

JSC «GAZPROM»

LLC «VNIIGAZ»

JSC «GAZPROM» Role in Russian Power Industry Development

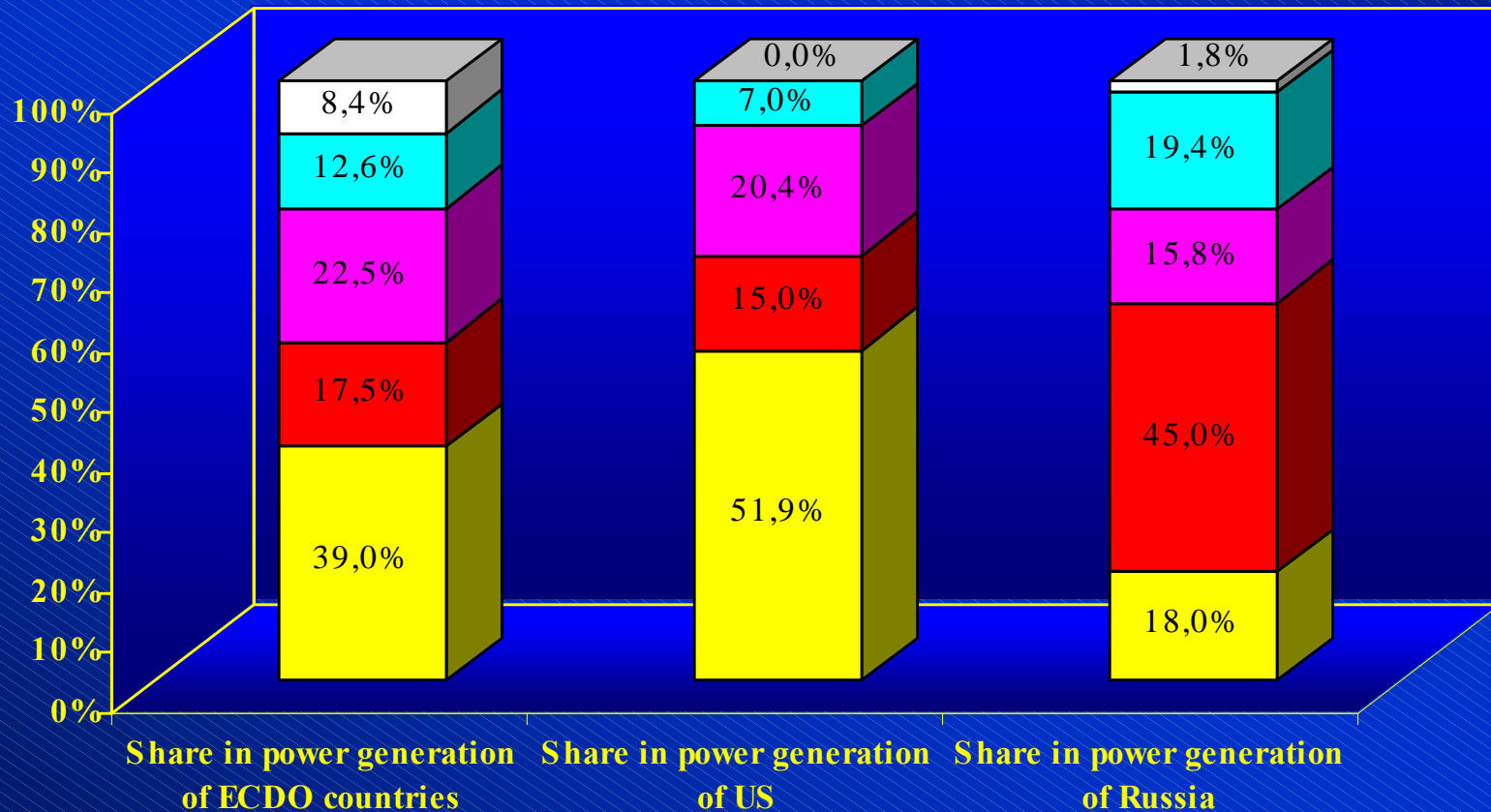
24 January 2006

*Roman Samsonov
General Director LLC «VNIIGAZ»*



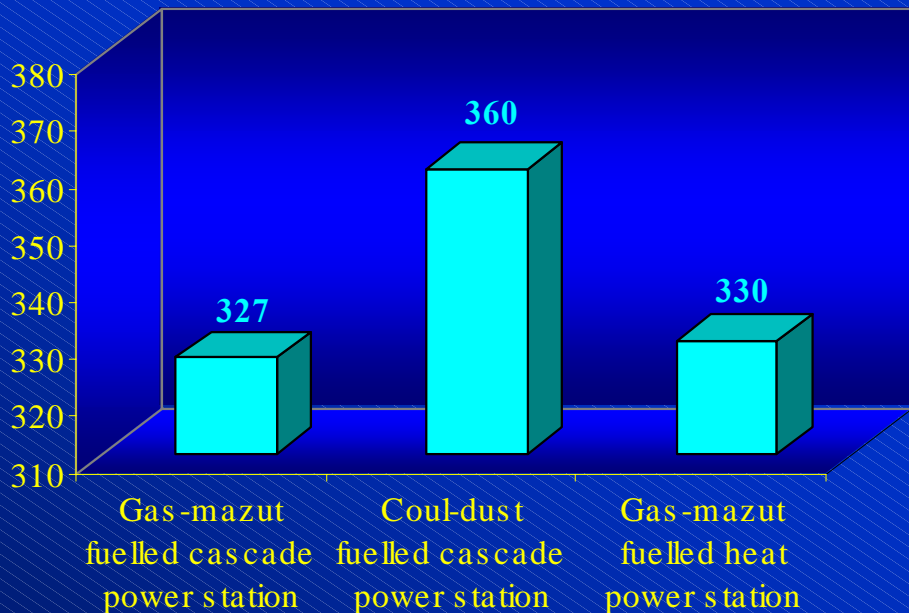
Power Generation Structure vs. Initial Energy Source

- Thermoelectric power station - Coal
- Thermoelectric power station - Natural gas
- Nuclear power station
- Hydroelectric power station
- Other

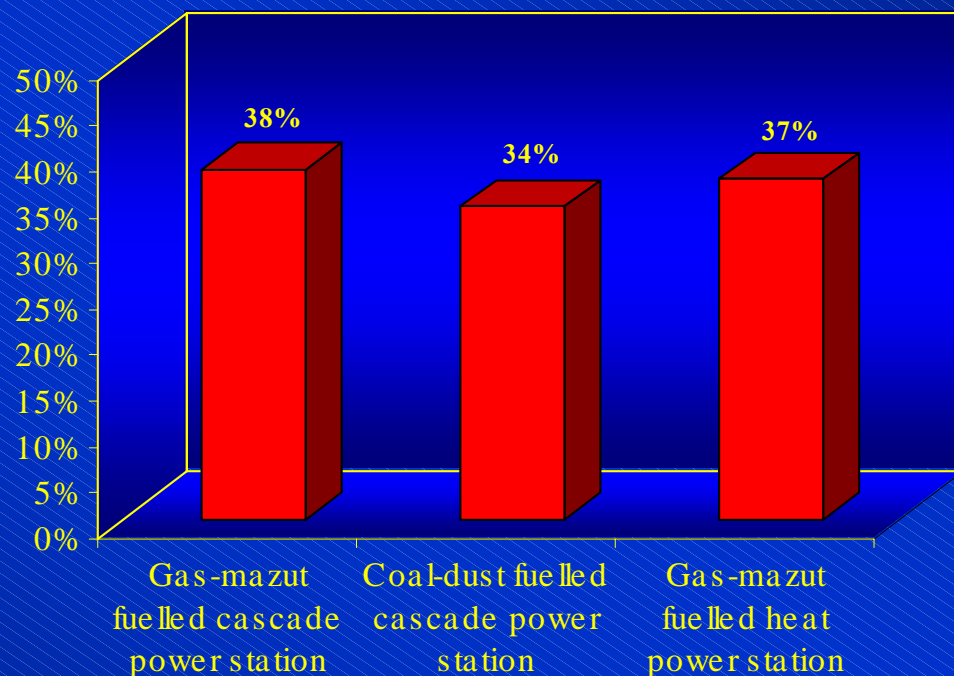


Efficiency of Fuel Use for Power Generation at Major Thermolectric Power Stations (per data by RAO «EES of Russia» for 2004)

Fuel rate for power generation, equivalent fuel ton/kwatt-hour



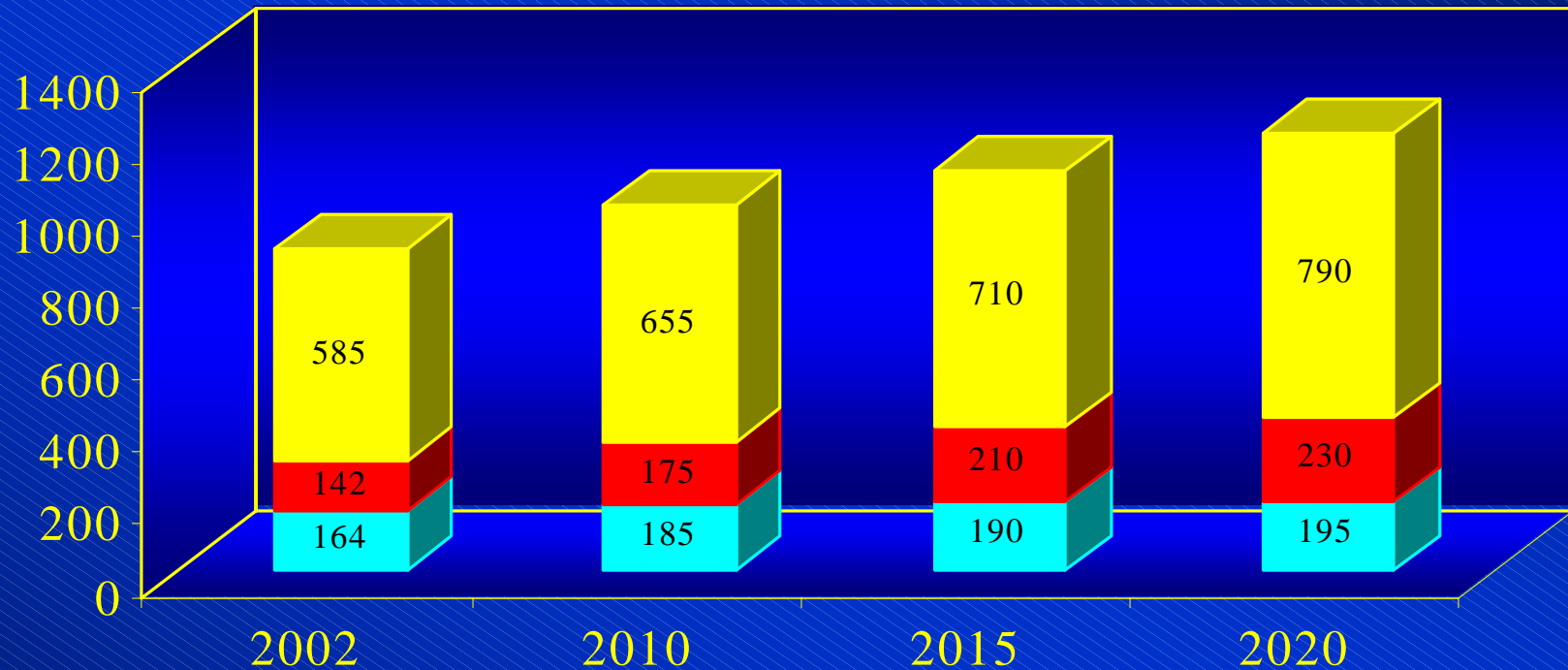
The thermal factor of fuel transformation into electric power (Coefficient of efficiency)



Power Consumption in Russia with Forecast up to 2020, billion kwatt-hour/year

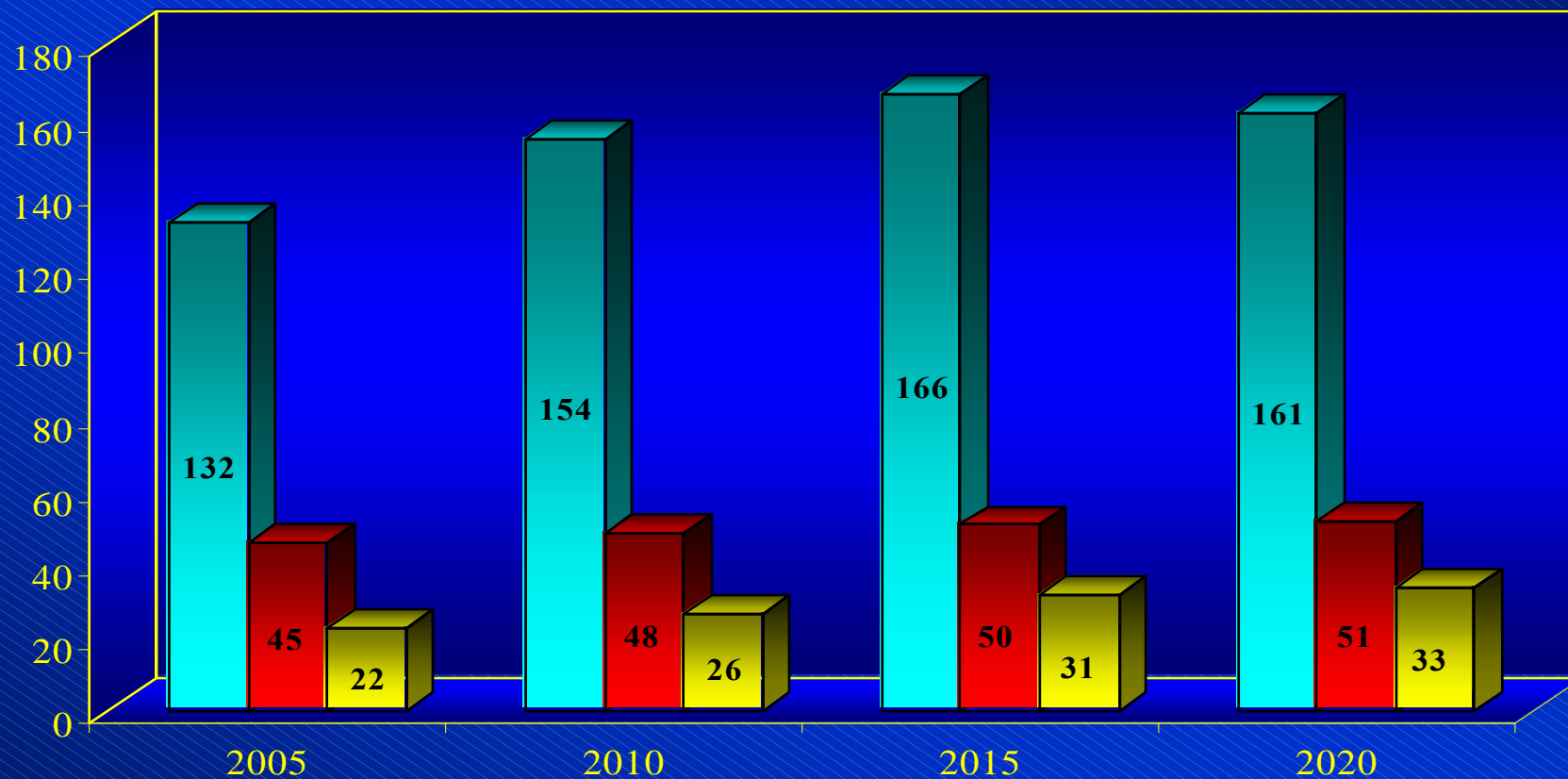


Power Generation Forecast in Russia up to 2020, billion kwatt-hour/year



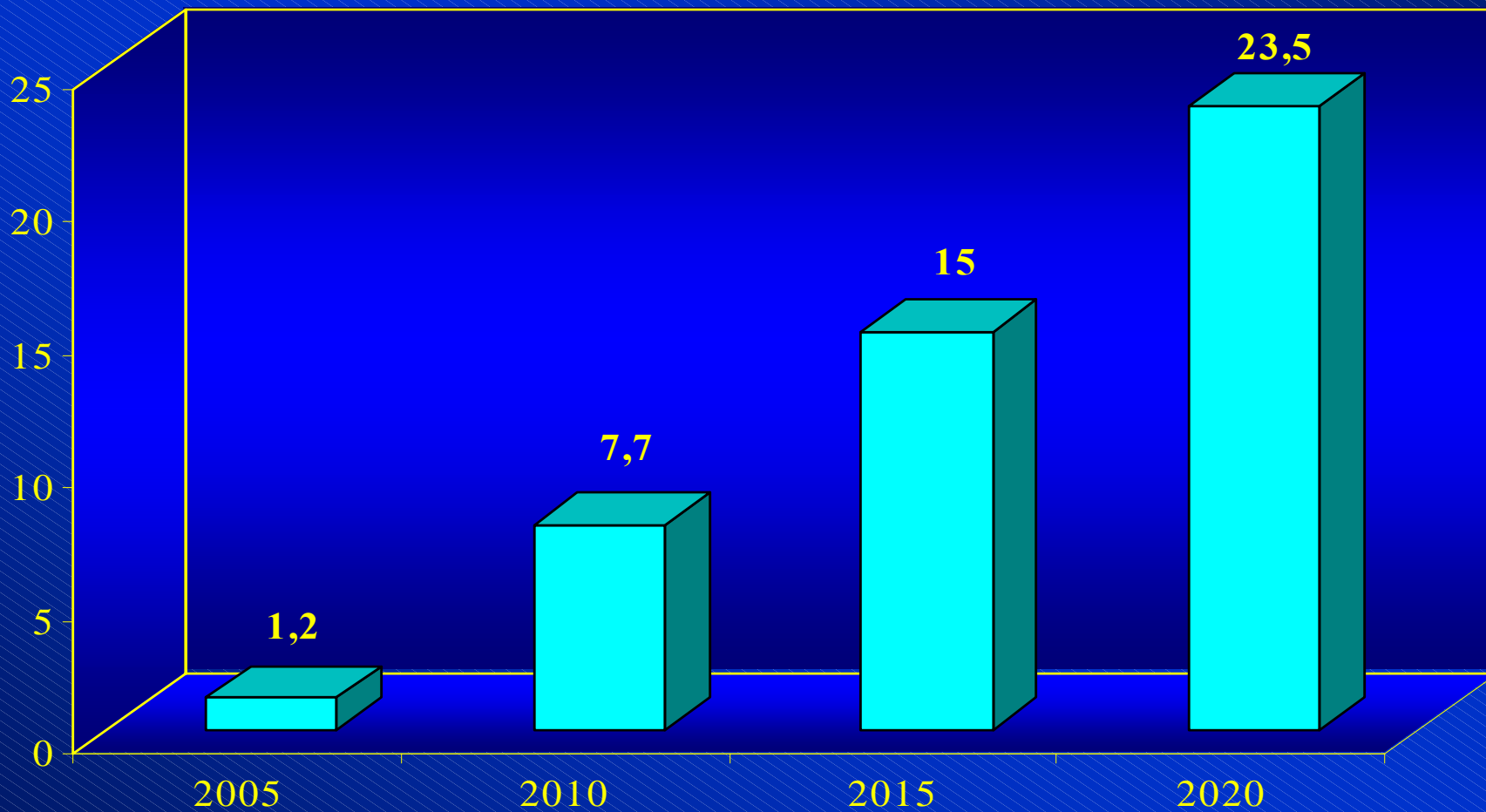
- Hydroelectric power station
- Nuclear power station
- Thermoelectric power station

Forecast of Power Stations Installed Capacity in Russia up to 2020, million kilowatt

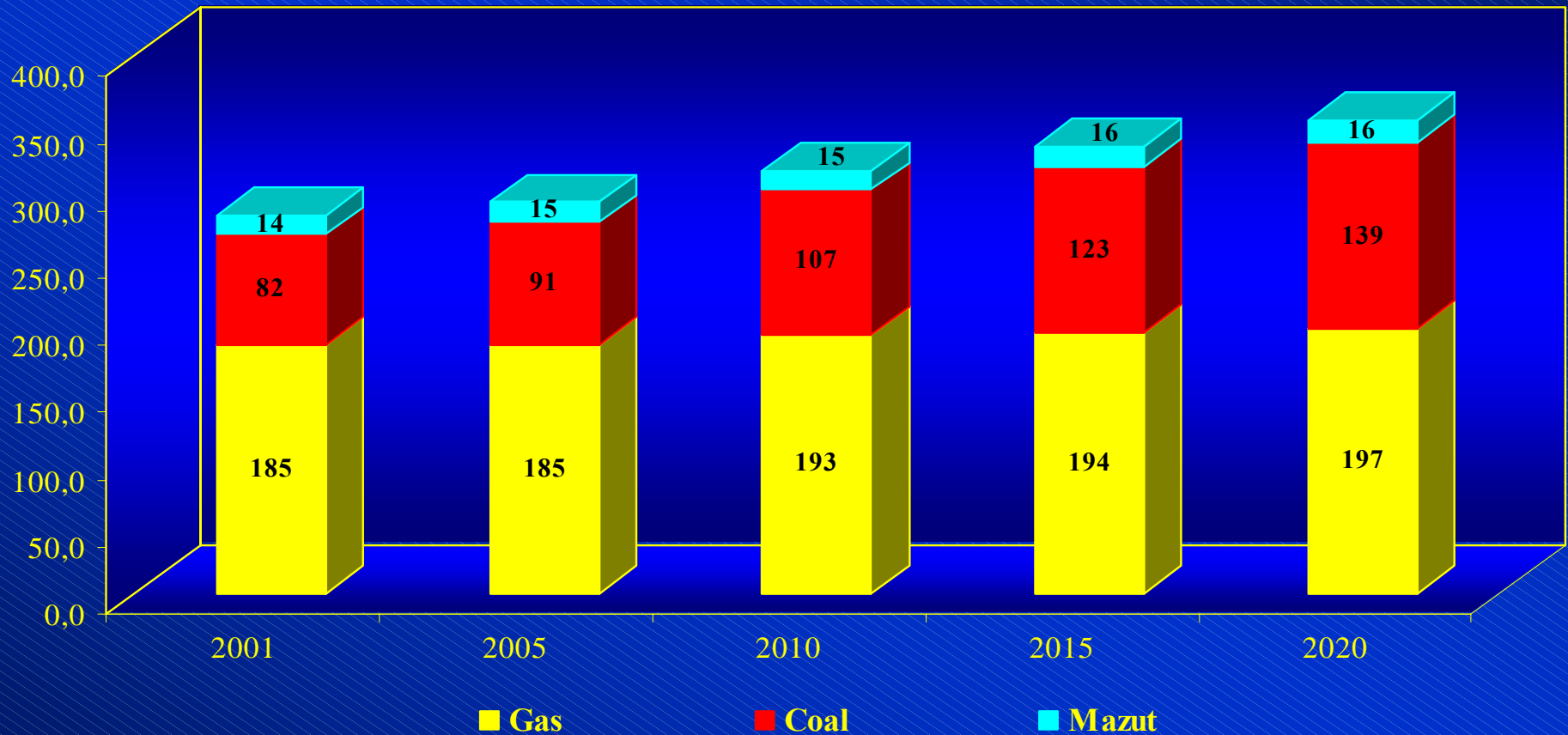


■ Thermoelectric power stations ■ Hydroelectric power stations ■ Nuclear power stations

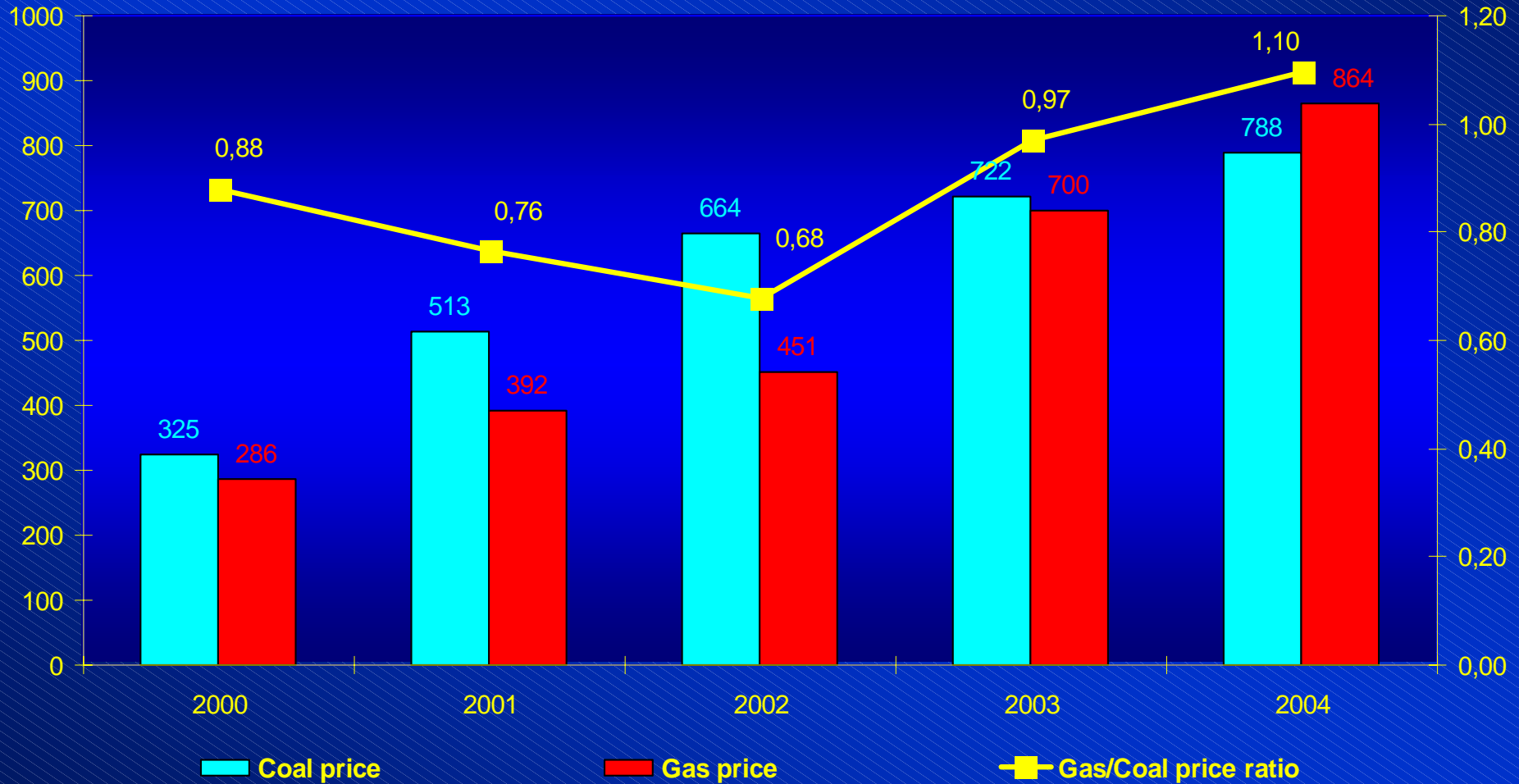
Forecast of Steam-to-Gas Plants Installed Capacity on The Thermoelectric Power Stations of Russia up to 2020, million kilowatt



Forecast of Fuel Demand for Power Stations in Russia up to 2020, million tons of equivalent fuel



Dynamics and Ratio of Gas and Coal Prices, ruble/ton equivalent fuel



General Parameters of Thermoelectric Power Stations Work in Russia and Contaminants Emission into The Atmosphere (1990-2002)

Parameter	Years				
	1990	1996	1998	2000	2002
Power generation, billion kilowatt-hour	797,0	537,4	518,1	534,6	533,4
Equivalent fuel consumption, million tons	387,5	255,9	242,4	242,6	239,8
Including:					
Coal	105,9	74,2	71,4	74,4	66,8
Oil Fuel	47,3	24,0	20,8	12,5	10,2
Gas	227,0	157,7	150,2	155,7	161,7
Peat and Others	8,1	0,7	0,7	0,6	1,0
Contaminants emission into the atmosphere, million tons	7,0	4,3	3,9	3,4	3,2
Including:					
Ashes	2,3	1,2	1,1	1,0	0,9
SO ₂	3,1	1,9	1,7	1,4	1,3
NO _x	1,6	1,1	1,0	0,9	0,9
CO ₂	708,0	517,0	517,0	475,0	474,0

Estimation Results of Prevented Environmental Damage in The European Part of Russia as a Consequence of «Gas Pause» in Power Industry of Russia

Damage Type	Emission	Estimate **		
		in money terms, billion euro		Share in total impact, % at $\gamma=5\%$
		$\gamma=0\%$	$\gamma=5\%$	
Damage for population health	PM*	32	46	29
	SO ₂	53	74	45
	NO _X	23	32	20
Climate impact	CO ₂	6,8	9,3	6
Sum		115	160	100

* - PM – suspended particles (flying ashes)

** - at discount rate $g=5\%$ and without discounting ($g=0\%$)

Energy Companies in World Power Industry

TotalFinaElf

Royal Dutch Shell

E.ON

RWE

RAG

Chevron Corporation

Exxon Mobil

Dominion Resources

British Gas

BANPU

Dynegy

El Paso

Eni

British Petroleum

Conoco Philips

Petrobras

Repsol YPF

< 10 000 MB_T

Middle installed capacity

Vertical integration with power generation

Electric power and energy supply wholesale trade development

Power industry development like separate business

> 10 000 MB_T

Middle installed capacity

Electric power and gas integrated sale

Power industry development like separate business

Vertical integration with electric power production and trade

Power industry development mainly for auxiliary

At increase of generating supply power industry become the separate business in the context of holding company

JSC «GAZPROM» Activity in Power Industry (2004)

JSC «GAZPROM»

Energy consumption:
18,7 billion kilowatt-hour
(including 8% own
production)

Domestic gas supplies
290 billion m³

Networks length – 102 thousand km
Power sub-stations > 12 000 (6-110 kwatt)

Own generation – 2800 Megawatt
> 1 900 power units

Power stations: technological,
technological-commercial, commercial

Shares in RAO «EES», Mosenergo

Electric power supply:
17 billion kilowatt (92 %)

Gas supply:
108 billion m³

Russian power industry

Generation:
915 billion kilowatt-hour

Installed capacity:
216 Gig watt

Gas consumption:
149 billion m³ (including
JSC «GAZPROM» gas –
108 billion m³)

**45% of power generation in Russia
operates on gas (70% - without Nuclear
and Hydroelectric power stations)**

**JSC «GAZPROM» possesses significant experience of
respective activities in all segments of power generation,
controls more than 10 % of power industry assets in
Russia**

Aims of JSC «GAZPROM» Activities in The Area of Power Generation

- **Ensuring own energy security, reliability and efficiency of power supply;**
- **Increasing stability, competitiveness, profitability and capitalization of business on the whole;**
- **Increasing efficiency of JSC «GAZPROM» and associated companies resources and assets use;**
- **Implementation of strategic targets of company by means of participation in domestic and international projects;**
- **Participation in forming competitive power market;**

Aims of JSC «GAZPROM» Activities in The Area of Power Generation

- Access to important market segment;**
- Production of high value-added cost products;**
- Company insurance as consumer against prices growth for power;**
- Gas and power production consolidation.**

JSC «GAZPROM» Transformation into World Power Industry Company

At present JSC «GAZPROM» has all the objective prerequisites to activate at domestic and international power market.

Diversification of JSC «GAZPROM» activities, market activities in direction of electric power supplies will allow to increase reliability and quality of energy supply to unified gas supply system facilities and to obtain significant profits.

Today JSC «GAZPROM» possesses 10,5 % share in RAO «EES of Russia» and 25,1 % share in first-rate Russian energy company – JSC «Mosenergo».