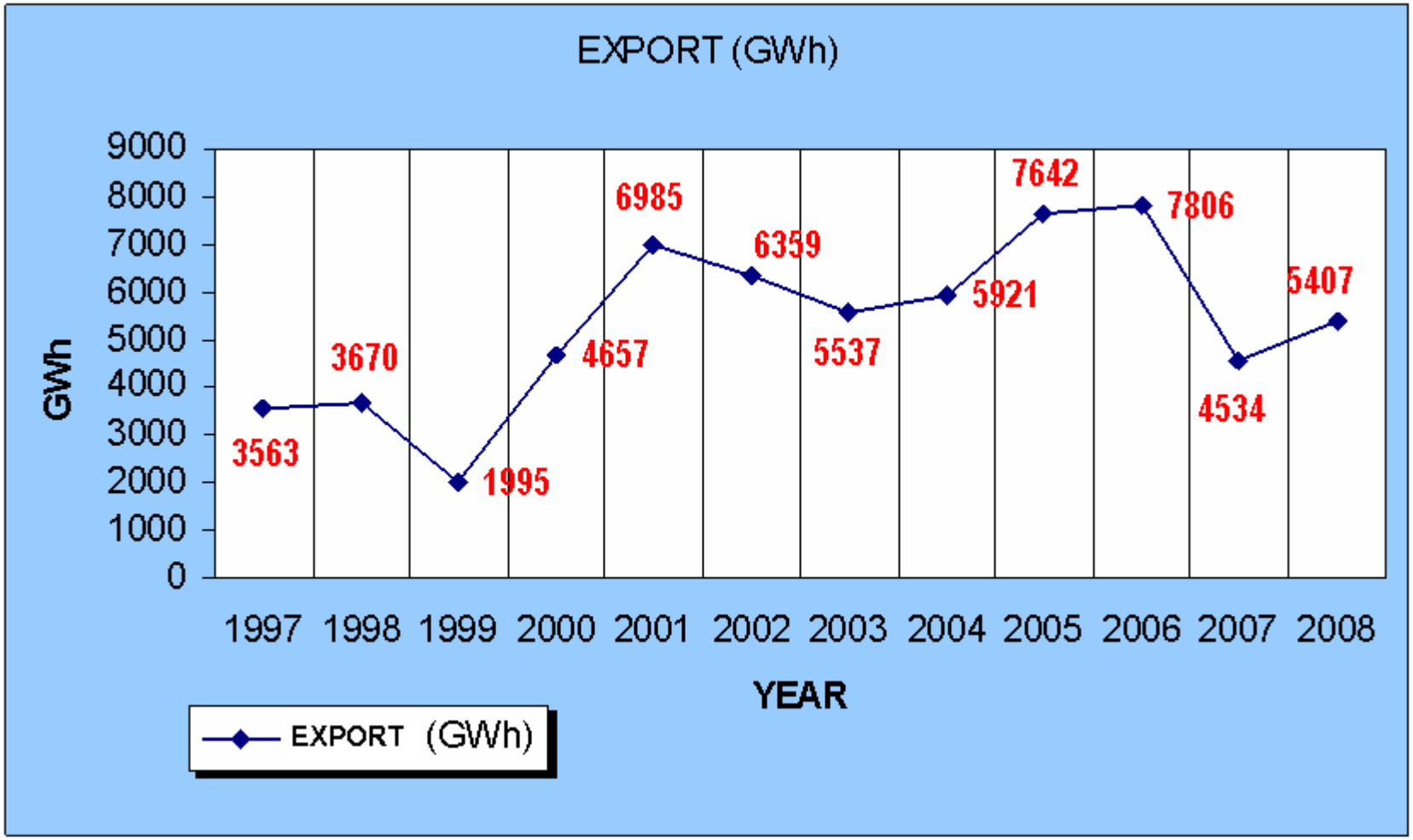
ELECTRICITY PRODUCTION



YEAR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
TOTAL	42922	41845	38389	40867	43886	42657	42514	41539	44259	45710	43093	44831

The number are in GWh

Electricity export



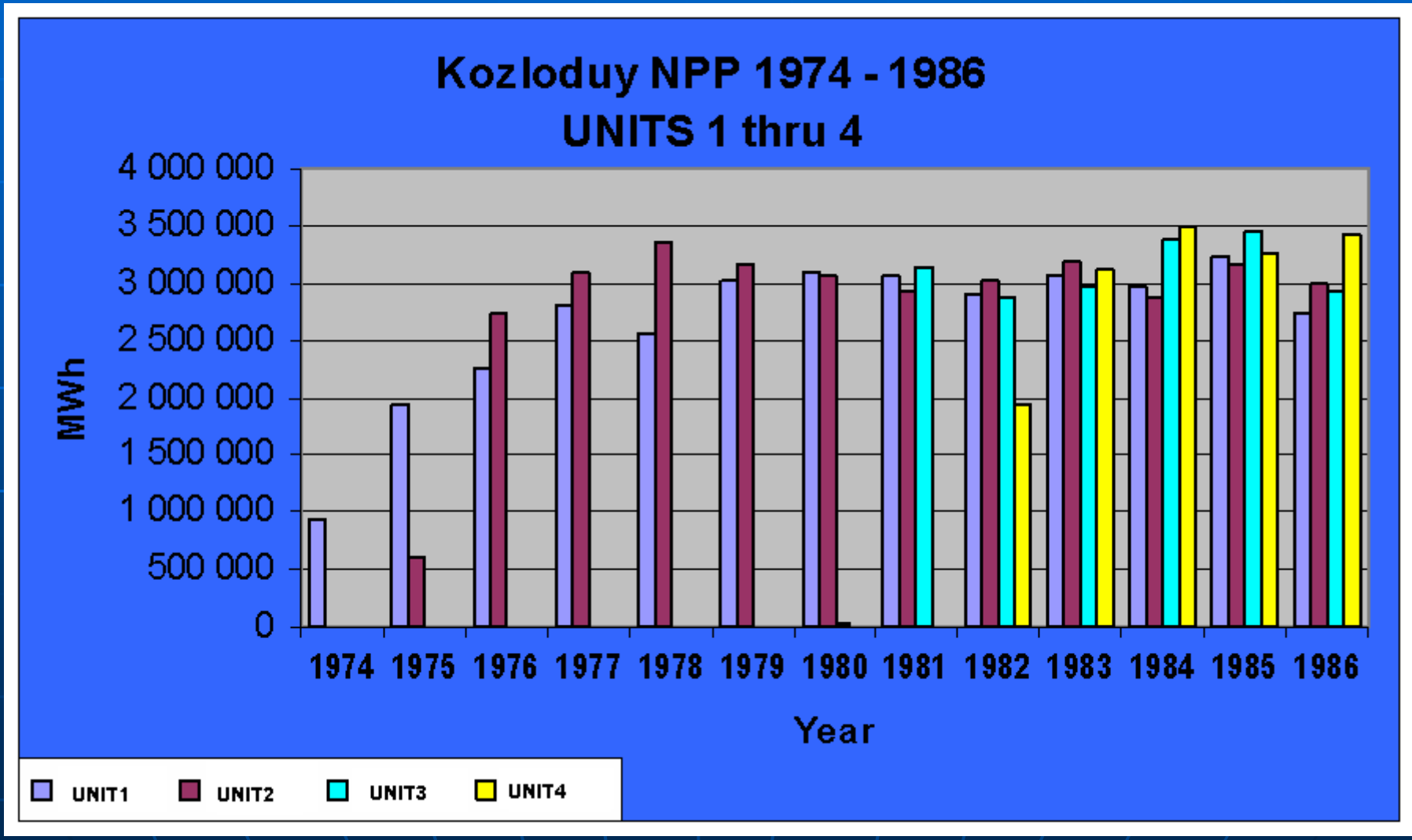
THE BULGARIAN NUCLEAR ENERGY – NPP KOZLODUY OVER THE YEARS….

Electricity production
Kozloduy NPP 1974 – 2008

YEAR	TOTAL (MWh)	YEAR	TOTAL (MWh)
1974	928,242	1992	11,552,412
1975	2,554,952	1993	14,012,645
1976	4,988,746	1994	15,519,852
1977	5,884,198	1995	17,444,318
1978	5,910,614	1996	18,265,107
1979	6,180,434	1997	17,922,550
1980	6,164,678	1998	17,078,813
1981	9,118,636	1999	16,034,732
1982	10,745,635	2000	18,178,342
1983	12,317,354	2001	19,553,419
1984	12,735,371	2002	20,221,719
1985	13,131,352	2003	17,178,411
1986	12,070,552	2004	16,814,773
1987	12,435,434	2005	18,653,081
1988	16,030,042	2006	19,493,219
1989	14,565,473	2007	14,643,081
1990	14,664,830	2008	15,765,105
1991	13,183,516		

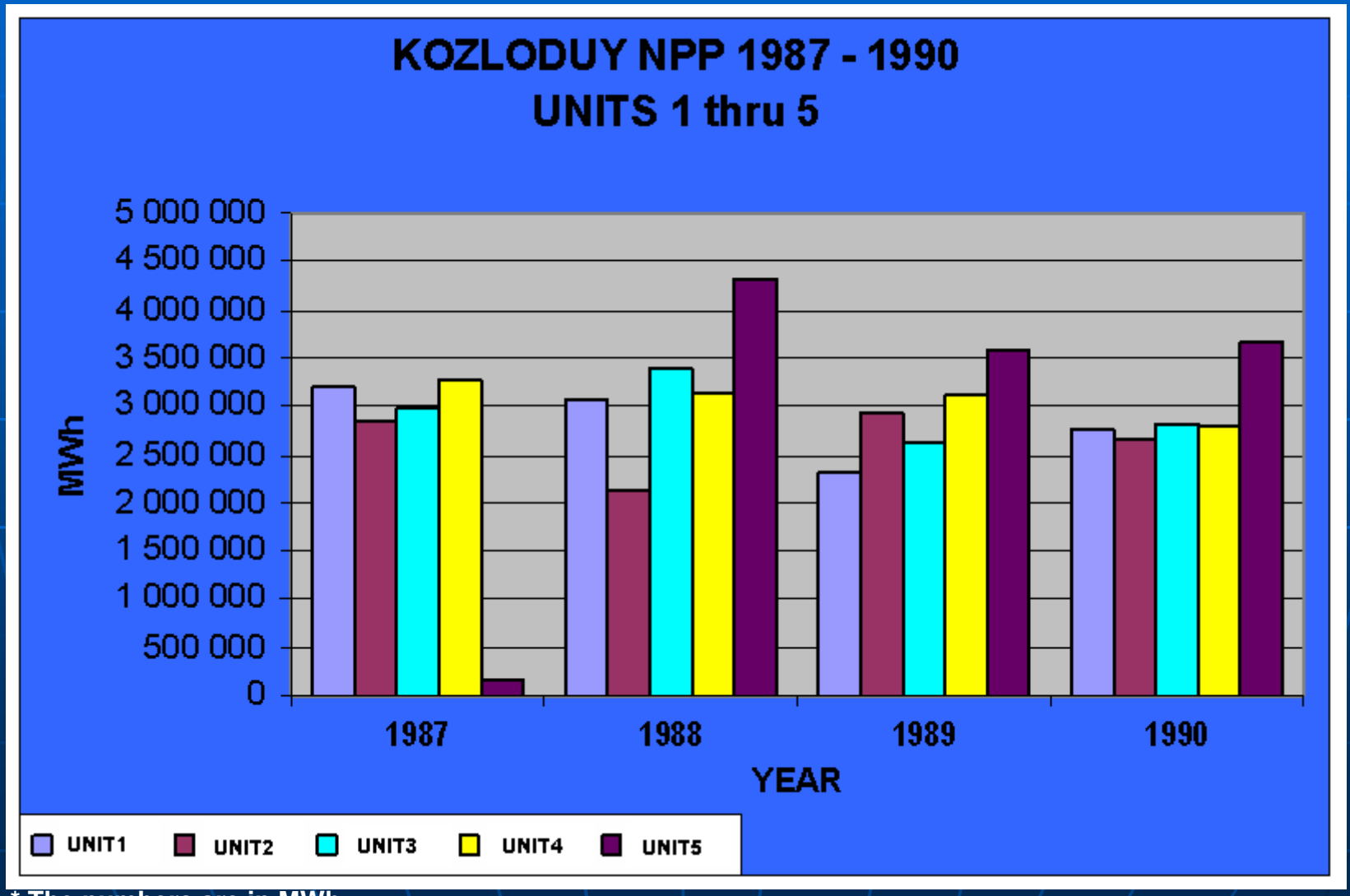
* The numbers are in MWh

Electricity production Kozloduy NPP (continuation)



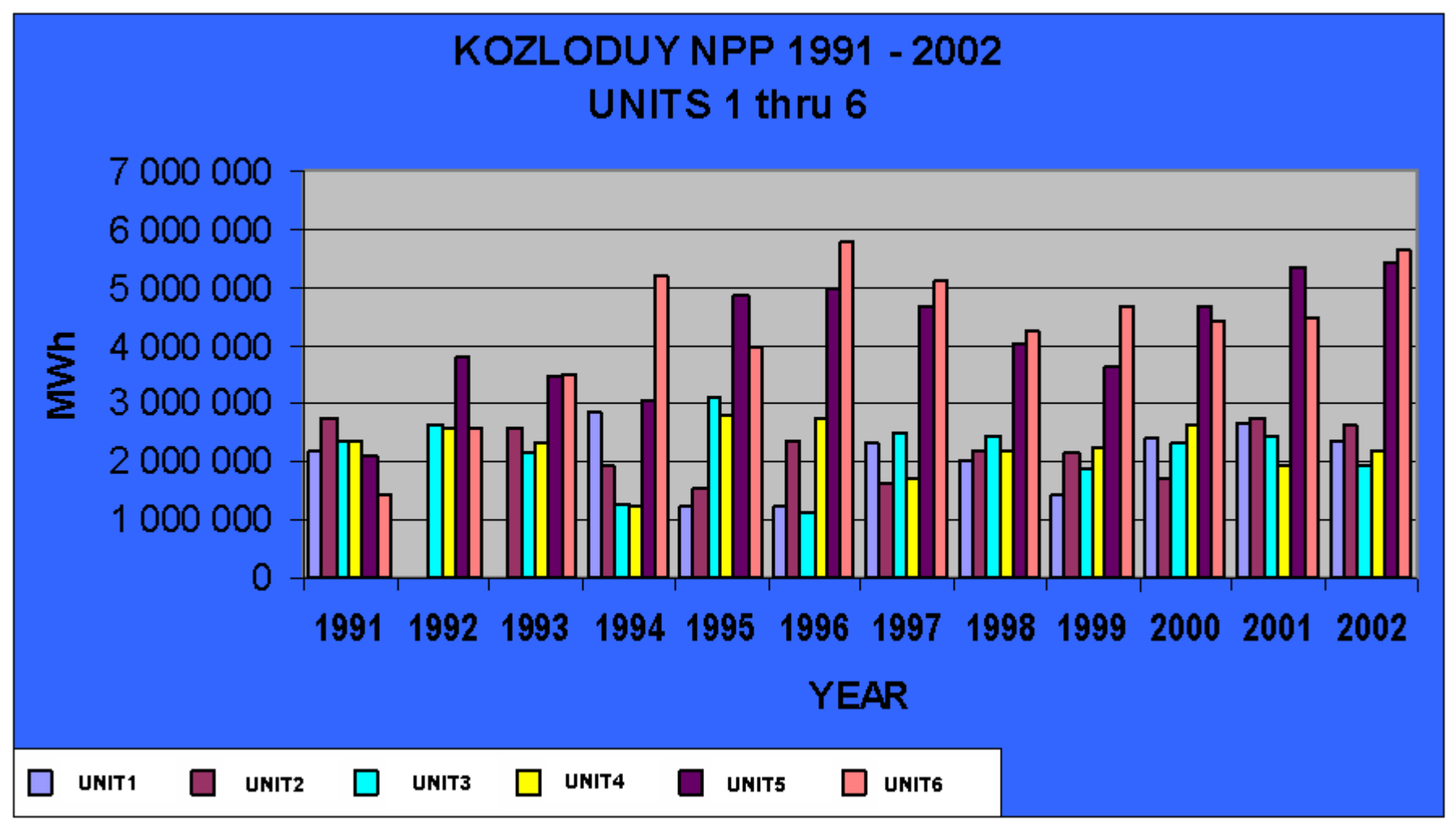
* The numbers are in MWh

Electricity production Kozloduy NPP (continuation)



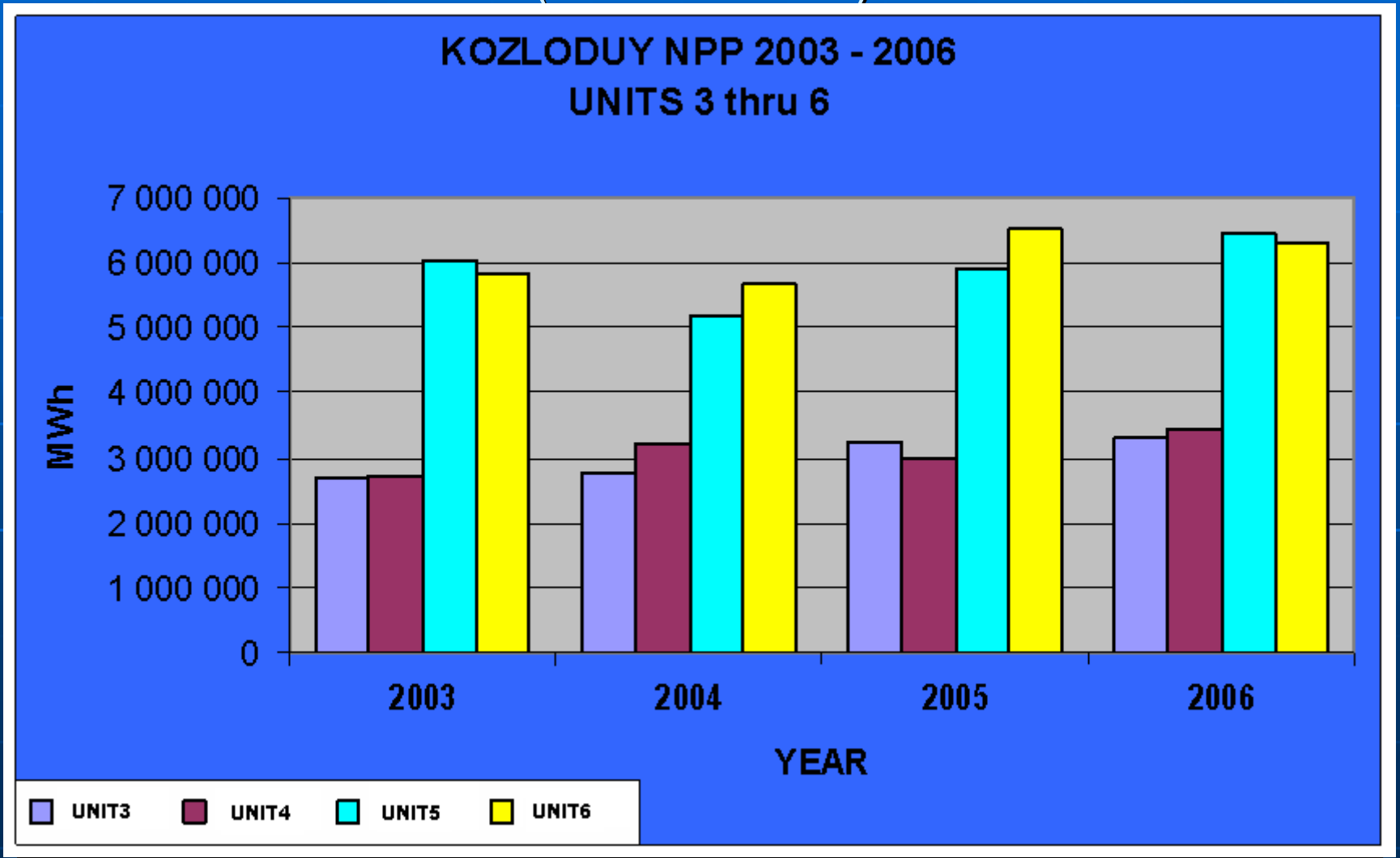
* The numbers are in MWh

Electricity production Kozloduy NPP (continuation)



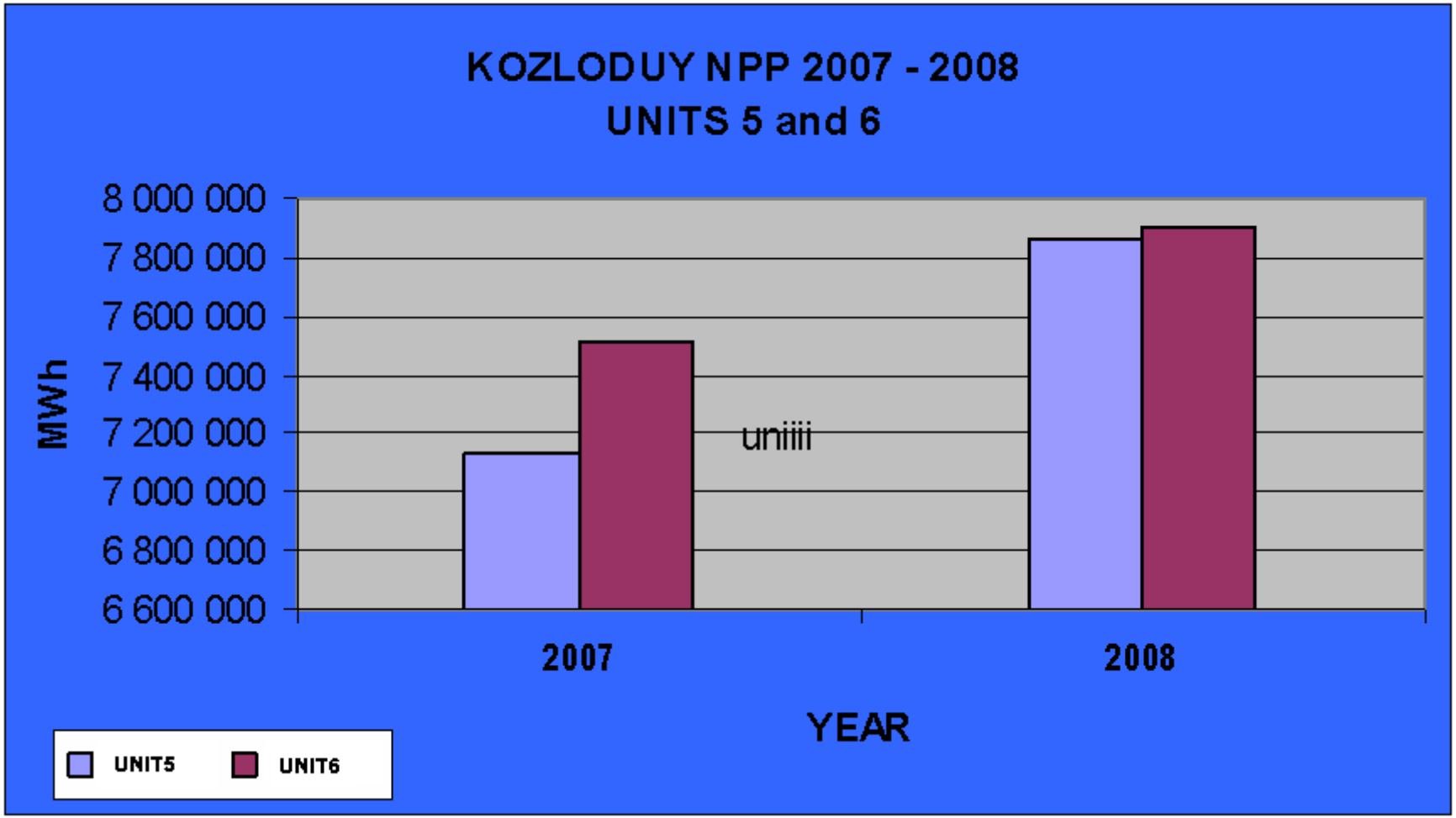
* The numbers are in MWh

Electricity production Kozloduy NPP (continuation)



* The numbers are in MWh

Electricity production Kozloduy NPP (continuation)



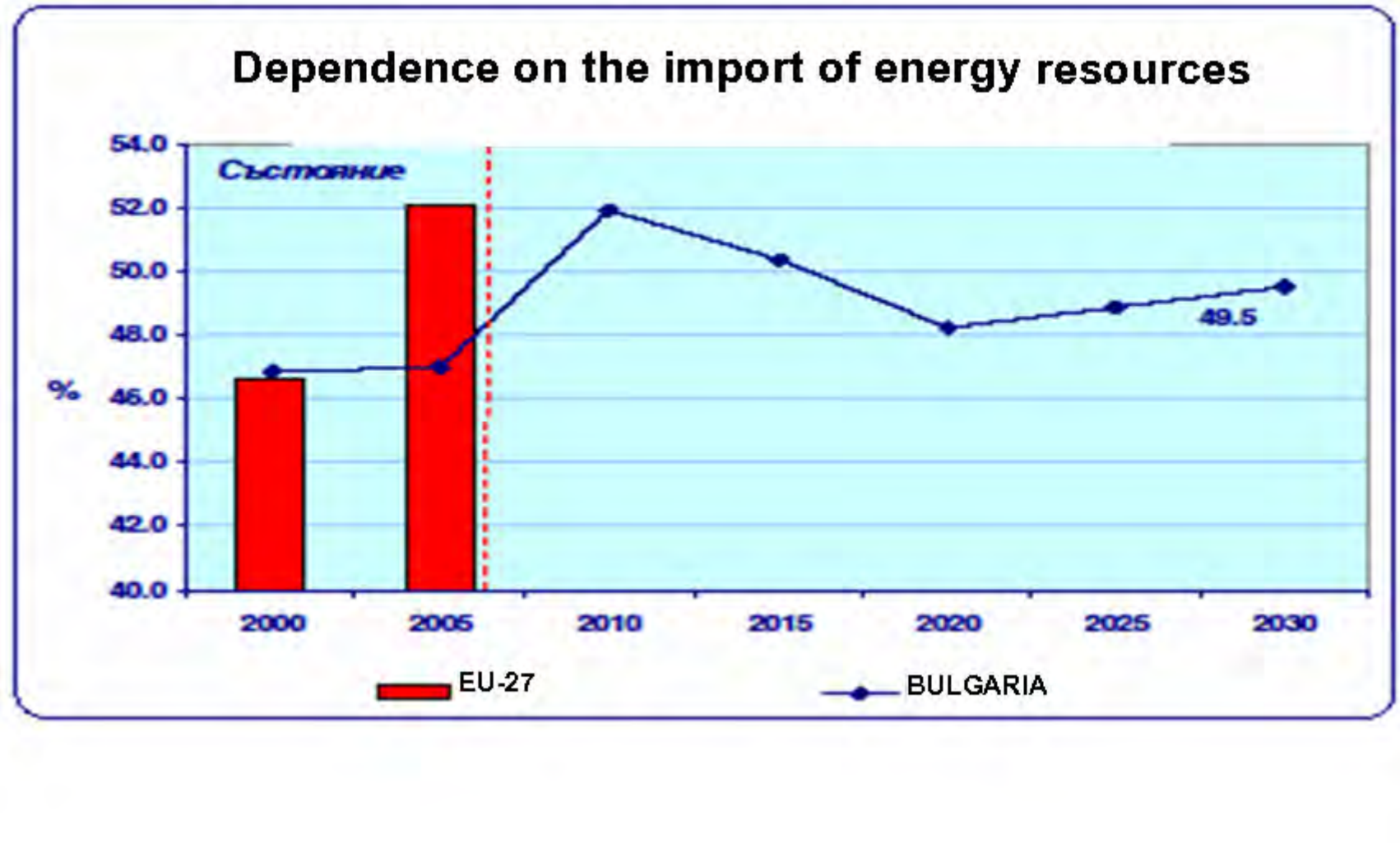
* The numbers are in MWh

THE FUTURE OF THE BULGARIAN NUCLEAR ENERGY BASED ON BELENE NPP AND ITS BENEFITS

BELENE NPP
Economic benefits

- Expected lower prices of electricity in the Region due to the commissioning of:
  - 2 x 1000 MWt at Belene NPP
  - 2 x 700 MWt at Cherna Voda NPP
- Considerable decrease (~ 20%) of the electricity prices in Bulgaria due to the relatively higher share of Belene NPP in the domestic energy mix
- Lower electricity prices in Bulgaria
- Sustainable export to the neighboring countries at competitive prices

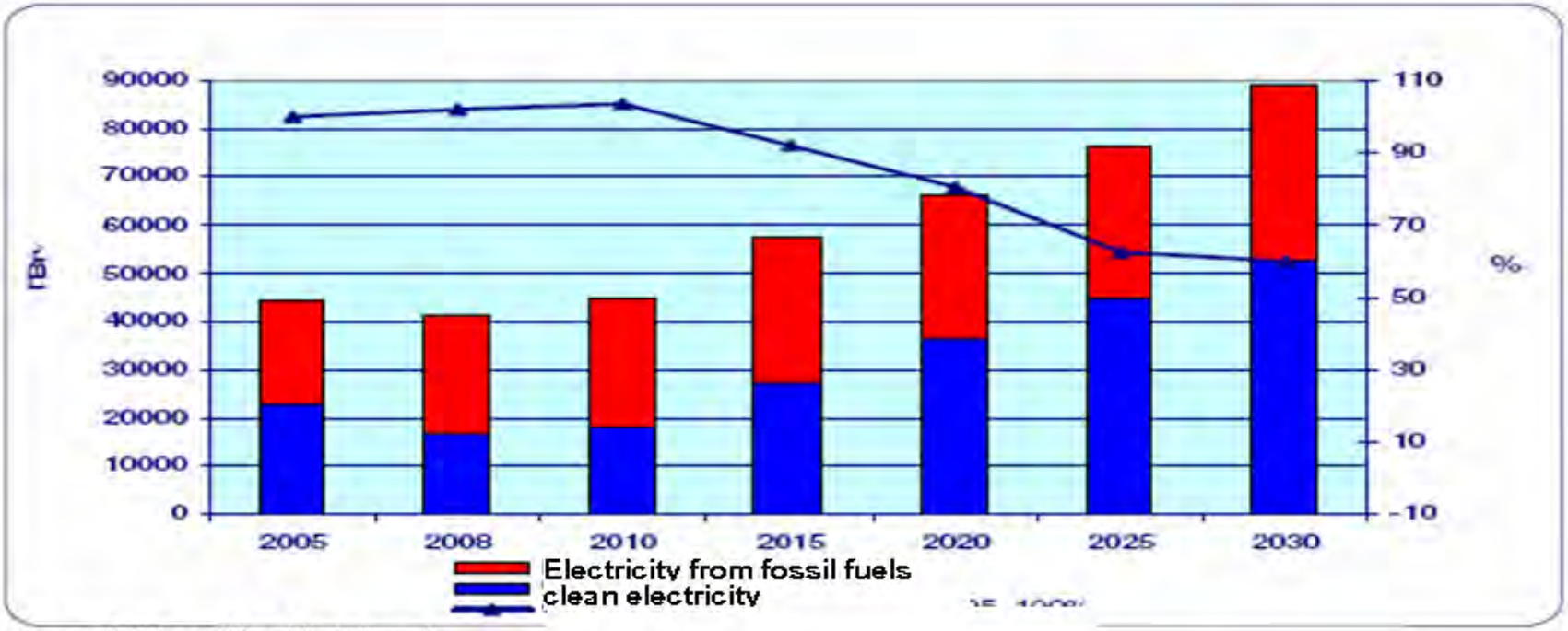
Belene NPP and its impact on the energy dependence of the country



The dependence of Bulgaria on imported energy resources will remain relatively constant and below the average level of EU-27 thanks to the development of nuclear facilities and facilities using domestic coal

Source: The Bulgarian Energy Strategy Concept until 2020, July 2008

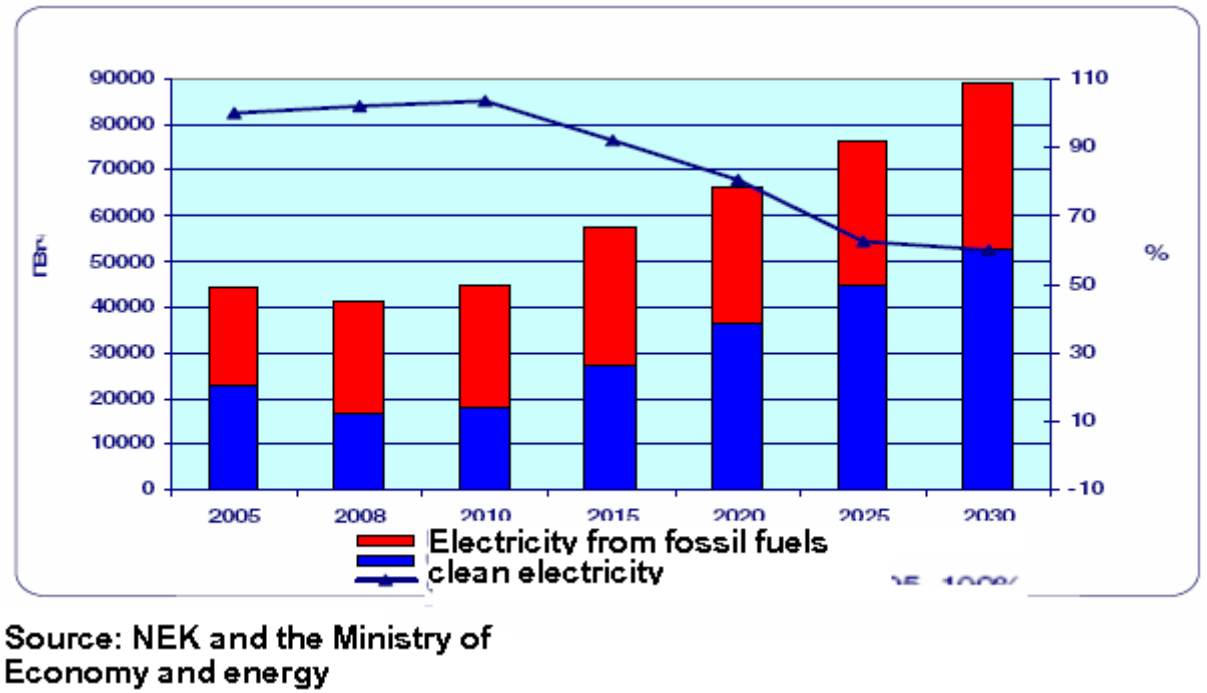
Belene NPP Environmental benefits



Source: NEK and the Ministry of Economy and energy

- Increase of the clean energy share (nuclear and RES) by:
  - 41% in 2008
  - 55% in 2020
  - 60% in 2030
- 40 % lower CO_2 emissions for the production of 1 MW/h electricity
- The emissions of noxious substances such as dust, SO_2, NOx will also decrease by 40 %

Belene NPP
Environmental benefits
(continuation)



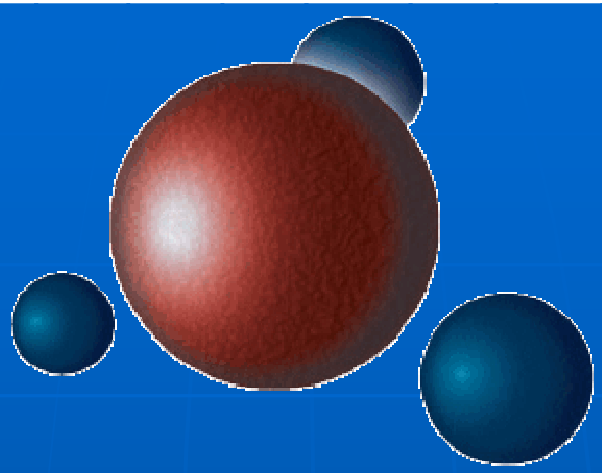
Source: NEK and the Ministry of Economy and energy

The increase of the share of clean energy (nuclear and RES) will allow the country to meet its commitments for:

- 20 (30)% decrease of greenhouse gas emissions by 2020
- And up to 50 % during the period until 2050

NUCLEAR ENERGY AS PART OF THE SOLUTION
Conclusion

- Nuclear energy ensures the security of energy supply and stability in spite of the increasing oil prices;
- Nuclear energy is an effective technology economy-wise;
- Nuclear energy mitigates the dependence on imported fossil fuels and electricity;
- Nuclear energy helps decrease the energy dependence of any country;
- Nuclear energy is the main factor leading to the decrease of CO_2 ;
- It is accepted the nuclear energy and RES supplement each other.



bulATOM

Bulgarian Atomic Forum
16 “Veslets” str. 1000 Sofia, Bulgaria
tel./fax: +359 2 93 98 150
e-mail: info@bulatom-bg.org
Web-site: http:// www.bulatom-bg.org