



The Energy Situation in Russia and its Implications for the Manganese Industry in the CIS

Prepared for:

IMnI Conference, Vienna, June 2007

Prepared by:

Konstantin Golovko

CRU Raw Materials Team

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31 Mount Pleasant, London WC1X 0AD UK
Tel +44 20 7903 2000 Fax +44 20 7837 0976

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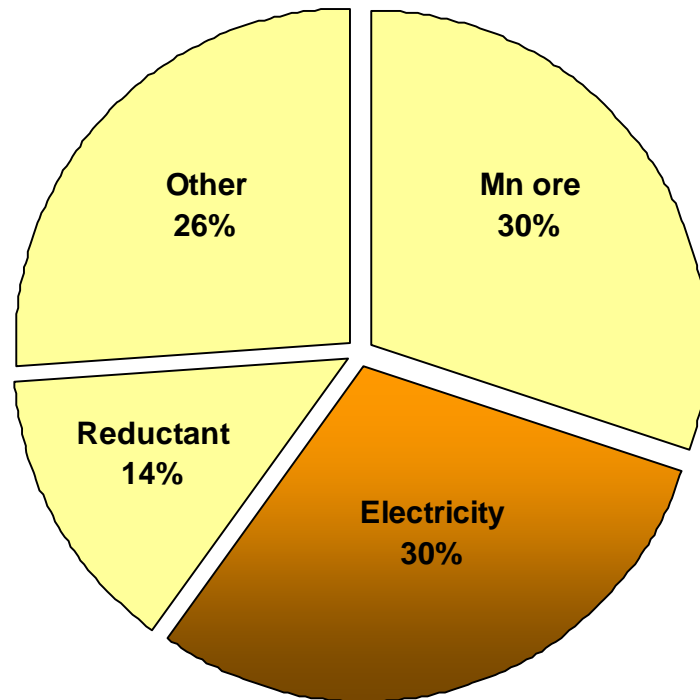
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Electricity accounts for a large share of production costs

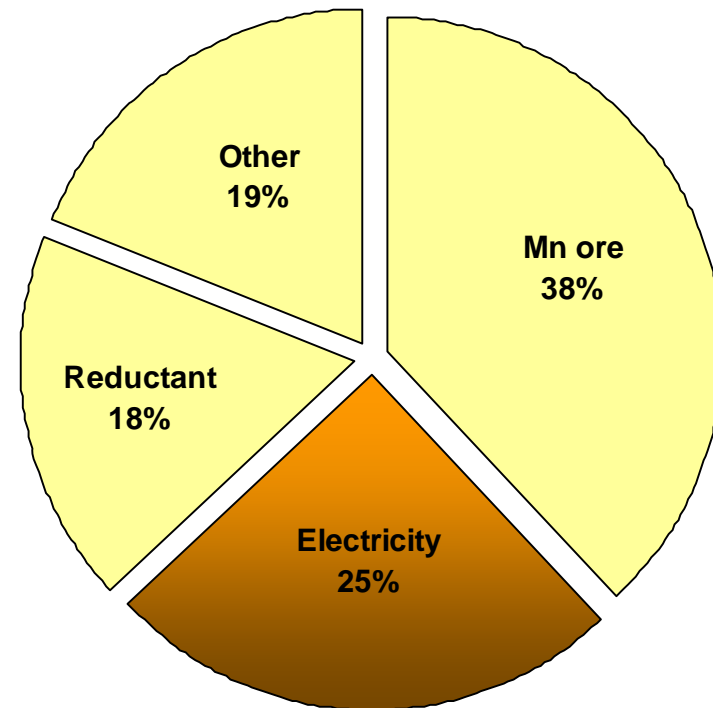
Structure of average EAF site operating costs for CIS plants, 2006, %

SiMn site operating costs



World range: 16-43%

HCFeMn site operating costs



World range: 12-37%



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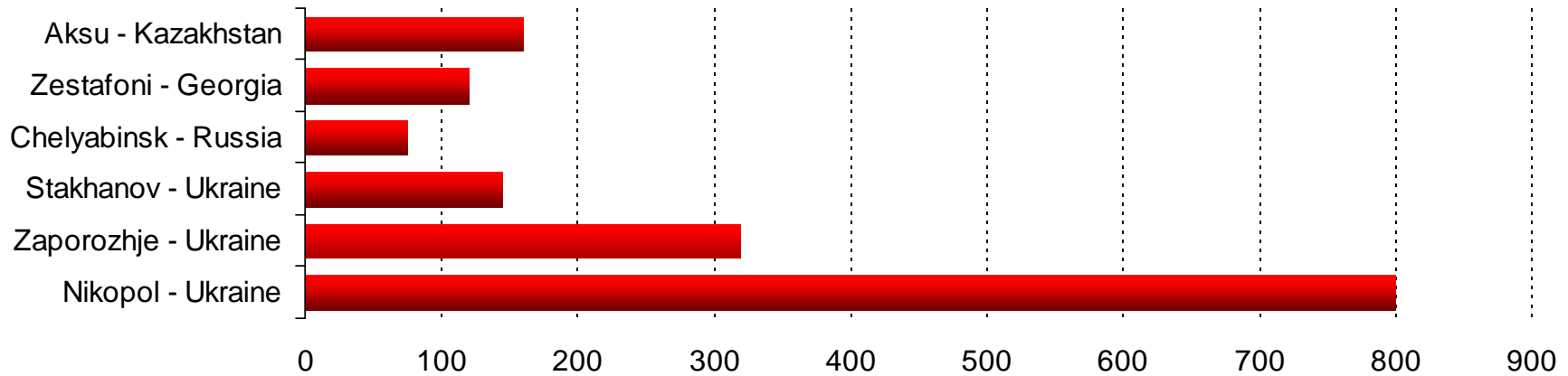
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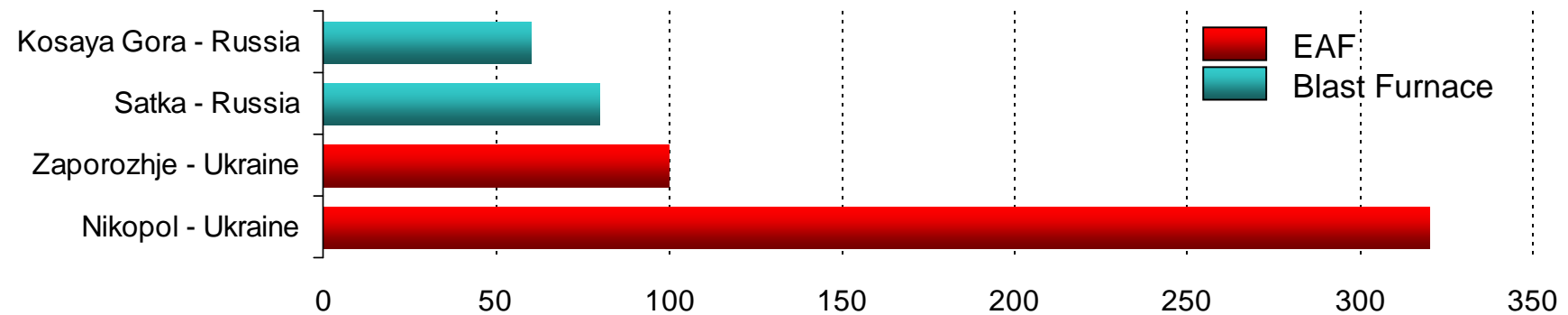
Ukraine is the leading CIS producer of manganese alloys

Capacity for manganese alloys in the CIS by plant, '000 tonnes, 2007

Total CIS SiMn capacity 1.62Mt - 18% of world capacity



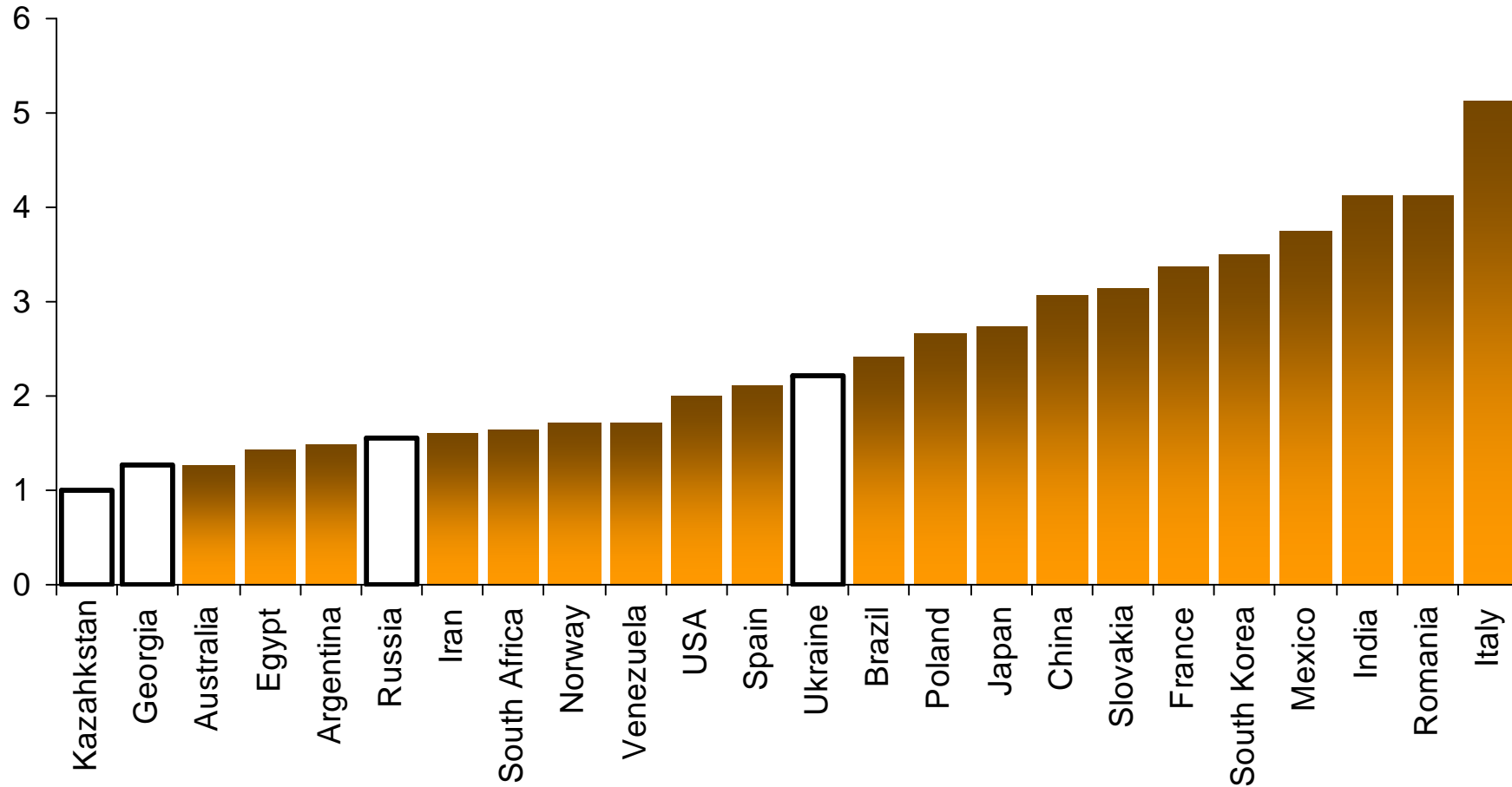
Total CIS HCFeMn capacity 0.56Mt - 12% of world capacity





CIS producers enjoyed relatively cheap electricity...

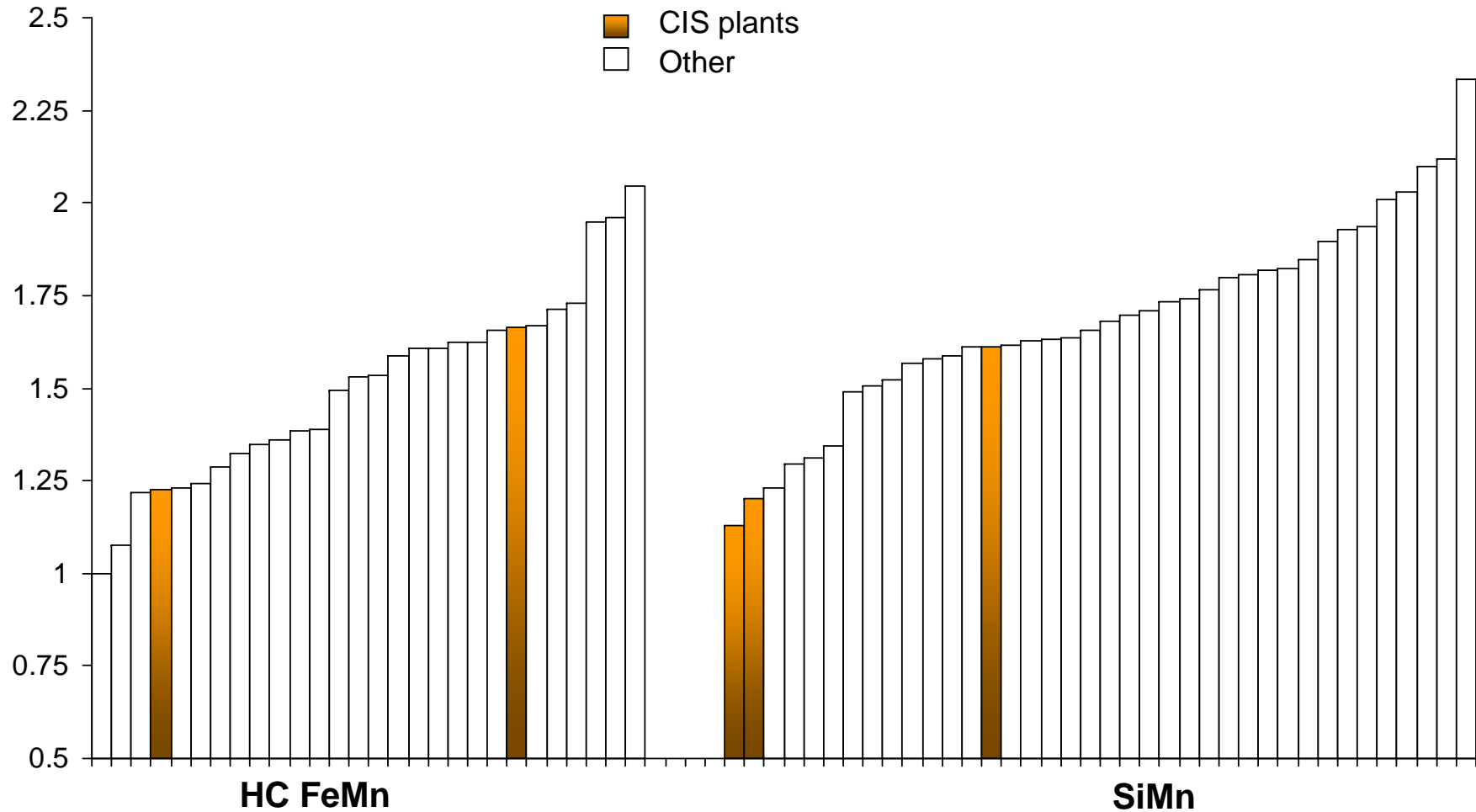
Relative power tariffs by country in 2005, index





...which allowed them to occupy low positions on the cost curve

Business operating costs by plant and the position of the CIS producers, index, 2005



Data: CRU



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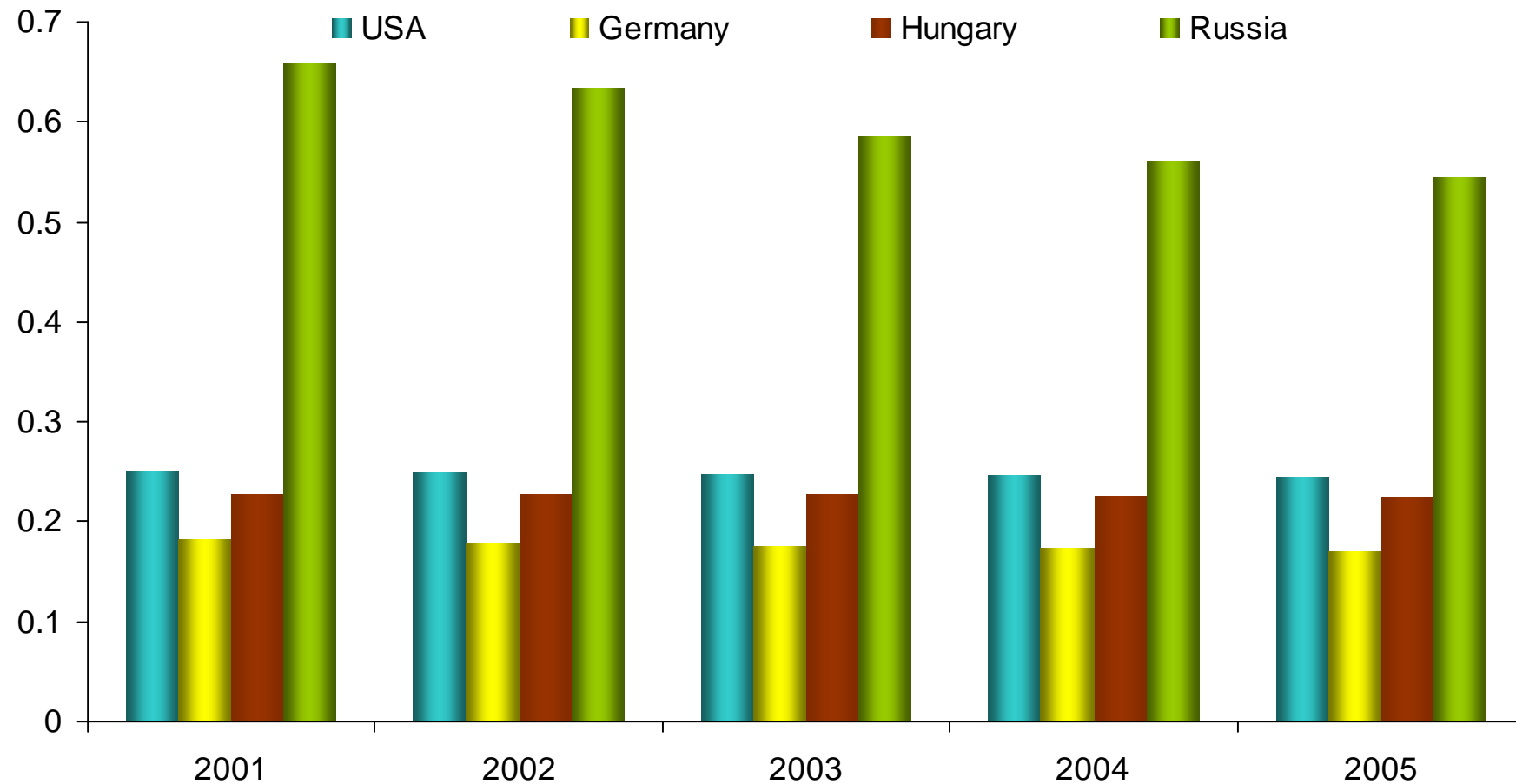
Key features of the Russian electric power industry

1. Dominating role of the government in electricity generation, lack of competition
2. Cross subsidising (households to industry, interregional)
3. Almost zero capacity growth over the past two decades
4. Prevailing share of thermal power generation
5. High wear of equipment, low efficiency, excess labour
6. Inadequate development of transmission capacity
7. Energy intensive industries consume above 60% of total electricity, little incentive for power saving
8. Reforms have been launched to bring competition to the sector
9. Projected strong demand growth and rising prices



Russia's economy is extremely energy intensive

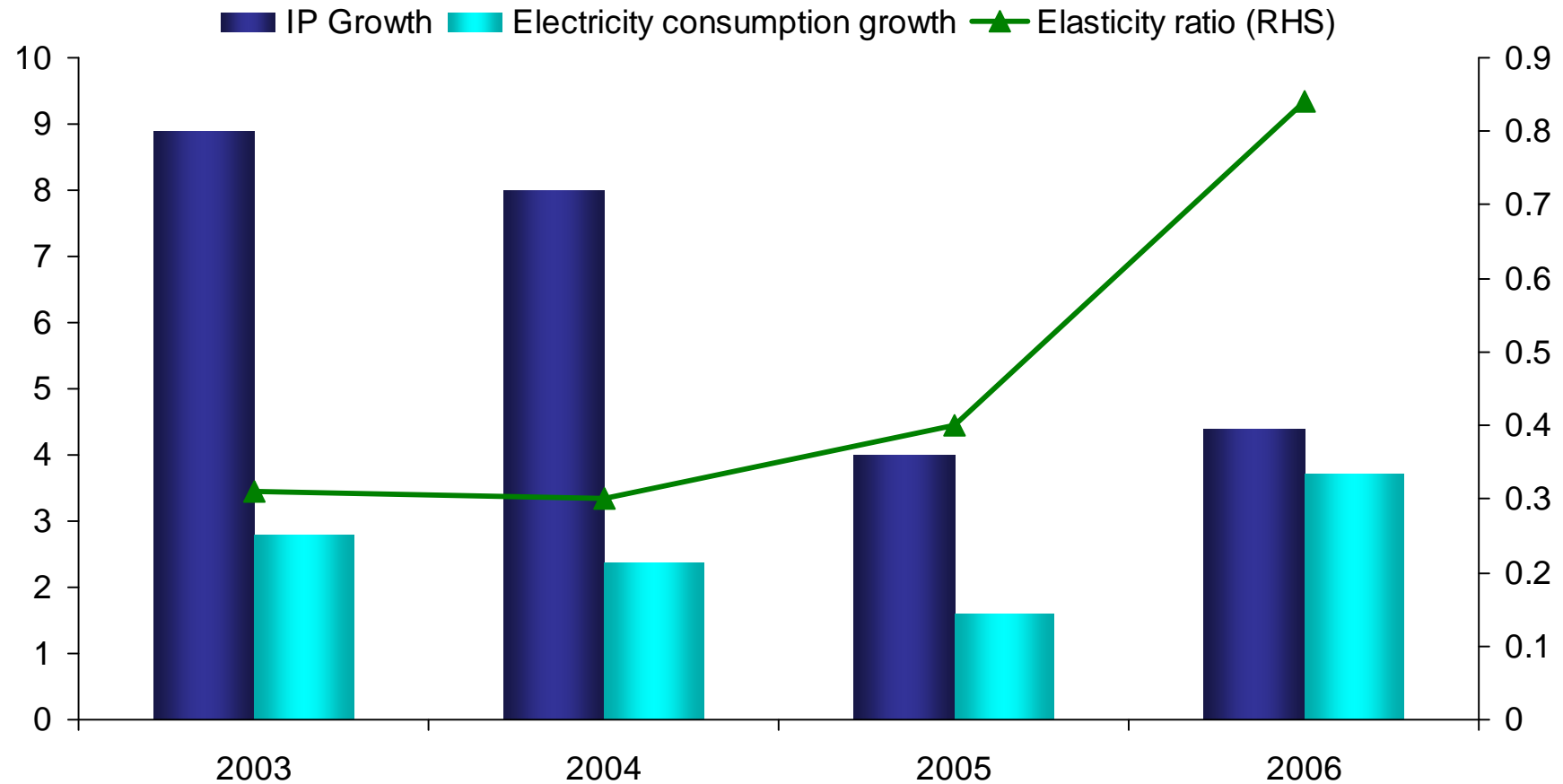
Energy intensity of selected economies, 2001-2005, tonnes of oil equivalent per \$1000 of GDP





The energy sector is increasingly affecting economic growth

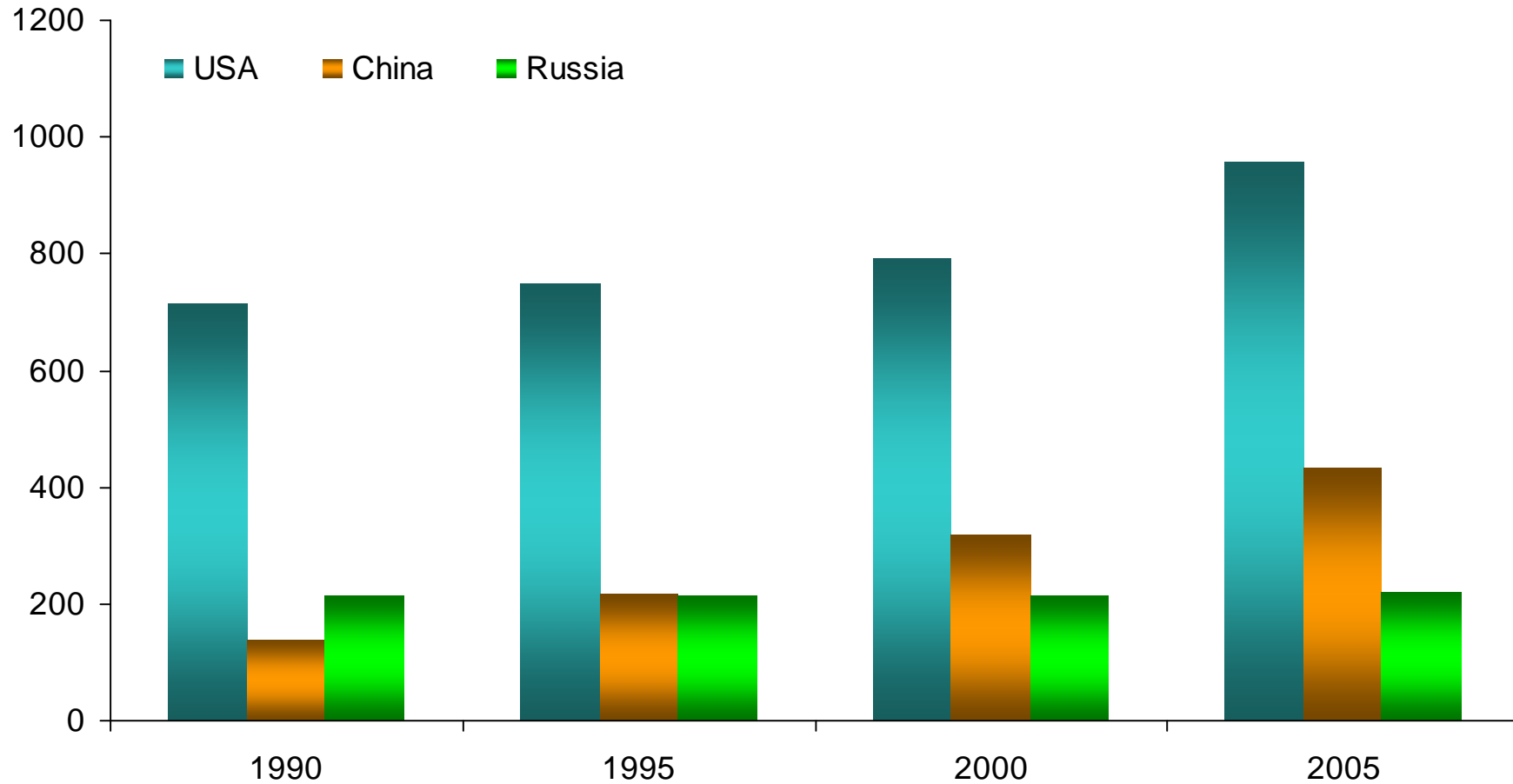
Estimate of the elasticity of industrial production to energy consumption, 2003-2006, %





Russia's generating capacity has seen little growth

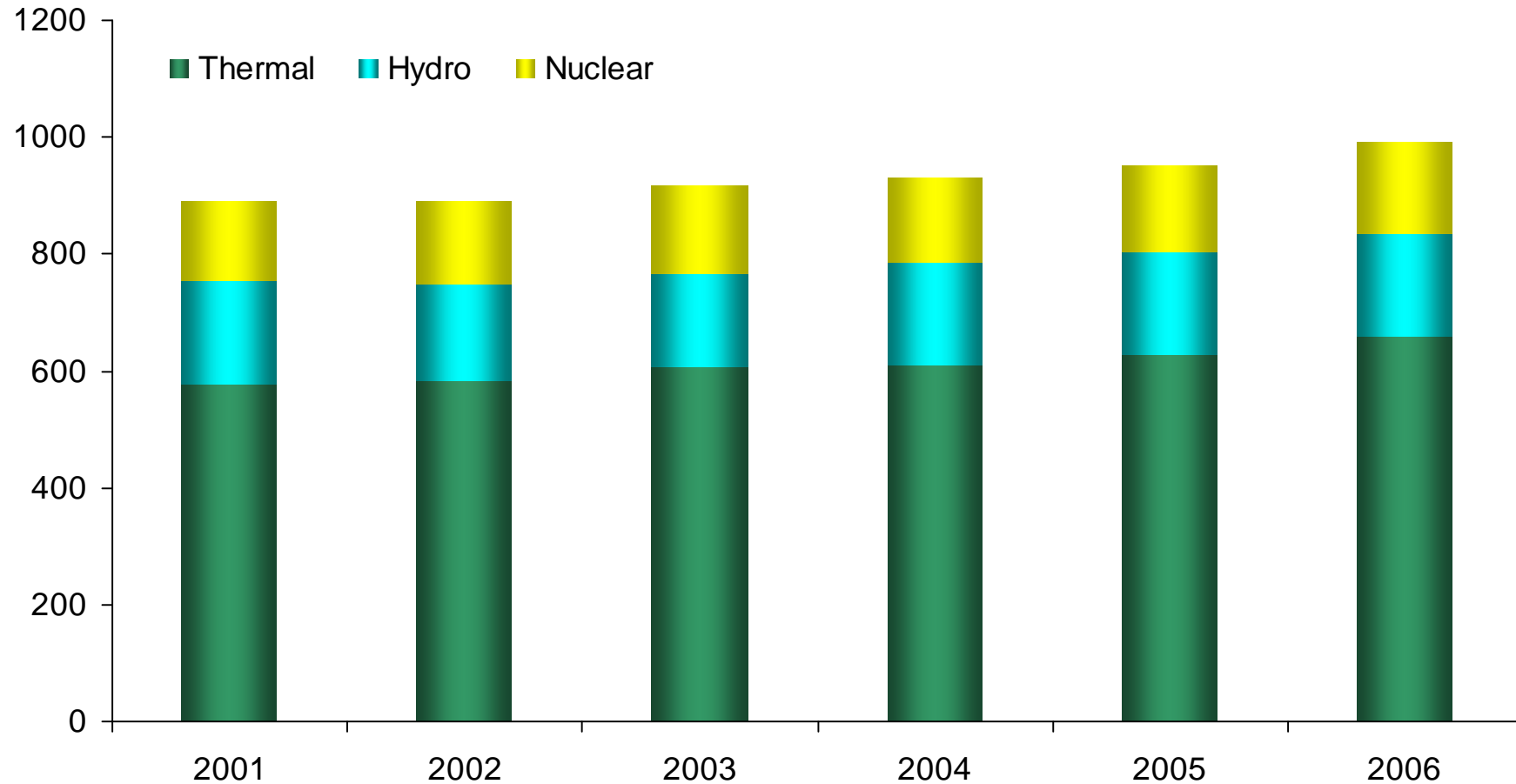
Generating capacity in selected countries in 1990-2005, '000 MW





Thermal generation has been a major source of electricity

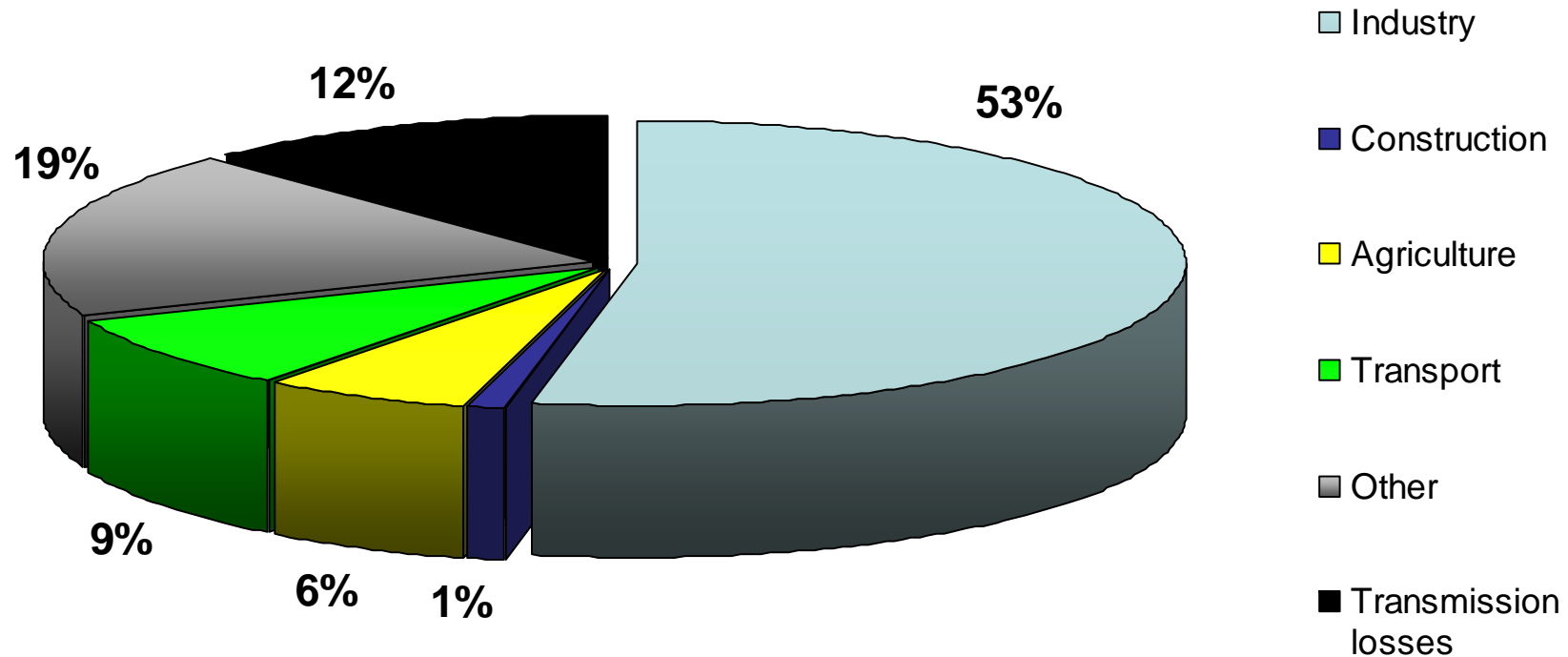
Structure of electricity generation in Russia, 2001-2006, billion KWh





Industry and transport account for 62% of Russia's electricity consumption

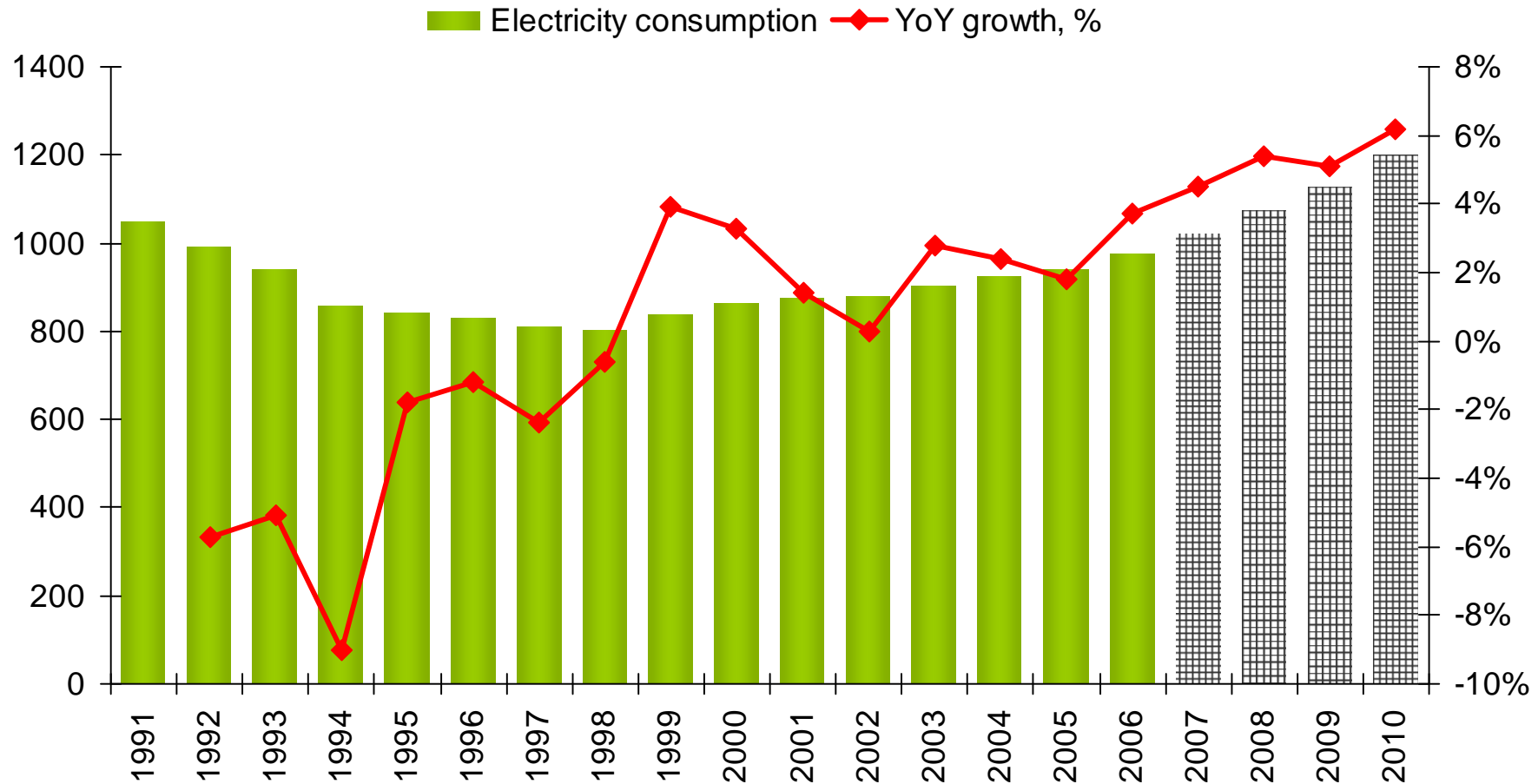
Structure of electricity consumption by sector, 2005, %





Electricity demand is expected to grow by 5%pa until 2010

Electricity consumption in Russia, billion KWh (LHS), and annual growth rate, % (RHS)

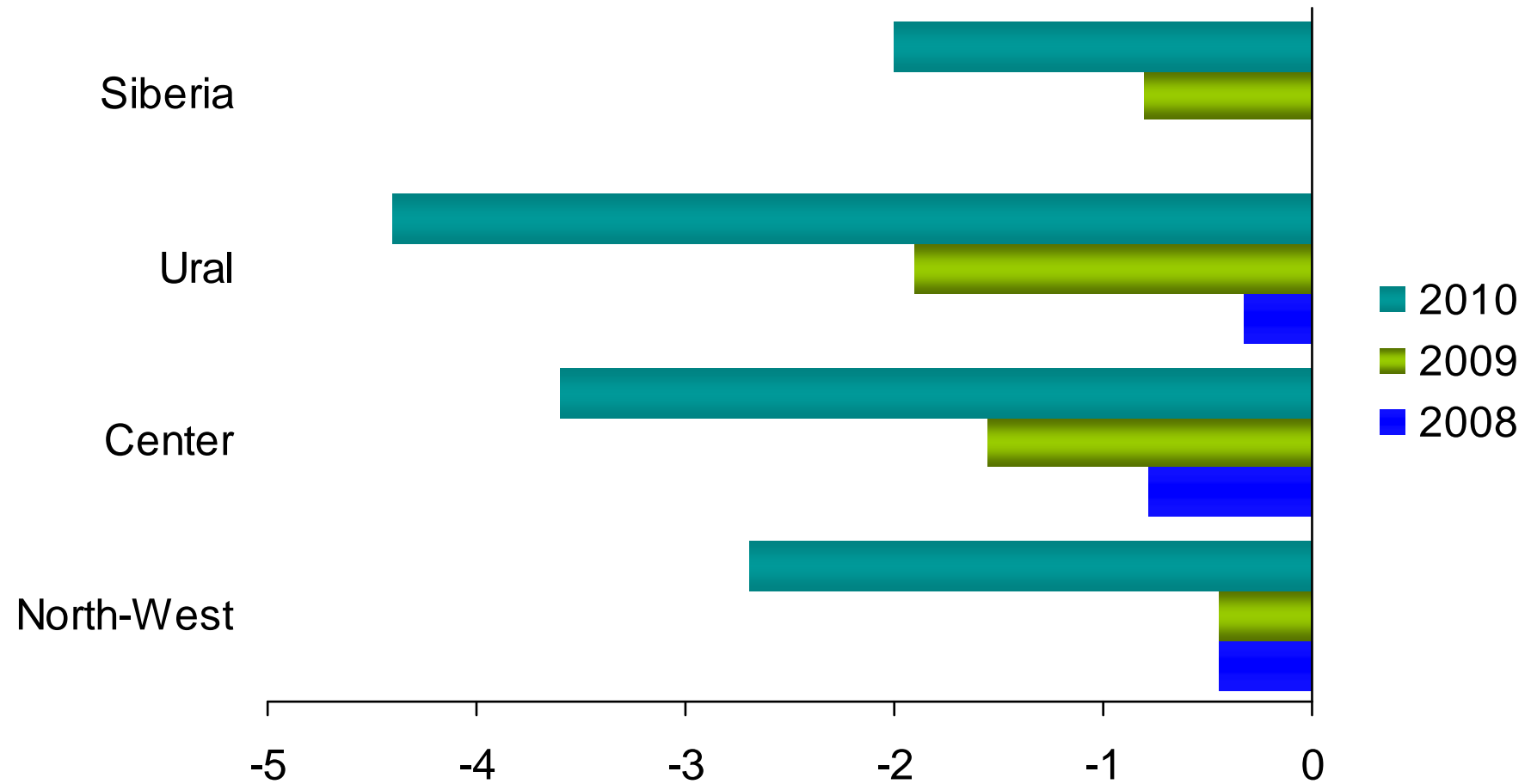


Data: InfoLine, RAO UES, MEDT



Shortages are imminent, with Center and Ural hit the most

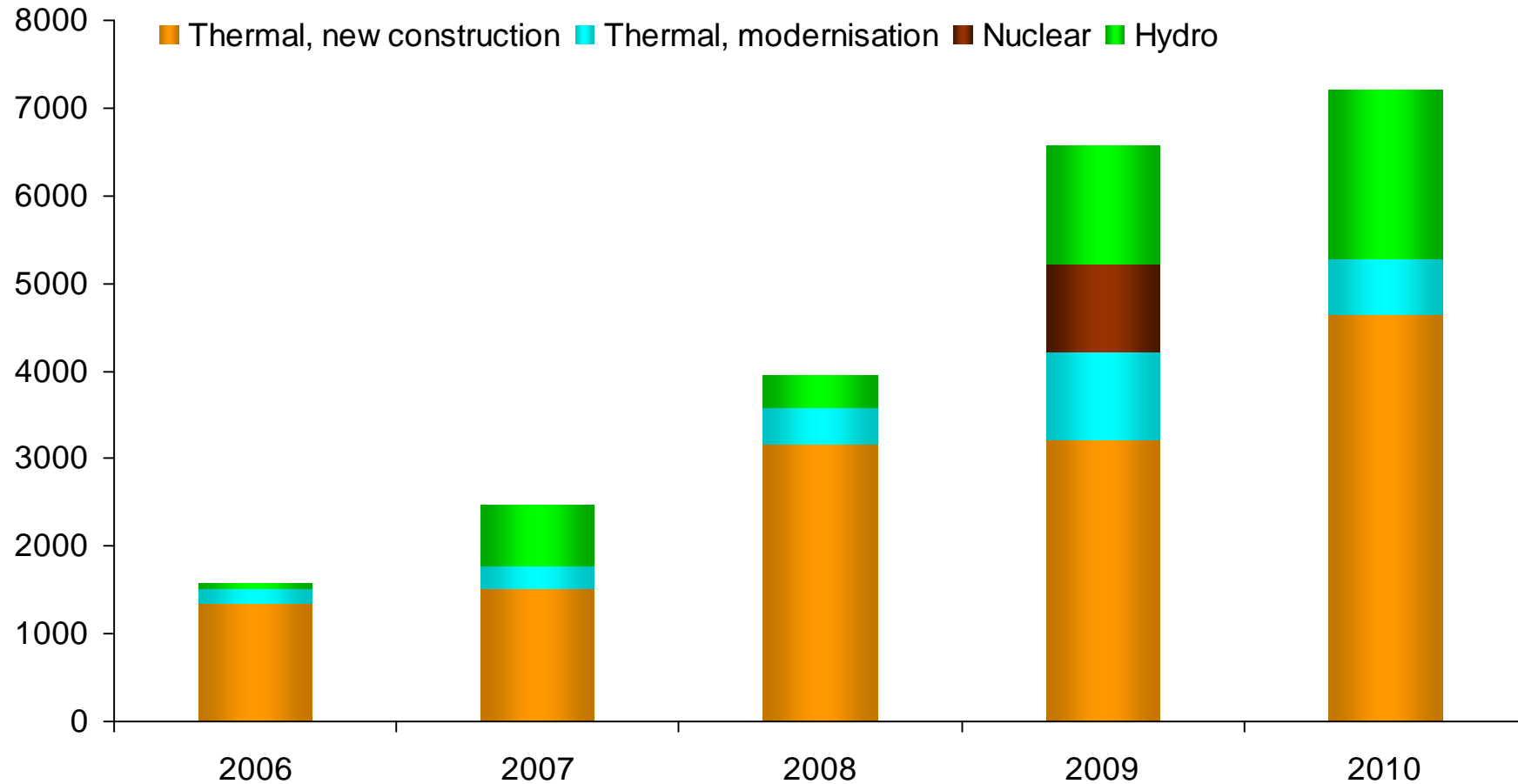
Forecasted deficit of capacity in Russia in 2008-2010 by region, '000 MW





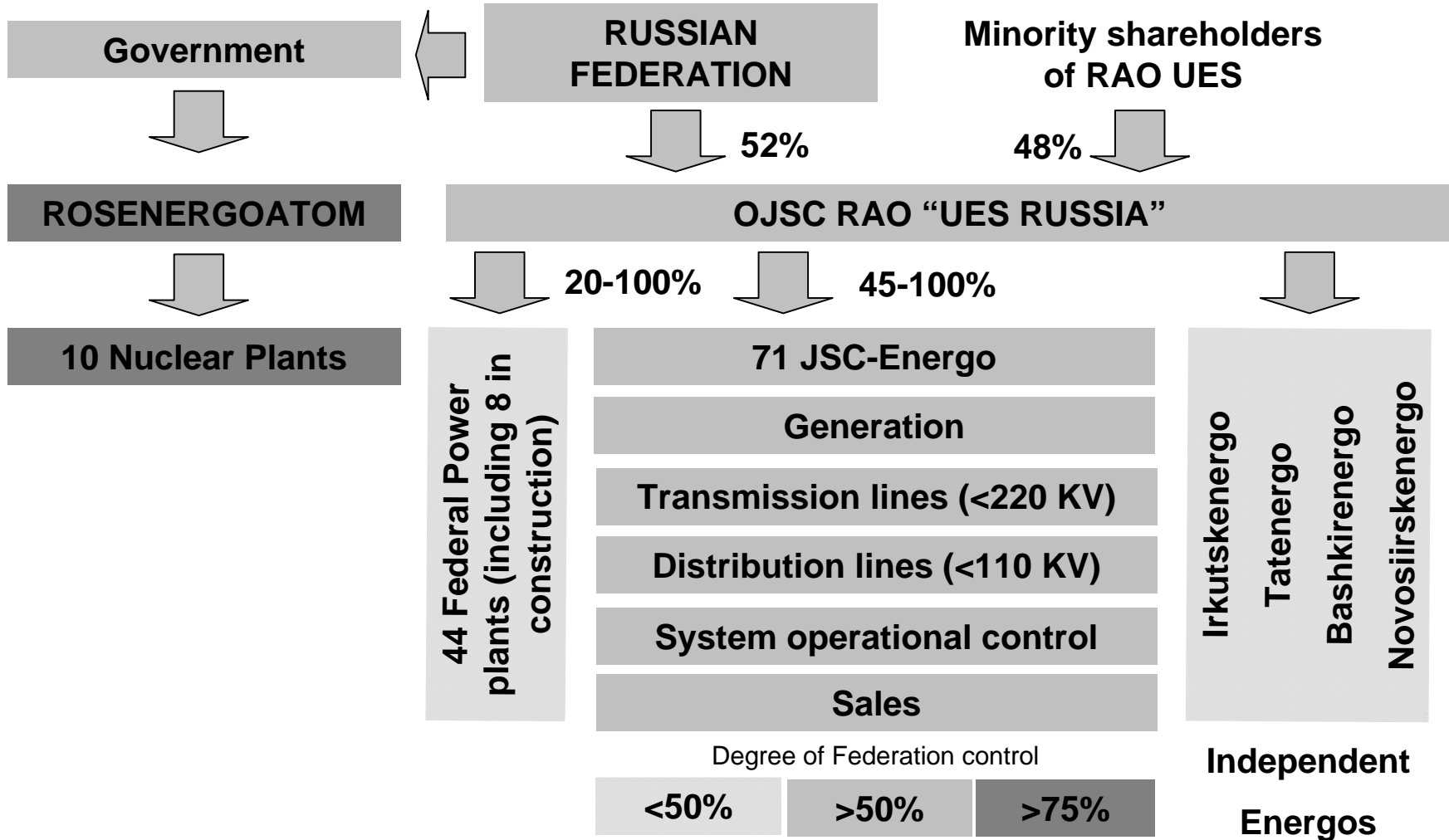
Majority of new capacity will be thermal

Forecast of generating capacity additions in Russia, 2007-2010, MW



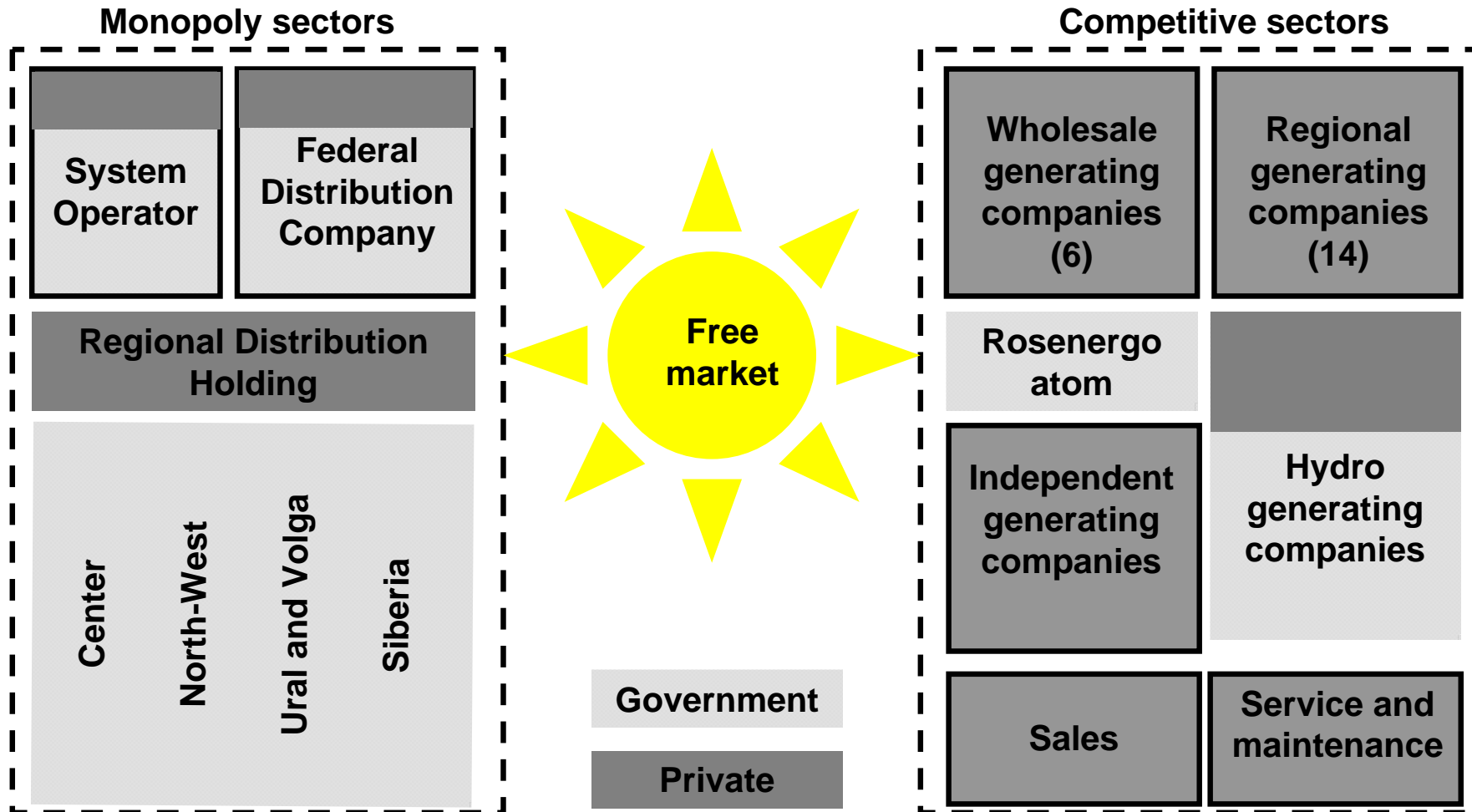


Ownership structure of the industry before the reforms





Targeted ownership structure after the reforms in 2008





Key conditions for the success of the reforms

1. Privatisation procedures and the final capital structure of the wholesale and regional generating companies
2. Effectiveness of the mechanisms of project financing and attracting private investment in generation

Key dangers that could jeopardize the results

1. High probability of persisting excess government control
2. Large share of strategic investors who control fuel supply (Gazprom, LukOil, SUEK) and energy consumption (Basil Element, Interros, Evraz, Renova).
Probability of cartel agreements
3. Lack of competition and uncompetitive prices in the regions with the low share of private investment
4. Conservation of low efficiency of power generation



New format of the wholesale electricity market (NOREM)

1. Introduced in September 1st, 2006
2. Direct contracts between suppliers of energy (generators and importers) and buyers (consumers, resellers and exporters)
3. Prices are regulated by the Federal Tariff Service (FTS)
4. Regulated contracts will be gradually phased out by the non-regulated (free market) sector, which accounts for only 5% of the market in 2007
5. Two types of trading in the free market: bilateral agreements and “market for the next day”
6. Capacity is now traded and priced separately from energy
7. All new generators and consumers from 2007 will be placed in the free market

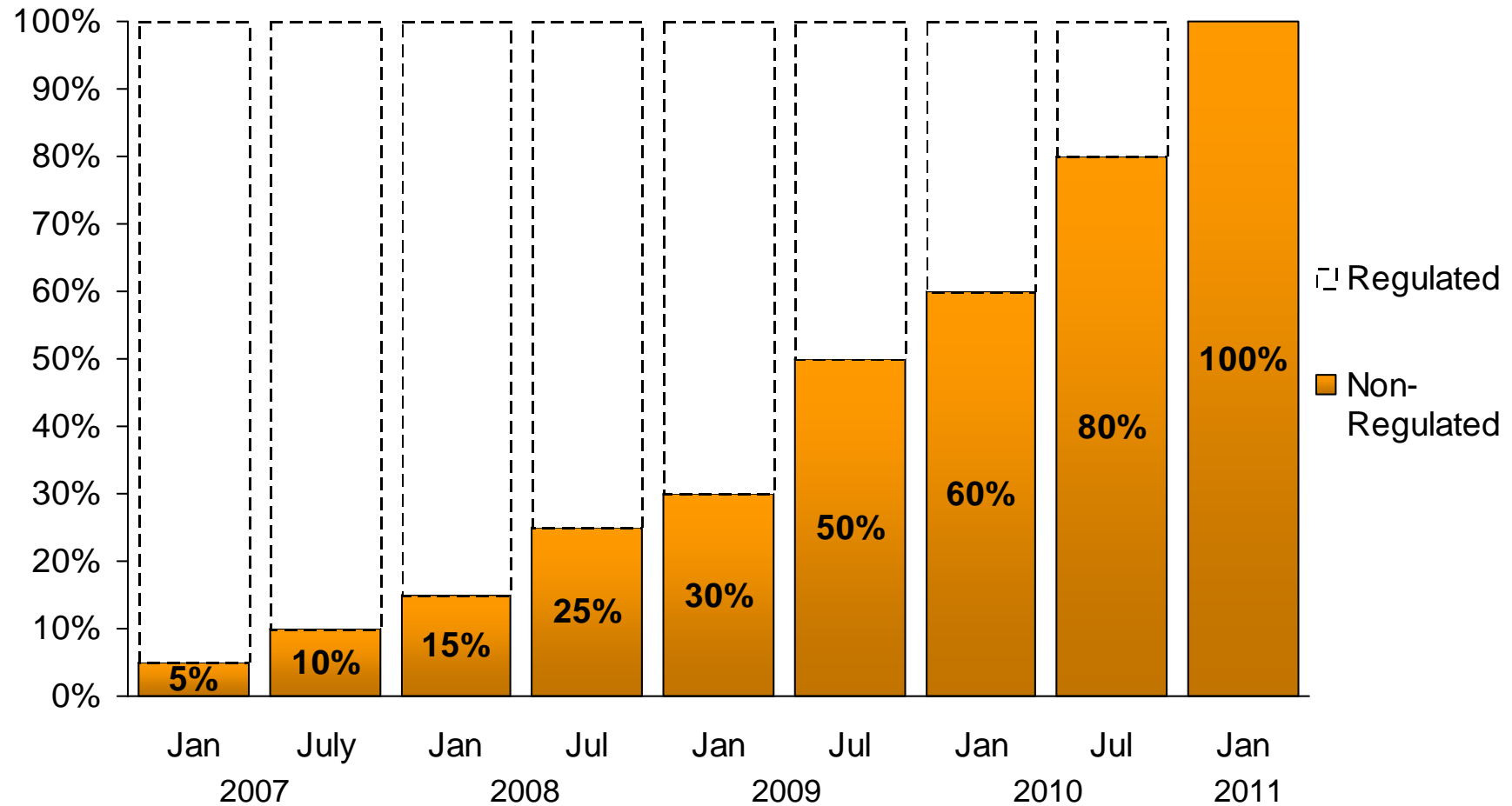
Principles of the retail electricity market

1. Default supplier – consumer’s last resort
2. The move towards non-regulated prices will occur in line with the wholesale market
3. Maximum retail prices reflect the average wholesale prices, transmission charges, service charges and sales margin



The market will gradually move to non-regulated prices

Approved split between regulated and non-regulated power tariffs in Russia, 2007-2011

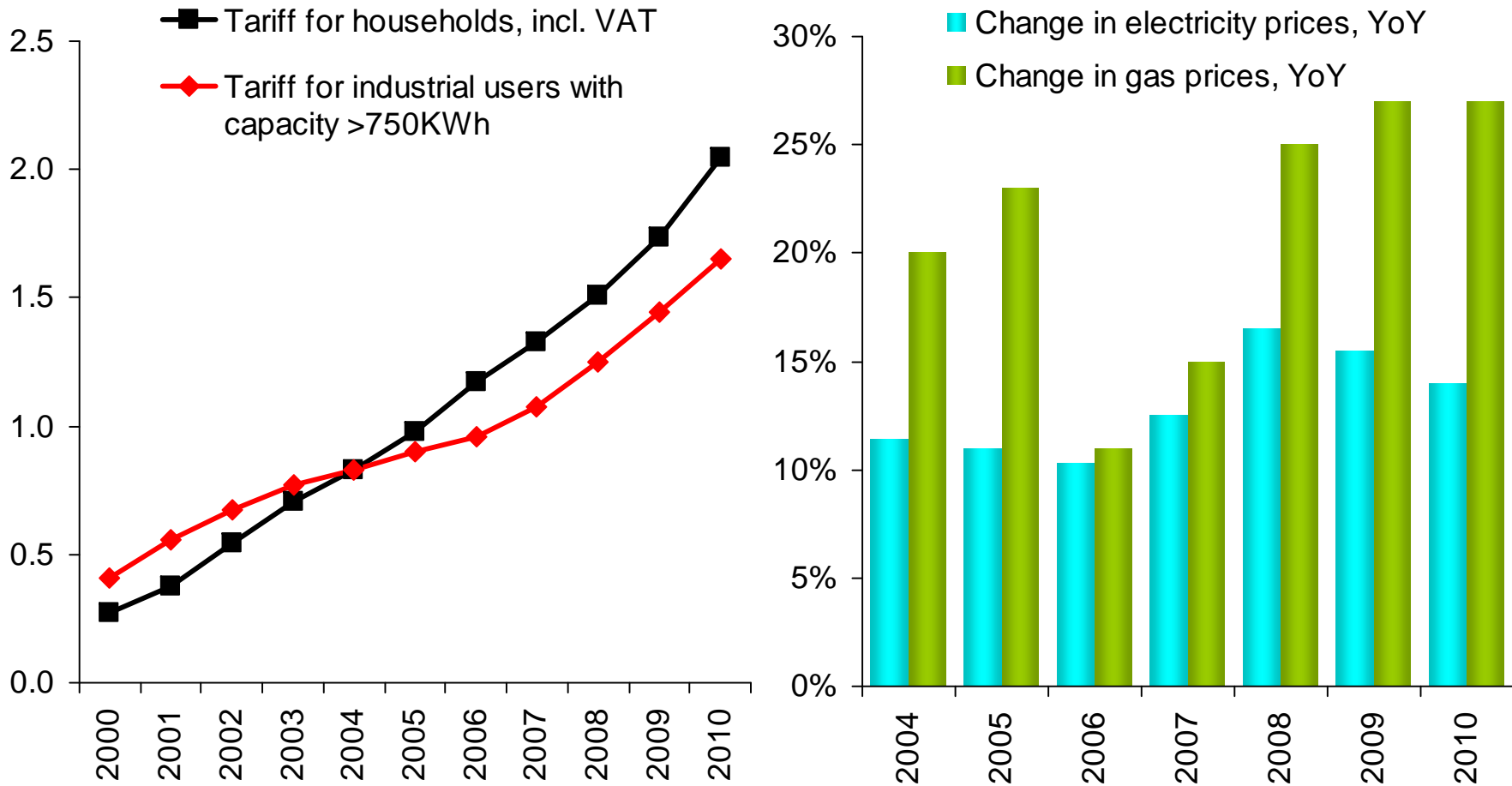


Data: InfoLine



Russia's electricity prices are likely to shoot up, partly to reflect rising gas prices

Average power tariffs, 2000-2010, RUR/KWh



Data: CRU, Infoline

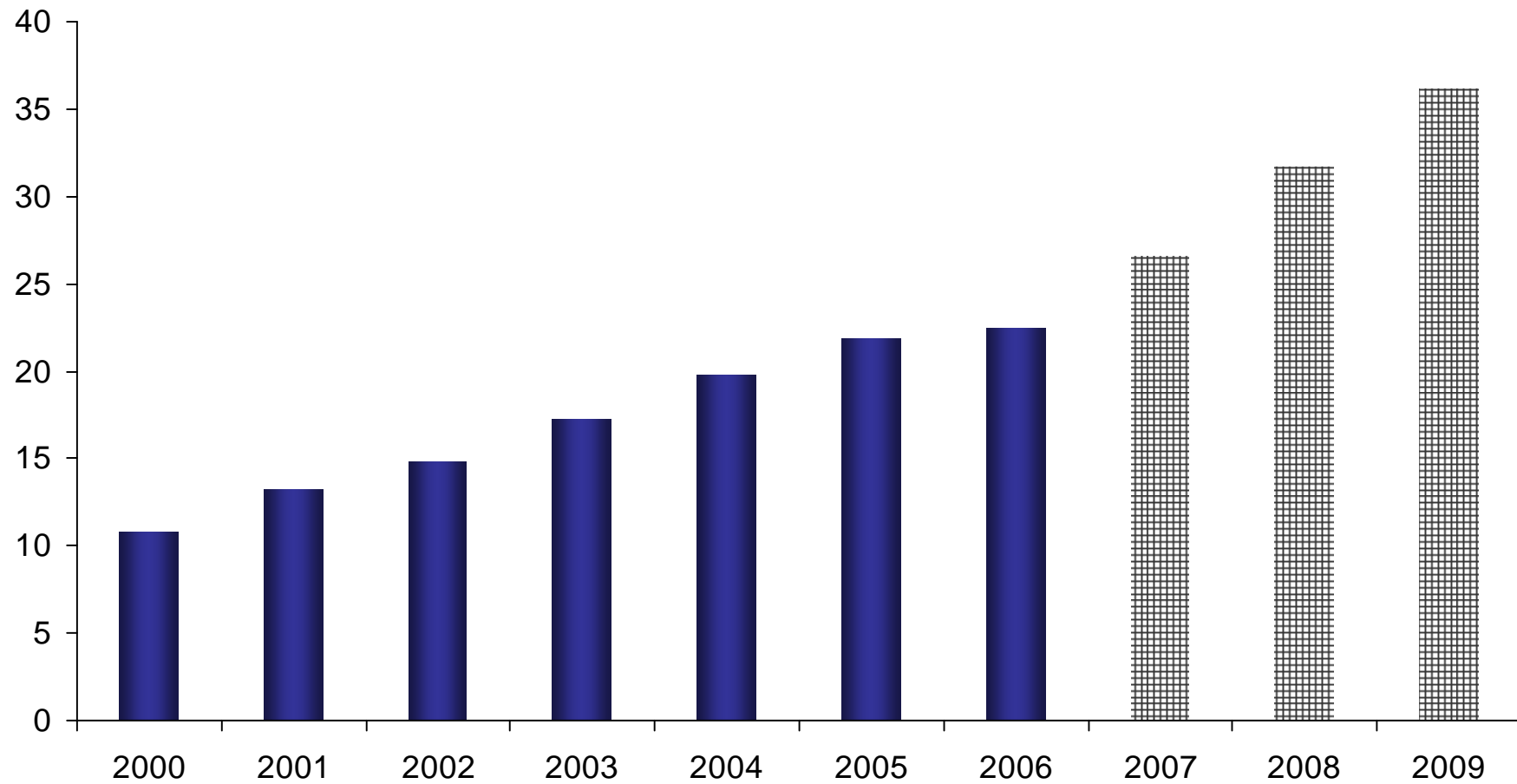


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Chelyabinsk's electricity prices are set to rise steeply

Estimated annual electricity prices for the Chelyabinsk plant, US\$/MWh, 2000-2009

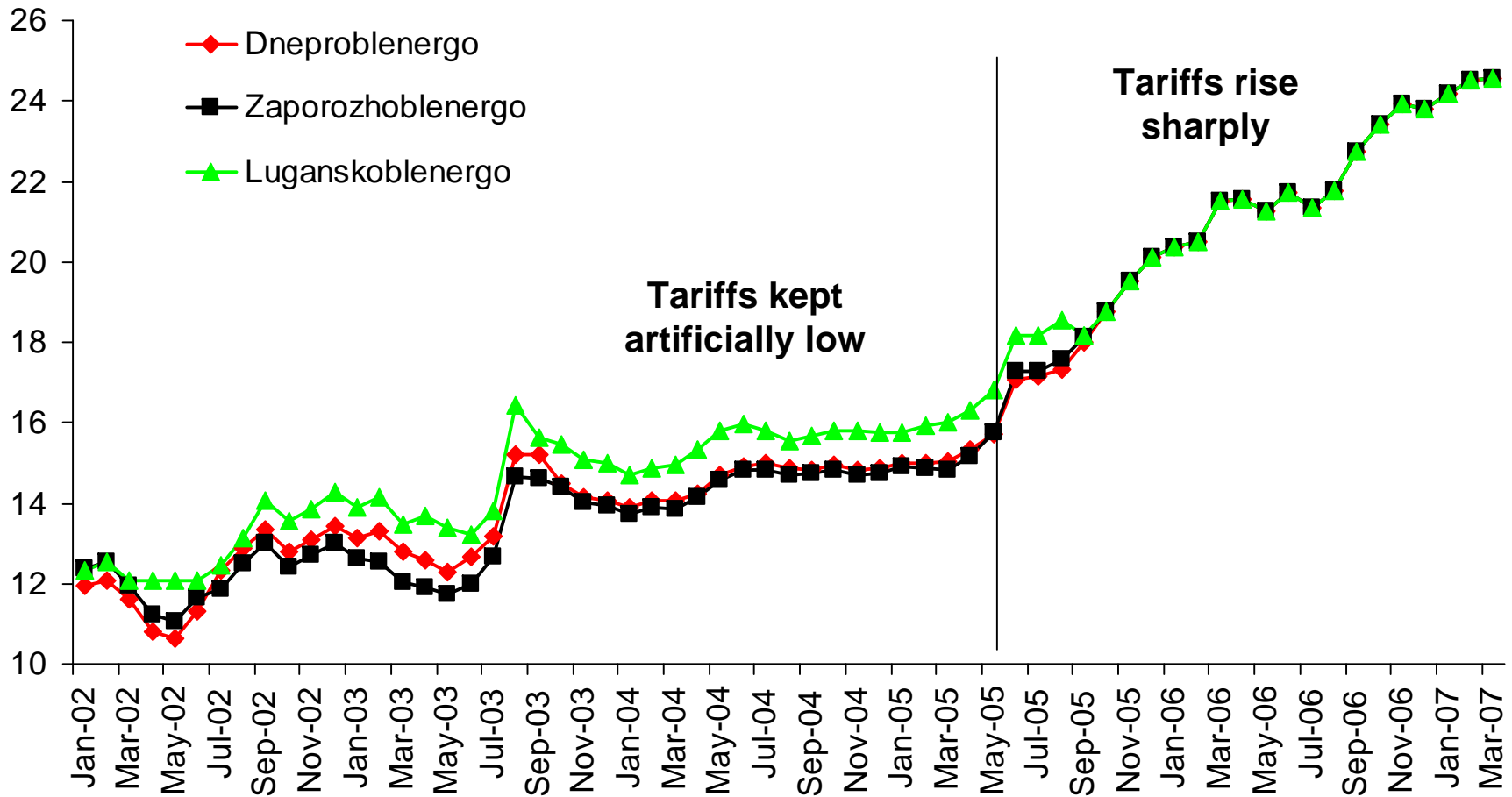


Data:
CRU



Ukraine has seen a sharp rise in tariffs since June 2005

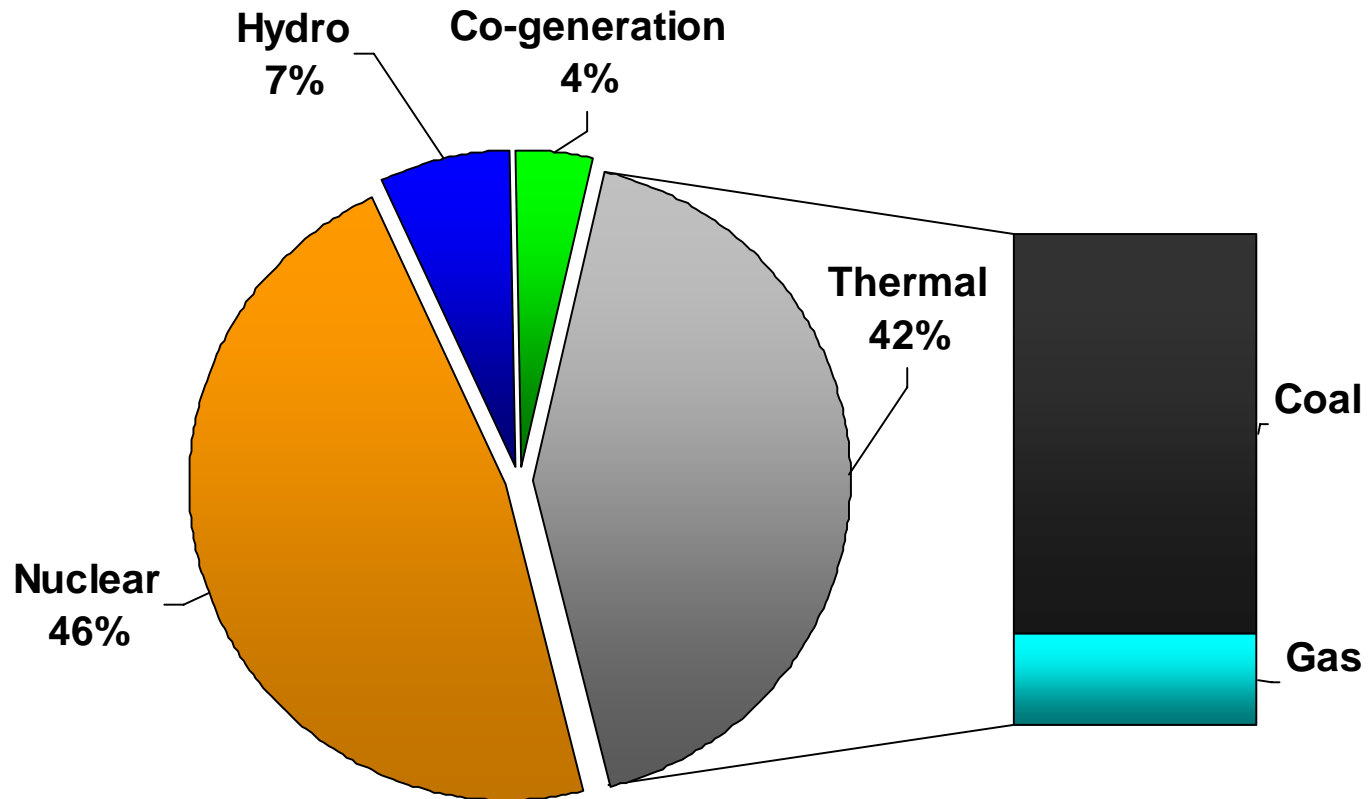
Retail electricity tariffs in ferroalloy production regions, kopeykas/KWh





Share of gas-fuelled power generation is minor in Ukraine

Structure of electricity generation in Ukraine, 2006, %





Ukraine's power tariffs are set to rise further

1. Market is heavily regulated, generation mostly in the hands of the government, all energy is distributed through the wholesale market
2. National Electricity Regulatory Commission (NERC) determines wholesale prices which affect retail tariffs. Direct power supply contracts are not allowed
3. Tariffs were kept artificially low for a long time but have now been allowed to rise to free market levels
4. Unification of tariffs in September 2005 fostered cross-subsidising of rural Western areas with poorly developed and expensive transmission networks
5. Gas prices have a minor effect on electricity prices. Correlation exists mainly with coal prices. Trend towards more reliance on coal due to rising gas prices
6. Opportunity cost – rising exports to Eastern Europe, mainly thermal power
7. CAPEX component is now included in the price to stimulate investment in transmission capacity and new generation
8. Gas-fuelled power station may become a target for acquisition by Russia
9. NERC announced a 14% increase in wholesale prices in 2007



Implications for individual CIS manganese plants vary

Country	Russia	Ukraine	Kazakhstan	Georgia
Plants	Chelyabinsk	Nikopol, Zaporozhje, Stakhanov	Aksu	Zestaphoni
Electricity sources	National grid	National grid	Captive	Captive
Impact of rising energy prices	Severe	Severe	Minimal	Minimal
Opportunities/ Possible changes	Building a 400-450MW captive coal fuelled power unit	Load modulation Direct power supply contracts in 2008 Market based tariffs	Remain profitable	Remain profitable



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Conclusions

1. Electricity prices are an important determinant of CIS manganese plants cost competitiveness
2. CIS power prices were low in the past giving cost advantages to the plants
3. Russia's electricity industry is facing power shortages due to strong demand growth and restricted growth of generating and transmission capacity
4. Reforms have been launched to bring competition to the electricity industry
5. Power tariffs in Russia are expected to rise on the back of the industry liberalisation, which will push ferroalloy plants towards captive power generation
6. Ukrainian tariffs are not directly influenced by the situation in Russia
7. Prices in Ukraine are set to rise further with the introduction of market principles, which will undermine cost competitiveness of the Ukrainian ferroalloy plants
8. Ukrainian producers may see some relief from the return to regionally differentiated retail prices and the possible introduction of direct supply contracts in 2008
9. Ferroalloy plants in Kazakhstan and Georgia are least affected by power price rises due to the reliance of captive electricity generation



**BULK FERROALLOYS
POWER TARIFFS
TO 2009**

CRU, the leading provider of business advisory services to the ferroalloys industry, is conducting a comprehensive study that examines power rates in the production of silicon, chromium and manganese ferroalloys. The study covers electricity supply arrangements to plants in all significant ferroalloy-producing countries around the world.

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A CRUcial time for intelligence on power tariffs to the ferroalloys industry

SUBSCRIBE NOW! GAIN A UNIQUE PERSPECTIVE ON THE KEY DEVELOPMENTS IN THE POWER MARKET THAT ARE AFFECTING FERROALLOY PRODUCERS WORLDWIDE. CRU'S APPROACH TO RESEARCH AND ANALYSIS COMBINES QUALITATIVE FORECASTING METHODS WITH CONTINUOUS INDUSTRY CONTACT.

Electric power is a vital legal and essential component in the production of all combined ferroalloys and is a major element in the production of ferroalloy products. Thus, the price of electricity is a critical determinant of the cost competitiveness of ferroalloy plants around the world. The study analyses power supply arrangements to ferroalloy plants worldwide. It also examines major developments in electricity markets around the world. As a result of widespread power industry deregulation, and the application of all cost-based methods, electricity prices to ferroalloy producers are increasingly determined by market forces. Strategic cost and the need for new investment in generation and transmission pricing strategies are also key factors in the market for electricity.

- The study covers:**
- Analysis of electricity market developments in key countries and regions of the world
 - Review of power supply arrangements at individual ferroalloy plants
 - Delineation of electricity rates for individual plants
 - Delineation of average power costs by product, country and company
 - Impact of exchange rate fluctuations
 - Power plant related finance projects

Covered Countries

Canada	Finland	Romania	South Africa
USA	Sweden	Slovak Republic	Zimbabwe
Mexico	France	Republic of Ghana	
Netherlands	Germany	Russia	India
Spain	Italy	South Korea	Japan
Argentina	Spain	Ukraine	South Korea
Ireland	Poland	Syria	China
Norway	Norway	Iran	Australia



CRU is an independent business analysis and consultancy group focused on the mining, metals, power, oil/gas, infrastructure and chemical sectors. Founded in 1988 and still privately owned to ensure its independence, the group employs more than 170 experts in London, Beijing, Sydney and New York within the United States. CRU's multi-sided business services are divided into three distinct areas:

- CRU ANALYTICS** – business analysis for the mining, metals, power and oil/gas sectors
- CRU STRATEGICS** – consulting for the mining, metals, power and oil/gas sectors
- CRU EVENTS** – conferences and event management for the mining, metals, power and oil/gas sectors

Thank you!

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Konstantin.Golovko@crugroup.com
Jorn.deLinde@crugroup.com