Russian Power Markets – Investor Viewpoint





The Second
Northern Dimension Forum
St.Petersburg
March, 2 2011

Seppo Remes

EOS Russia, Chairman of the Board

Holding MRSK, Lenenergo, MRSK North-West,

Member of the Board

Seppo Remes

Born 1955

Co-Founder; Chairman, Board of Directors EOS Russia AB

1) MRSK Holding, Board Member, Audit Committee Chairman, Member of the Strategy Committee, 2008-
2) Lenenergo, Board Member, Audit Committee Chairman, 2009-
3) North-Western MRSK, Board Member, Audit Committee Chairman, 2007-
4) Member of Boards: SIBUR, OMZ, Sollers
5) UES, Board Member, 2003-04, 2005-08, Member of the Strategy and Reform Committee, 2002-08, Member of the Valuation Committee, 2002-08, Chairman of the Audit Committee, 2003-08
6) Federal Grid Company (FSK), Board Member, 2008
7) RusHydro, Board Member, 2007-2008
8) Center MRSK, Board Member, 2007-08, Volga MRSK, Board Member, 2007-09,
9) System Operator, Board Member, 2007-08, OGK-6, Board Member, 2007-09
10) Vostok Nafta, Director, 2003-2004, Vostok Energo, CEO, 2001-03
11) European Business Club in Russia, Chairman, 1997-2003
12) Neste/Fortum, CVP (Russian Affairs), 1993-2001
13) Licenciate in Economics, Turku School of Economics

I. BASICS

II. RUSSIAN POWER SECTOR REFORM 2003-2009, CORE ELEMENTS

III. FURTHER REFORM TASKS & UNSOLVED PROBLEMS

IV. WHY RUSSIAN POWER IS INTERESTING INVESTMENT OPPORTUNITY?

Basics

- **4TH LARGEST ELECTRICITY MARKET IN THE WORLD**

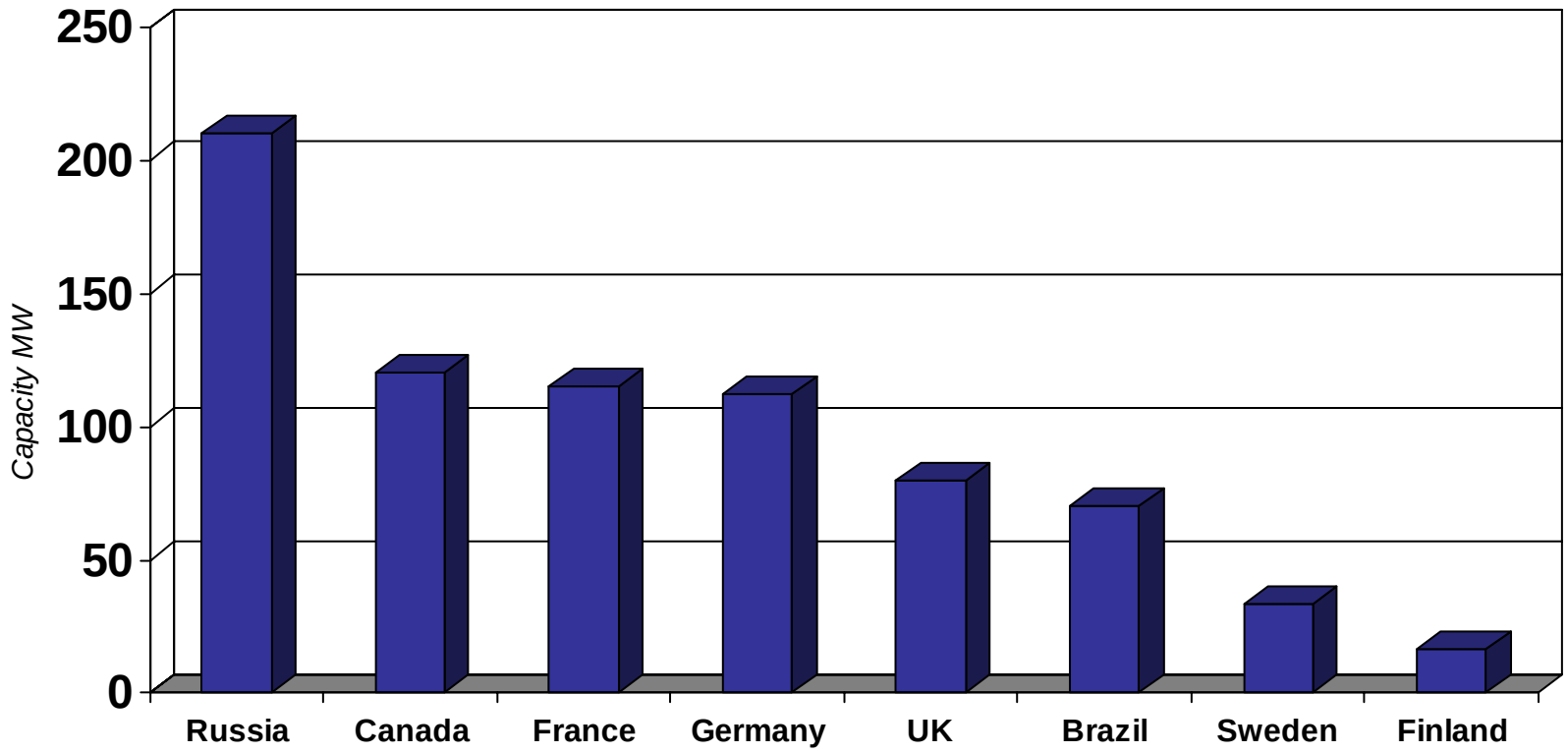
~ 7 times Sweden, 14 times Finland

~ more than 1 billion Kwh

~ thermal – 68%; hydro – 16%; nuclear – 16%

- **ROUGHLY 225 GW OF CAPACITY**
- **MORE THAN 30 NUCLEAR REACTORS**
- **MORE THAN 80% OF THERMAL STATIONS ARE GAS-FIRED**
- **FUNDAMENTAL REFORMS IMPLEMENTED IN 2003-2010**

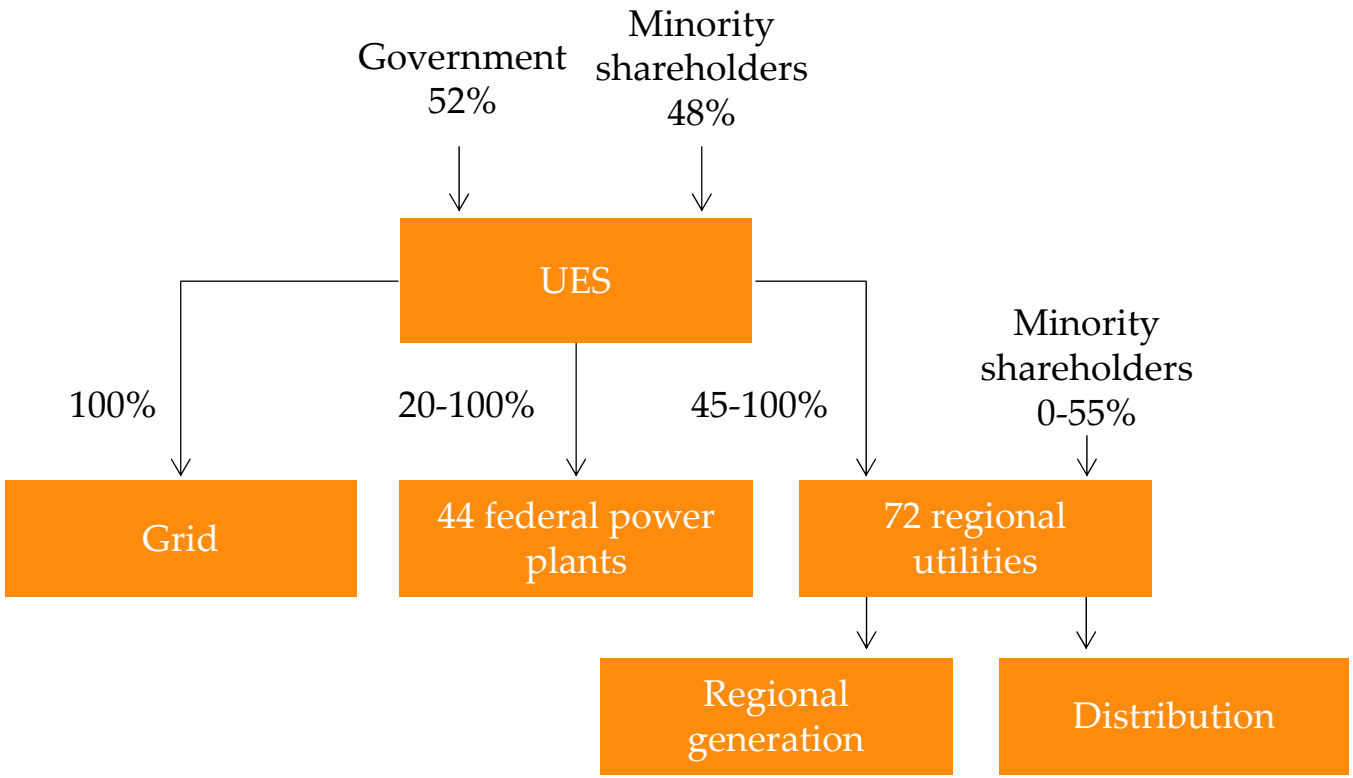
Russian electricity sector is very large



Russian power sector reforms implemented

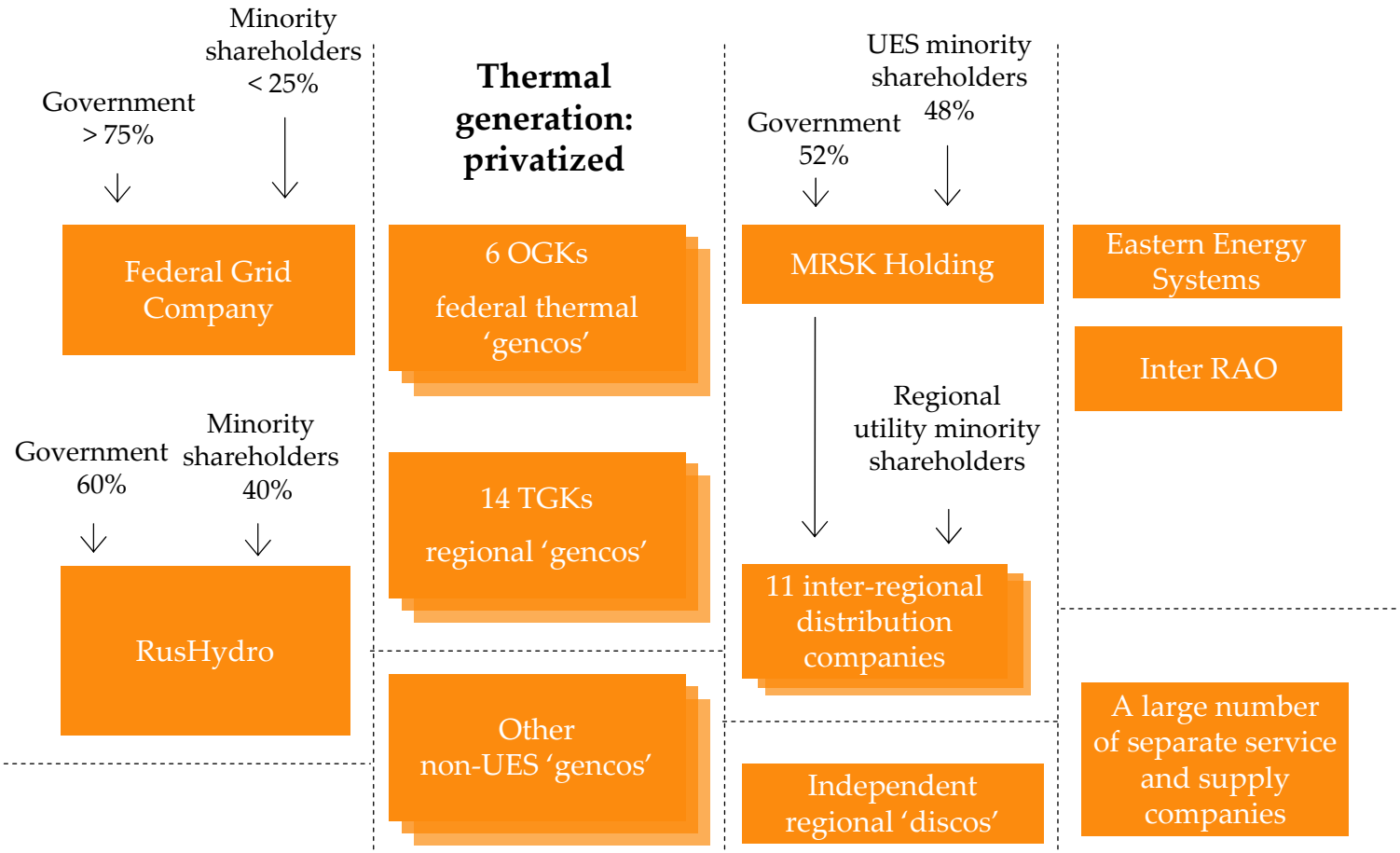
1. **Segregation of natural monopolies (distribution, grid, dispatching) from competitive sectors (production, sales, services) – huge reorganization**
2. **Creation and liberalization of power markets**
   - electricity markets now 100% liberalized
   - capacity markets
3. **Privatizations**
4. **Attractions of investments, Russian and foreign**
5. **Creation of regulations, especially RAB in distribution**

Simplified UES Structure in 2004



Source: EOS estimates

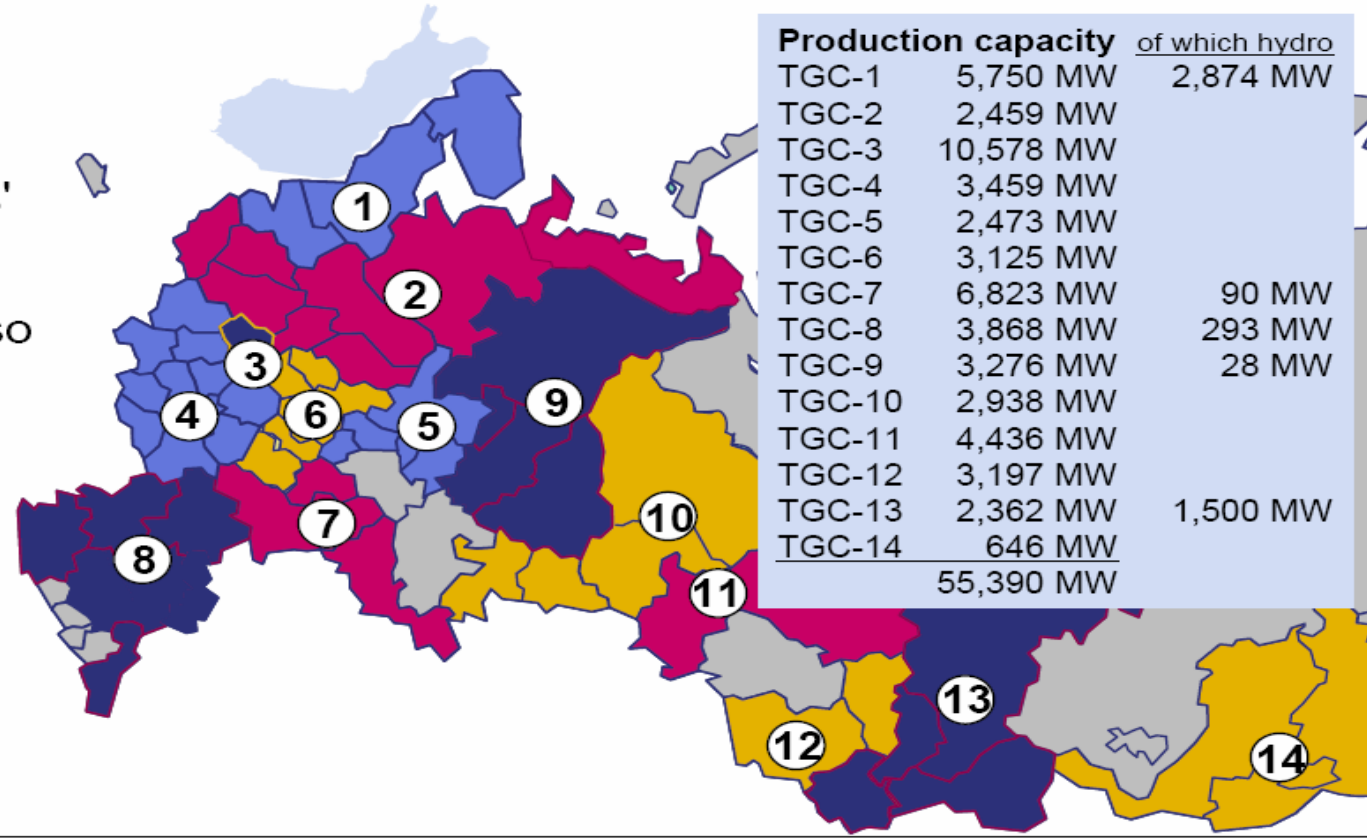
Simplified Industry Structure



Source: EOS estimates

Territorial generation companies (TGCs)

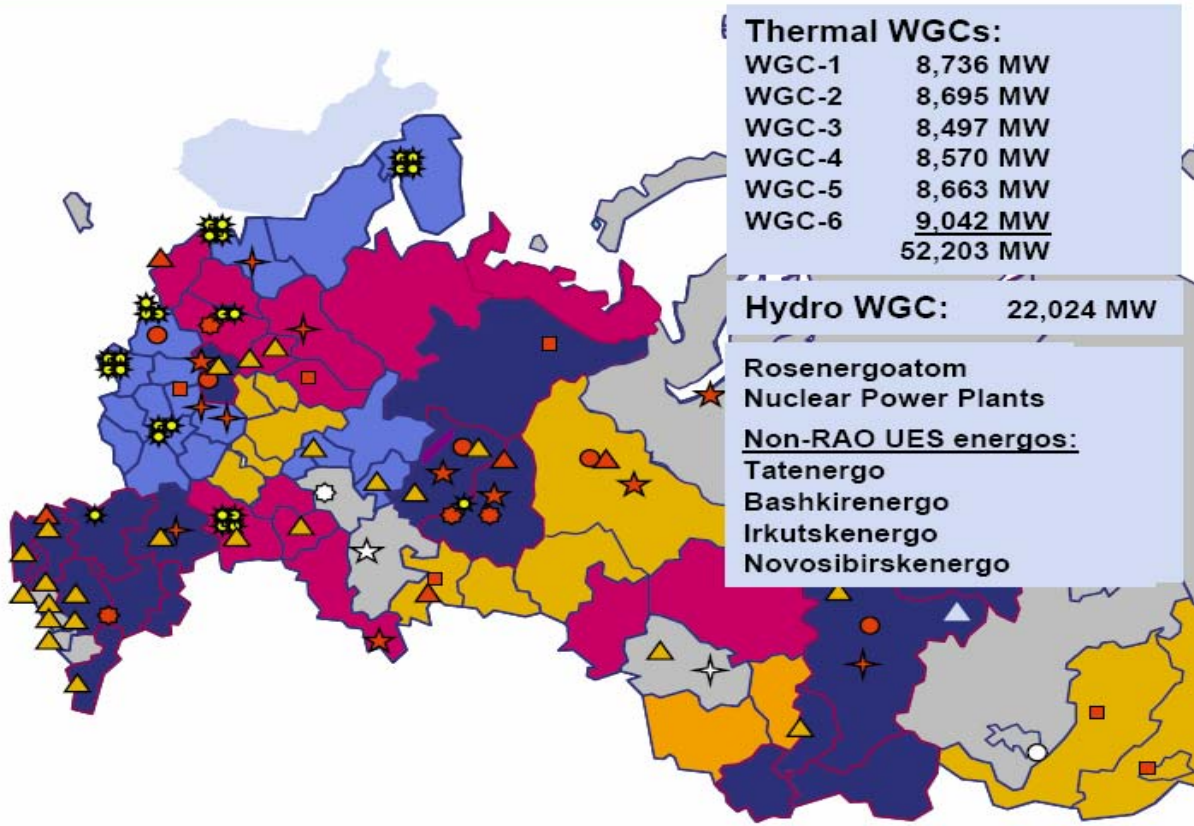
- Companies combined on a territorial basis from regional energos' generation assets
- TGCs may include also heat assets
- TGC-1 in northwest Russia is the 3rd largest TGC



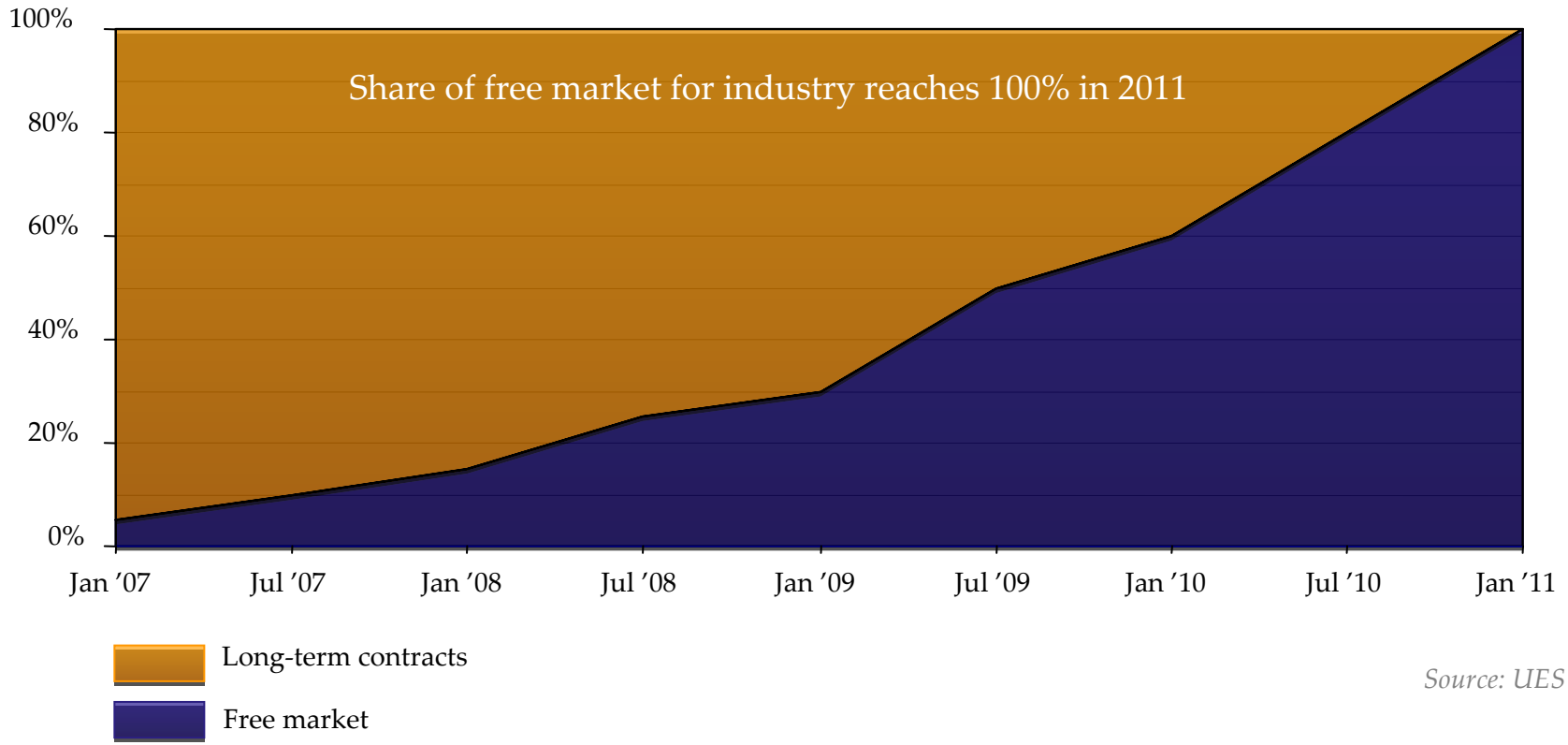
	Production capacity	of which hydro
TGC-1	5,750 MW	2,874 MW
TGC-2	2,459 MW	
TGC-3	10,578 MW	
TGC-4	3,459 MW	
TGC-5	2,473 MW	
TGC-6	3,125 MW	
TGC-7	6,823 MW	90 MW
TGC-8	3,868 MW	293 MW
TGC-9	3,276 MW	28 MW
TGC-10	2,938 MW	
TGC-11	4,436 MW	
TGC-12	3,197 MW	
TGC-13	2,362 MW	1,500 MW
TGC-14	646 MW	
	55,390 MW	

Thermal and hydro wholesale generation companies

- Each company will include power plants across the Russian Federation
- The size of thermal WGCs about 9,000 MW each, the hydro WGC about 22,000 MW
- Auctions planned for 2006 - 2007



Wholesale Liberalization



Source: UES

Generation Obtained External Financing

March 07

OGK-3
37.9%
601 $/kW
$3.1 bln

April 07

TGK-3
28.9%
796 $/kW
$2.3 bln

May 07

TGK-5
26.8%
496 $/kW
$0.45 bln

June 07

OGK-5
25.03%
669 $/kW
$1.5 bln

September 07

OGK-4
69.4%
763 $/kW
$5.7 bln

TGK-1
47%
709 $/kW
$2.8 bln

OGK-2
12.2%
669 $/kW
$0.64 bln

October 07

OGK-6
17.43%
567 $/kW
$0.85 bln

TGK8
56,7%
618 $/kW
$1,7 bln

December 07

TGK-9
51.9%
663 $/kW
$1,3 bln

TGK-12
7.3%
417 $/kW
$0.13 bln

March 08

TGK-10
76.5%
863 $/kW
$3.1 bln

TGK-2
41.1%
568 $/kW
$633 mln

TGK-6
50%
506 $/kW
$1.1 bln

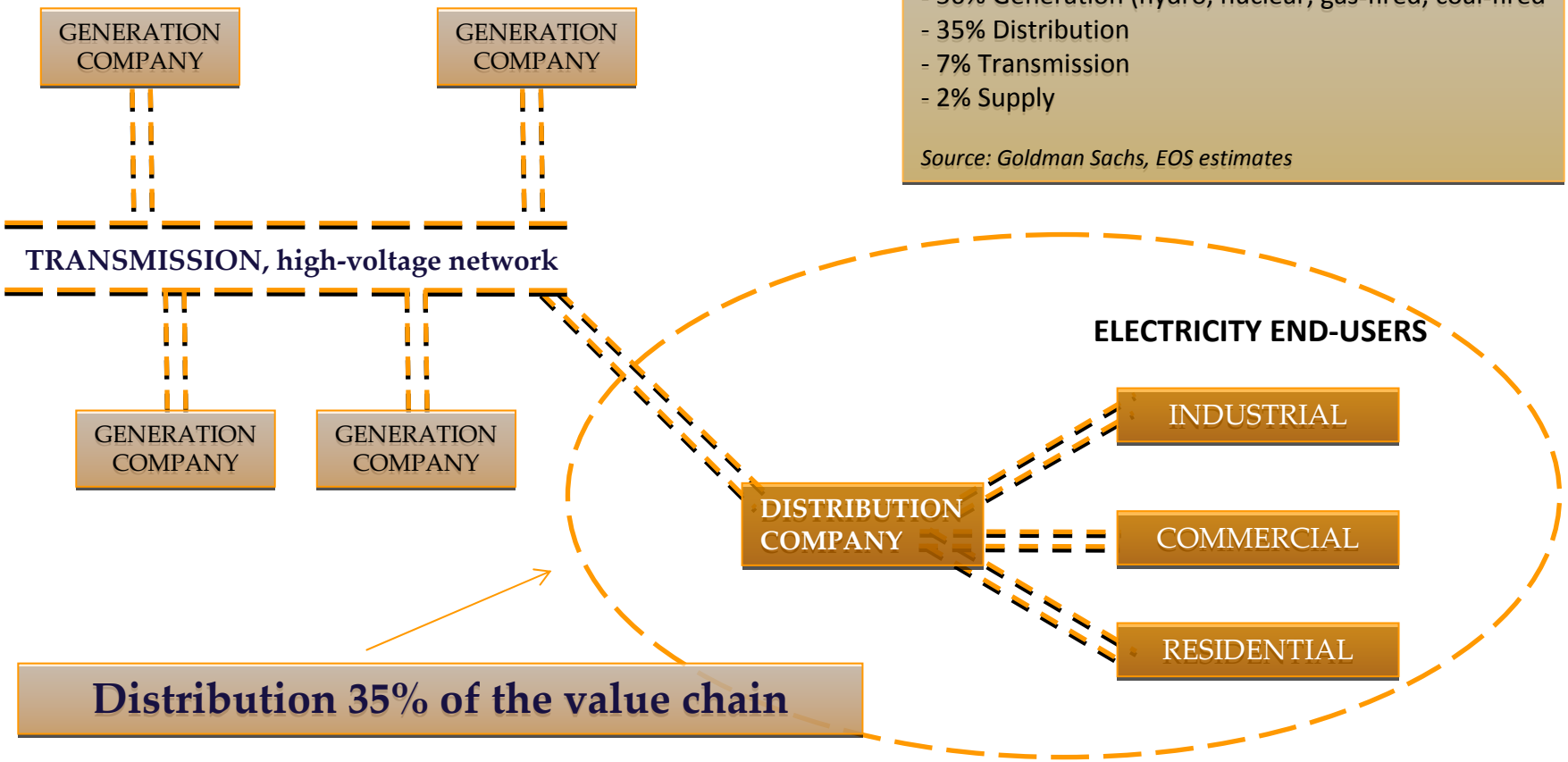
Russian Electricity Distribution

Distribution - Major Part of the Value Chain

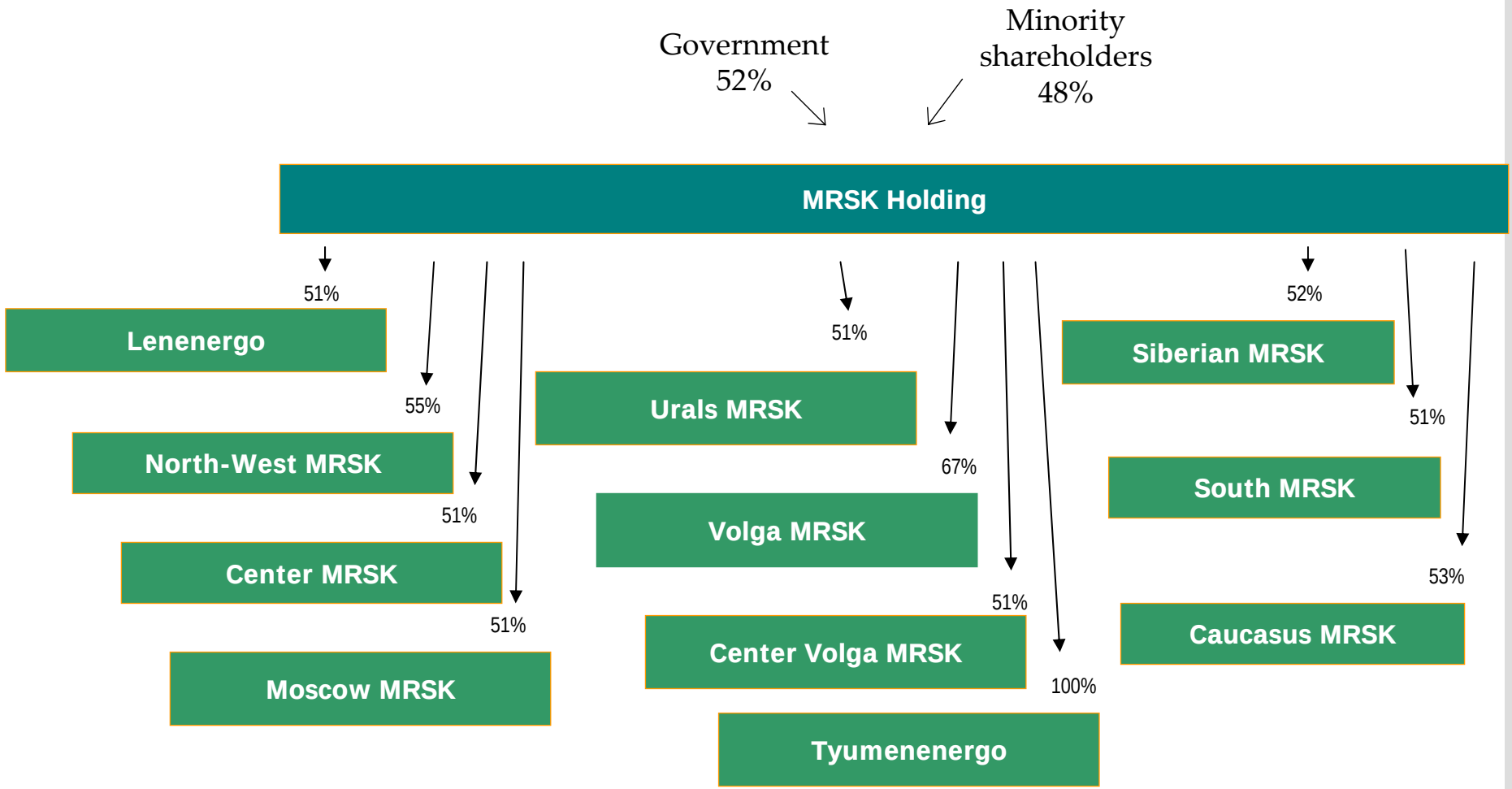
Rough approximation of the value chain:

- 56% Generation (hydro, nuclear, gas-fired, coal-fired
- 35% Distribution
- 7% Transmission
- 2% Supply

Source: Goldman Sachs, EOS estimates



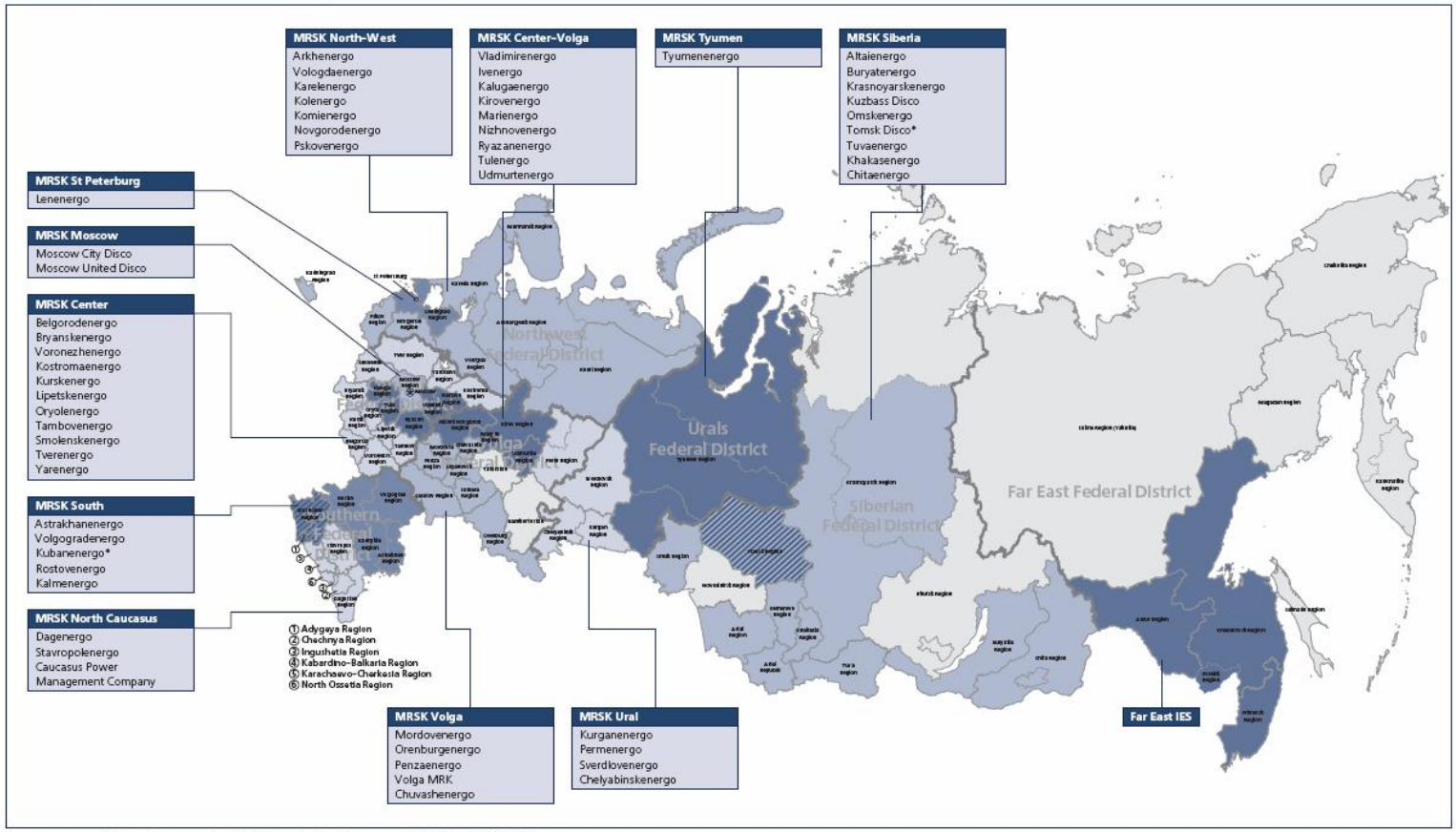
Russian Electricity Distribution Structure



Source: MRSK Holding

Massive Distribution Assets

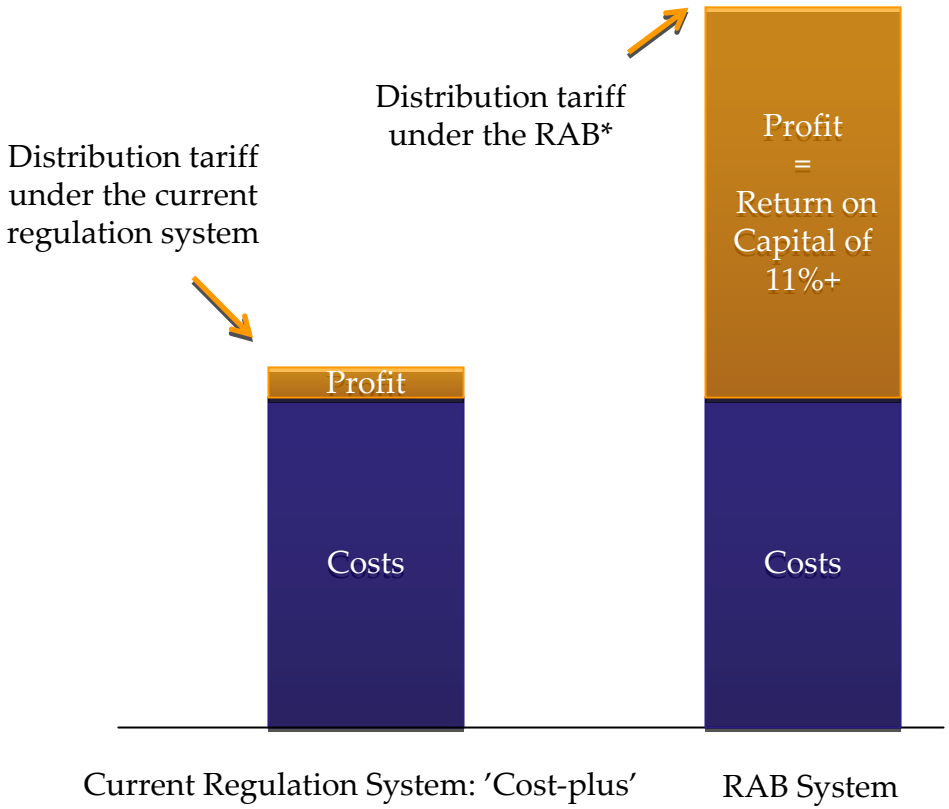
Electricity distribution sector configuration



* were not consolidated into respective MRSKs, majority stakes currently held by MRSK Holding

Source: MRSK Holding

RAB for Distribution*



Note: This is just a conceptual illustration designed to highlight the theoretical impact of the RAB on the distribution tariffs.

*** RAB = Regulated Asset Base regulation. Source: EOS**

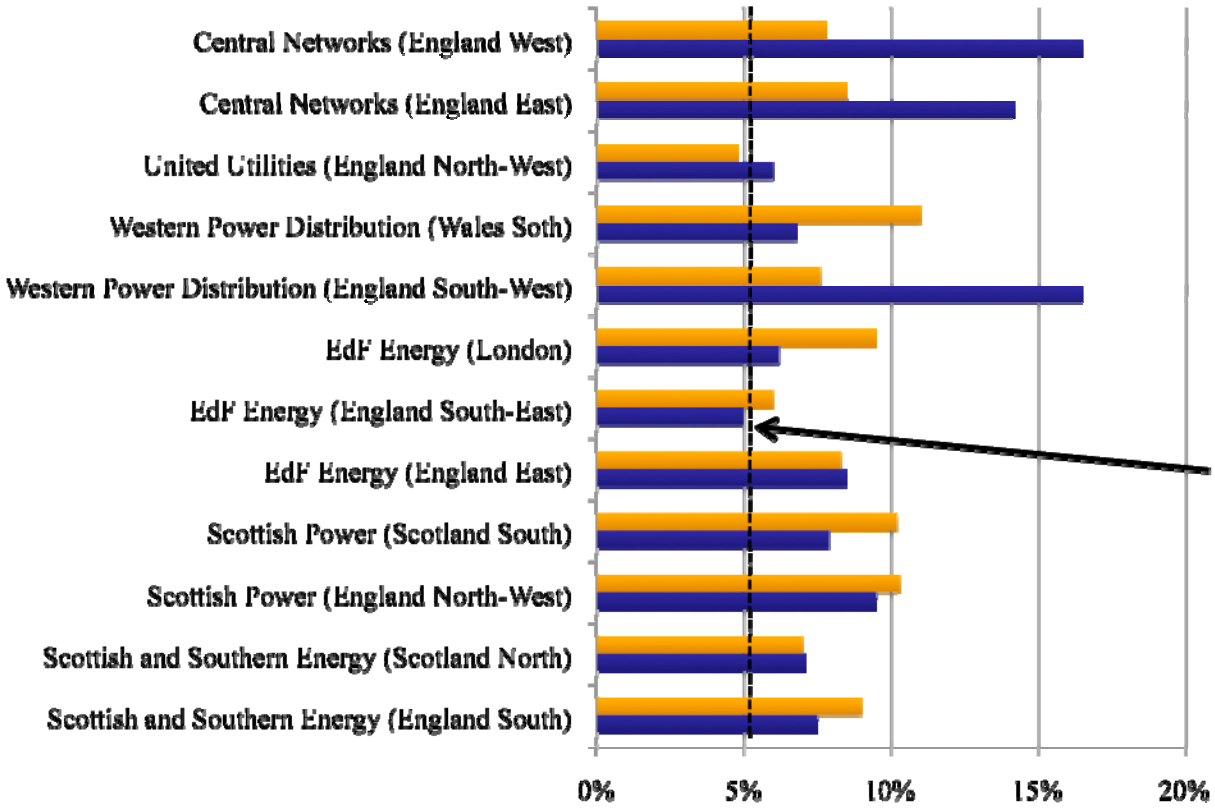
RAB – REGULATED ASSET BASE

- **Long-term tariff commitment: 3-5 years**
- **External, higher-than-expected costs compensated ex-post**
- **11% return on capital for all new assets, and for old ones from third year (first year - 6%, second – 9%)**
- **Companies can keep all additional revenues from cost-cuttings, efficiency improvement for 5 year period**
- **So-called X-factor: regulatory cost-cut requirement/annual (from 0,5-2%)**
- **iRAB = initial level of RAB values for overall old assets defined by 5 year investment needs to-be-financed from profits**

  = in fact, RAB includes investment component
- **Annual uncontrollable OPEX adjustments based on pass-through principle**

RAB May Allow Large Outperformance

UK Distribution Companies Outperforming RAB Returns



These companies had in 2005-06 RAB returns of 5-17% and an **average ROE of 29%**

Source: Renaissance Capital

Future Tasks - Problems

1. Capacity markets: today's capacity payment system not genuinely market – based, but acceptable for generators

1) capacity market modelling rather difficult technically: necessity to limit windfall profit, e.g. for hydro; probably need to take into account both OPEX and CAPEX – no dual marginal pricing

2) ideas: a) smoothen volatility, price peaks

b) market mechanism to initiate new capacity investments before deficits

=> today's decisions to be re-addressed after 3-4 years, when most of investment commitment have been implemented

3) problem of today's model: old capacity tends to disappear too quickly => too much too costly new investments

4) from administrative to real market

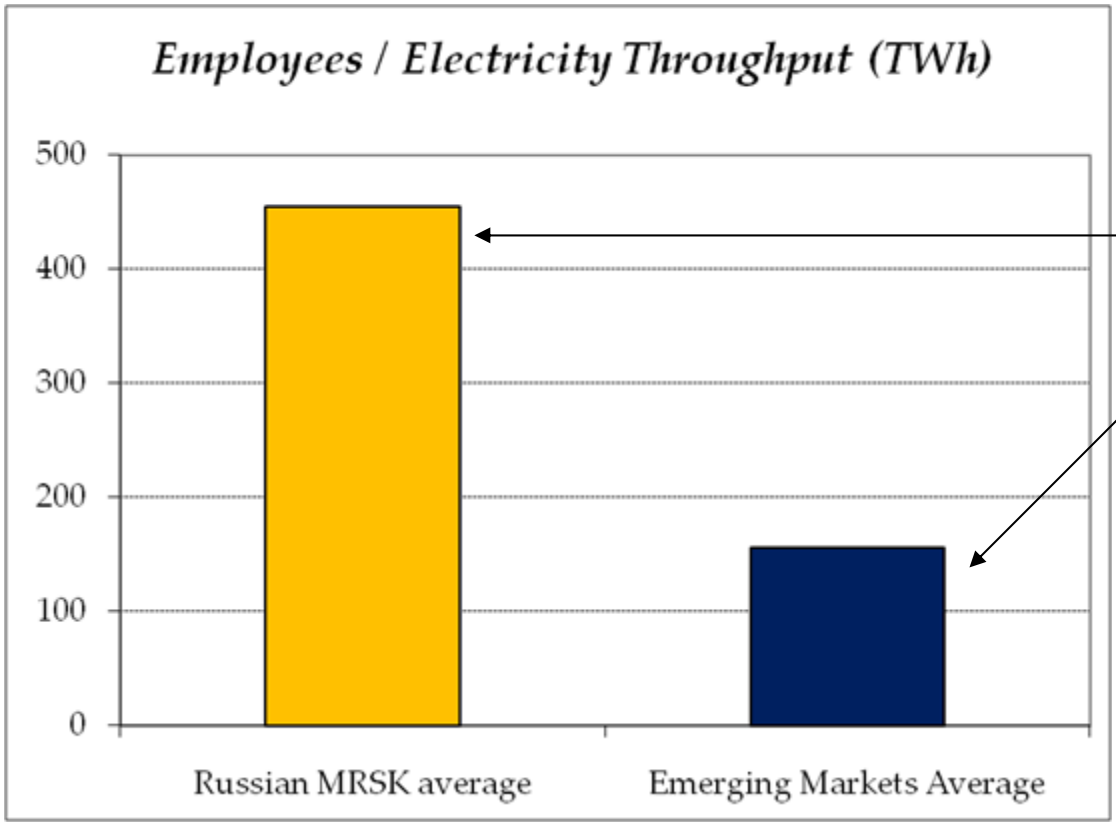
5) from dual to united market

2. RAB regulation also to heat distribution & production:

- heat distribution: classic RAB

- heat production: most obviously approach to be based on relative advantage of heat co-generation compared to pure heat generation (boilers) = RAB with relative/regulated price caps

Operational Inefficiencies: potential for efficiency improvement



Nearly 3 times more employees per TWh than EM peers

Russian average: MOESK, MRSK North-West, MRSK Center-East, MRSK Center-Volga, MRSK Volga, MRSK North Caucasus, MRSK South, Kubanenergo, MRSK Urals, MRSK Siberia.
Emerging Markets average: Elmu (HUN), Emasz (HUN), Equatorial Energia (BRA), Celesc (BRA), Prazhka Energetika (CZE)

Note that the Russian Employees/Throughput ratio is set to increase further when the companies start to invest in new asset

Source: EOS estimates

Distribution Ownership

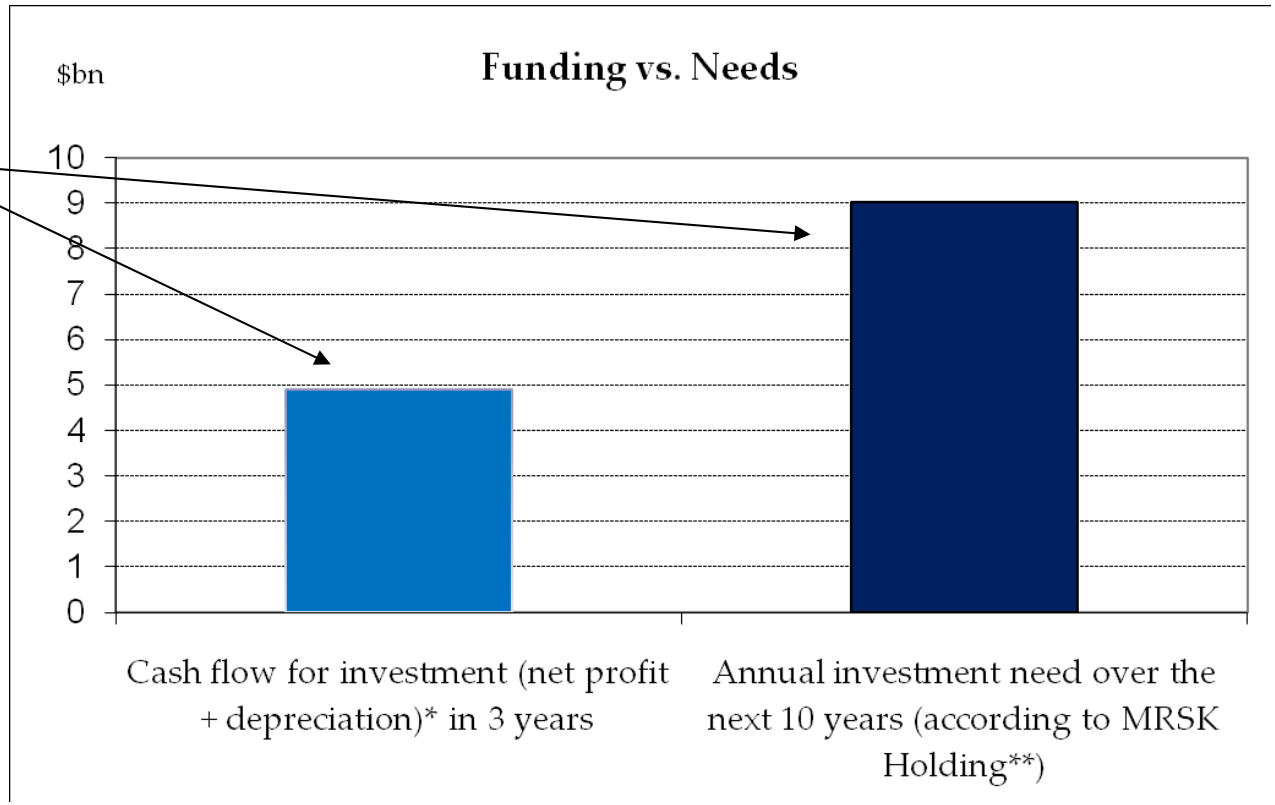
Option 1. **As today, Government controlled => funding problem not solved or extremely large funds from budget**

Option 2. **Management contracts => funding problem not solved**

Option 3. **Privatizations of most MRSKs => funding of modernization => private owners more efficient**

Funding Gap for Distribution

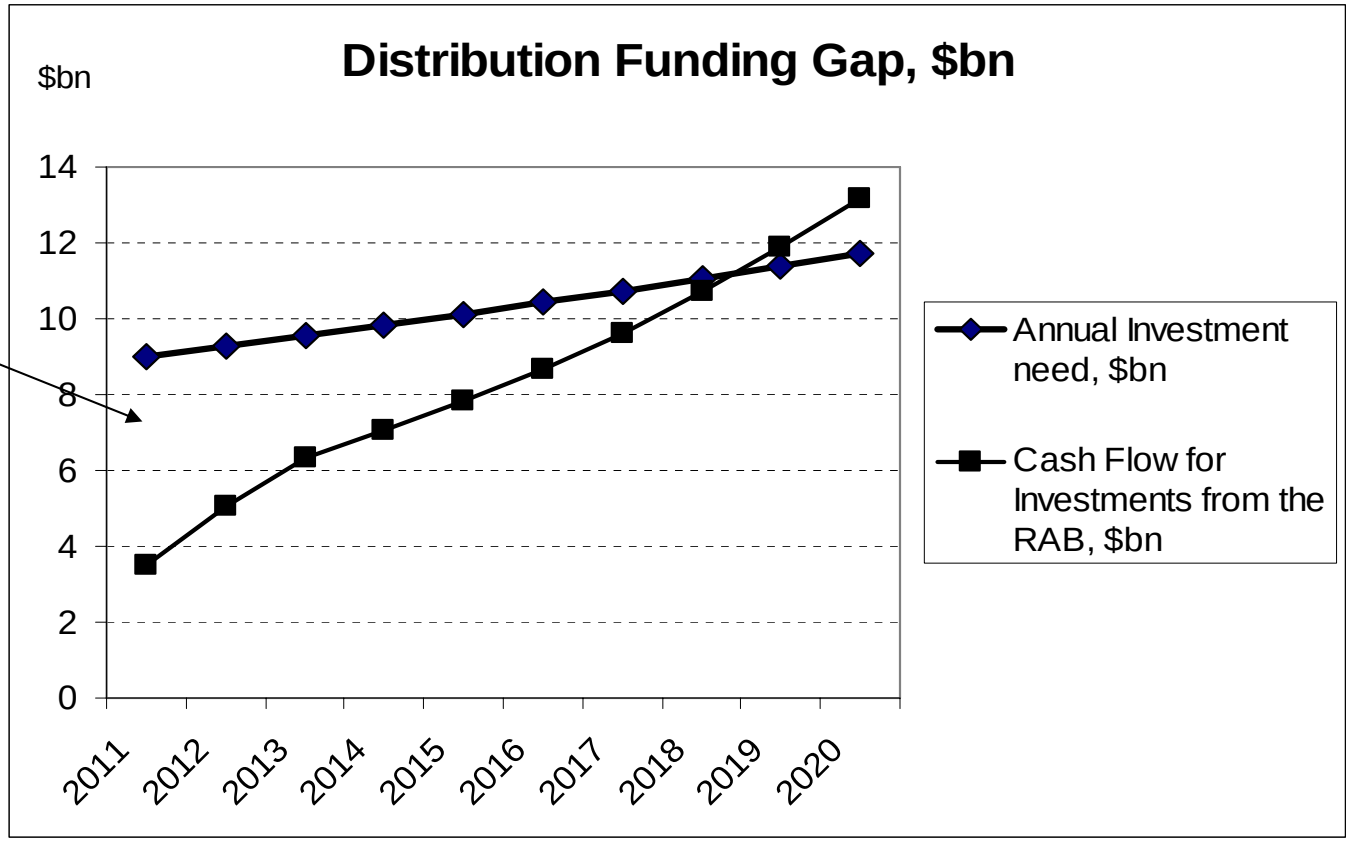
Distribution significantly underfunded even with the RAB



** Forecast net profit (11%) + depreciation in 2013. Assuming a RAB base of R900bn.*
*** Statement by MRSK Holding CEO in September 2010: investment need is R2.8tn over the next 10 years.*

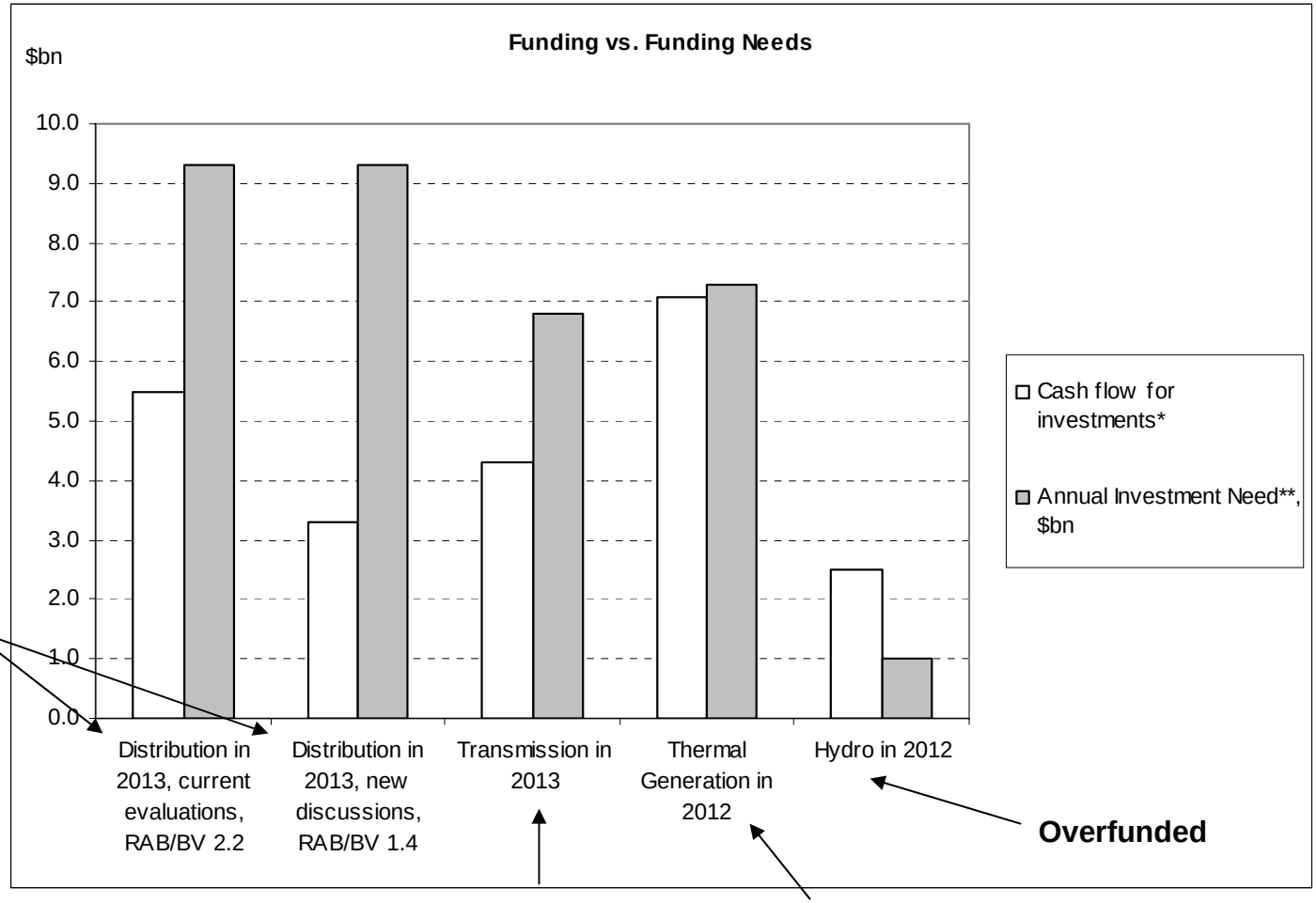
Funding Gap for Distribution

Funding gap of around $20-25bn



Note: Assuming that all funds re-invested. No dividends.

Large Funding Gap for Distribution



Massively underfunded

Overfunded

Underfunded vs. 'Gen Shema'

Sufficiently funded

* Forecast net profit + depreciation in 2013 (this assumes that distribution would have received the full 12% return and transmission the full 11% return.

** Annual investment need in accordance with 'Generalnaya Shema'

Future of Distribution: Optimal Road - Privatizations

- privatizations of most MRSK's combined with new share issues
- privatization income – up to 20 bln $; new share issues – up to 12 bln $;
- both Russain and foreign investors
- foreign investors especially important for efficiency improvements
- start with pilot in 2011: one MRSK privatization
- potential scheme: temporary Management Contract for foreign strategic investor
- more large-scale privatization 2012-2014
- tag along rights for minority shareholders
- privatization income could be used in government controlled distribution + system security + metering installation + "smart grid"
- special cases – MOESK, Lenenergo, Northern Caucasus

Electricity Distribution Privatization Experience from Other Emerging Markets

Strong Demand for Privatizations

Electricity distribution companies have already been mostly privatized in Eastern Europe, Latin America and Africa.

A lot of interest from global utility companies.

Eastern Europe:

- The winners in Bulgarian and Romanian distribution privatizations (2004, 2005) included, among others E.On (GER), RWE (GER), EDF (FRA), CEZ (CZE), Enel (ITA). The Hungarian privatization 1995-97 winners included E.On, RWE and EDF. The Moldovan privatization was won by Union Fenosa (SPA) in 1999.

The TGK privatization experience: many new Russian structures to emerge to take part in privatization

Some Distribution Privatizations

Country	Number of Companies Privatized	Years of Privatization
Brazil	7	1997-2000
Argentina	6	1996
Chile	3	1985-91
Bolivia	x	1995
Columbia	4	1997-98
Moldova	3	1999
Hungary	6	1995-97
India	2	1999
Senegal	1	1999
Poland	1	2001
Nicaragua	2	2000
Dominican Republic	1	1999
Guatemala	3	1998-99
Slovakia	3	2002
Bulgaria	3	2004
Romania	4	2005
Albania	1	2009
Turkey	4	2010

Source: Internet

Large Interest for Distribution Privatizations

Company	Electricity Distribution Subsidiaries
AES (US)	Venezuela, Domican Republic, Brazil, Argentina, Georgia, India, Kazakhstan, Ukraine
EDF (FRA)	Brazil, Hungary, UK, Cote d'Ivoire, Slovakia
EDP (POR)	Guatemala, Bolivia, Brazil
Electricity Sector Board (IRE)	Guyana
Suez Lyonnaise (FRA)	Togo, Senegal, Zambia
Endesa (SPA)	Brazil, Chile, Argentina, Columbia, Peru, Netherlands
E.On (GER)	Hungary, Czech Republic, Slovakia, Romania, Bulgaria
Enel (ITA)	Romania
EVN (AUT)	Bulgaria, Macedonia
Hydro Quebec (CAN)	Togo, Senegal
Iberdola (SPA)	Guatemala, Bolivia, Brazil
PP&L (US)	El Salvador, Chile, UK
PSEG (US)	Peru, Chile, Argentina, Brazil
RWE (GER)	Hungary, Czech Republic, Slovakia
Union Fenosa (SPA)	Nicaragua, Guatemala, Columbia, Venezuela, Panama, Dominican Republic, Moldova
CEZ (CZE)	Ukraine, Romania, Bulgaria, Albania

Source: Internet

Other potential future developments

- **Consolidations: Gazprom; KES; InterRAO; other M&A's**
- **RosAtom nuclear partnerships with foreigners**
- **Large scale installation of metering equipment; decrease of power losses in distribution**
- **New level of customer orientation: tougher requirements by regulators on quality and blackout limits**
- **Regulation of retail sector**

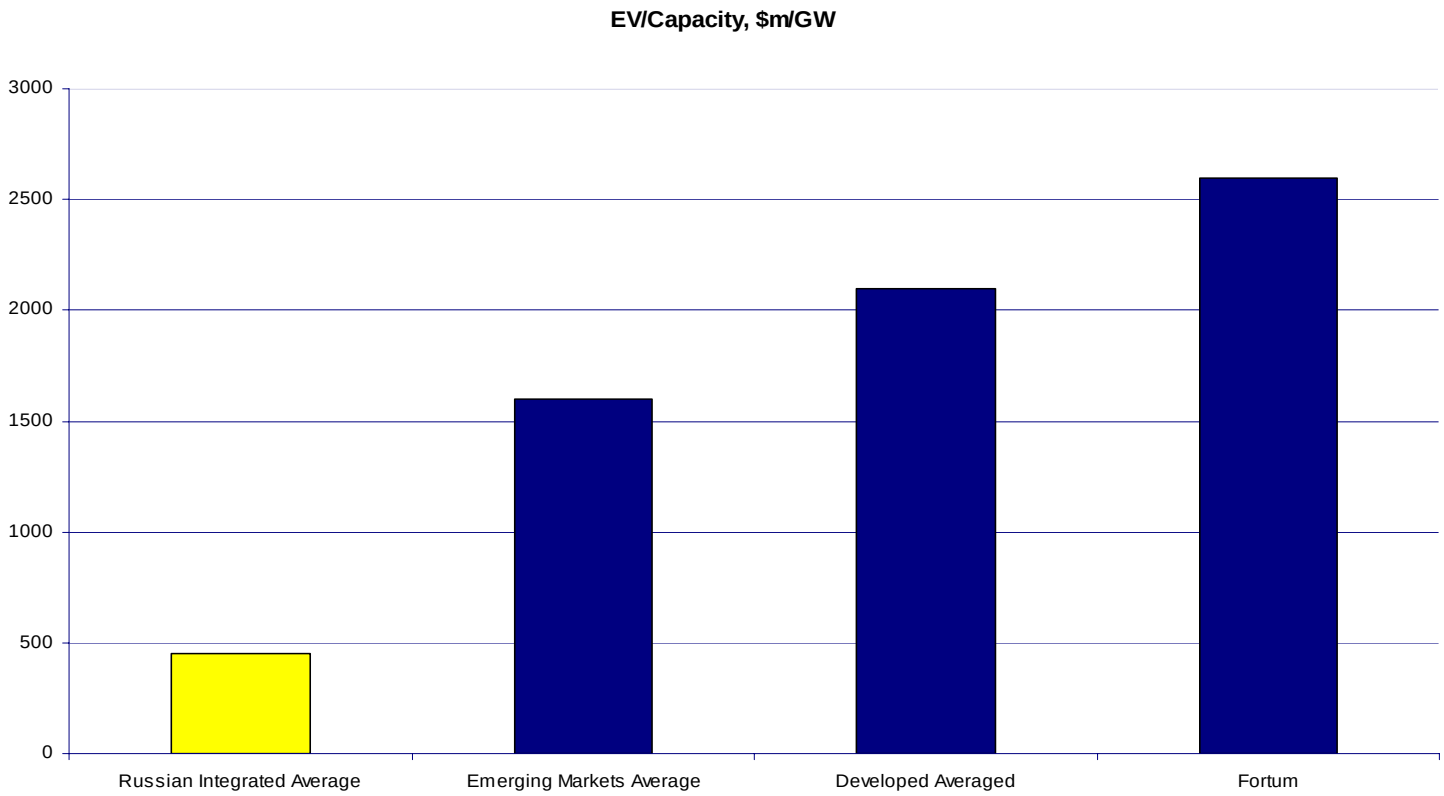
WHY RUSSIAN POWER SECTOR IS A GOOD INVESTMENT CASE?

1. **Distribution**
   1.1 RAB effect
   1.2 (Potential) privatization effect

2. **TGKs (co-generation)**
   2.1 Must-run for more than ½ year
   2.2 Heat RAB

3. **Economic growth – Increased Electricity Demand**

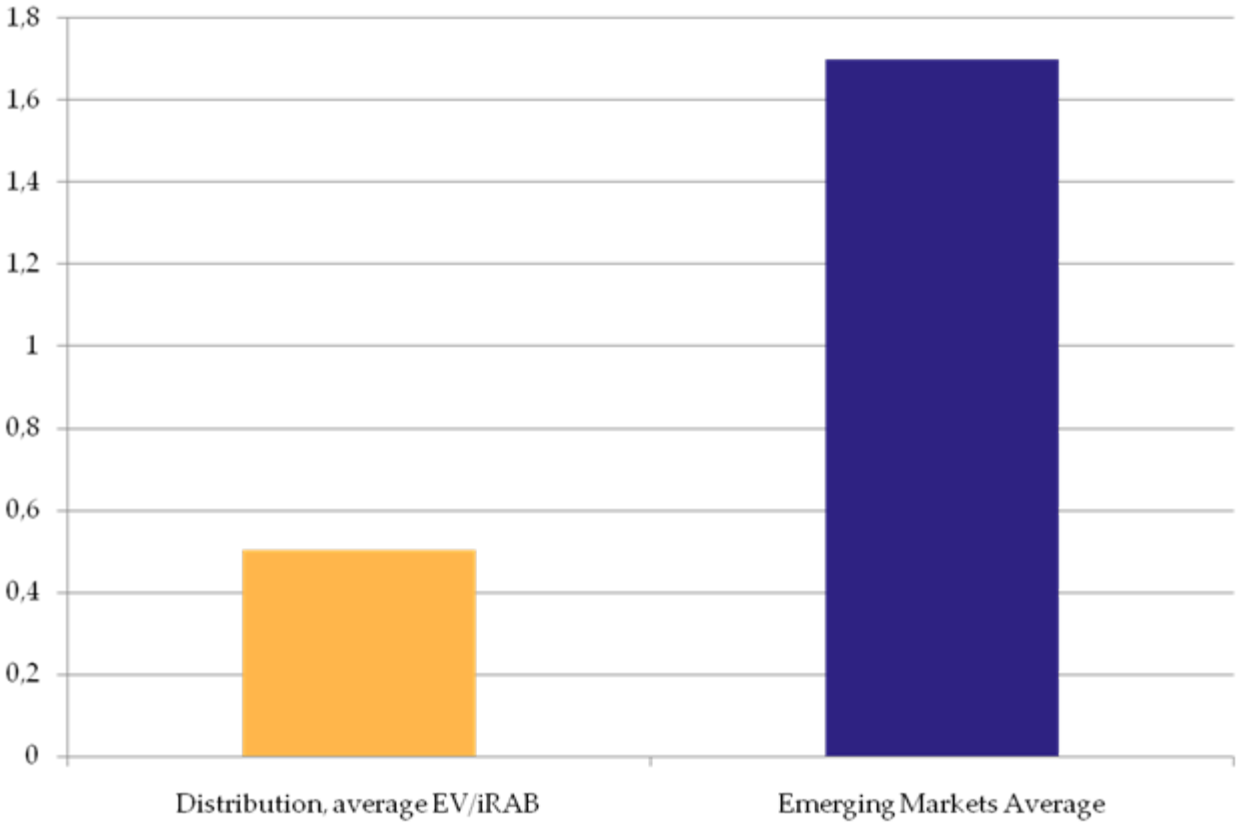
Attractive Valuations



Note: Emerging Markets average includes CEZ, Cernig, Copel, Kepco and Endesa Chile
Developed average includes EDP, Southern Co, Duke Energy, Endesa S.A., Enel, EDF, E.On, Fortum and Iberdrola

Source: EOS estimates

Russian Distribution on EV/iRAB

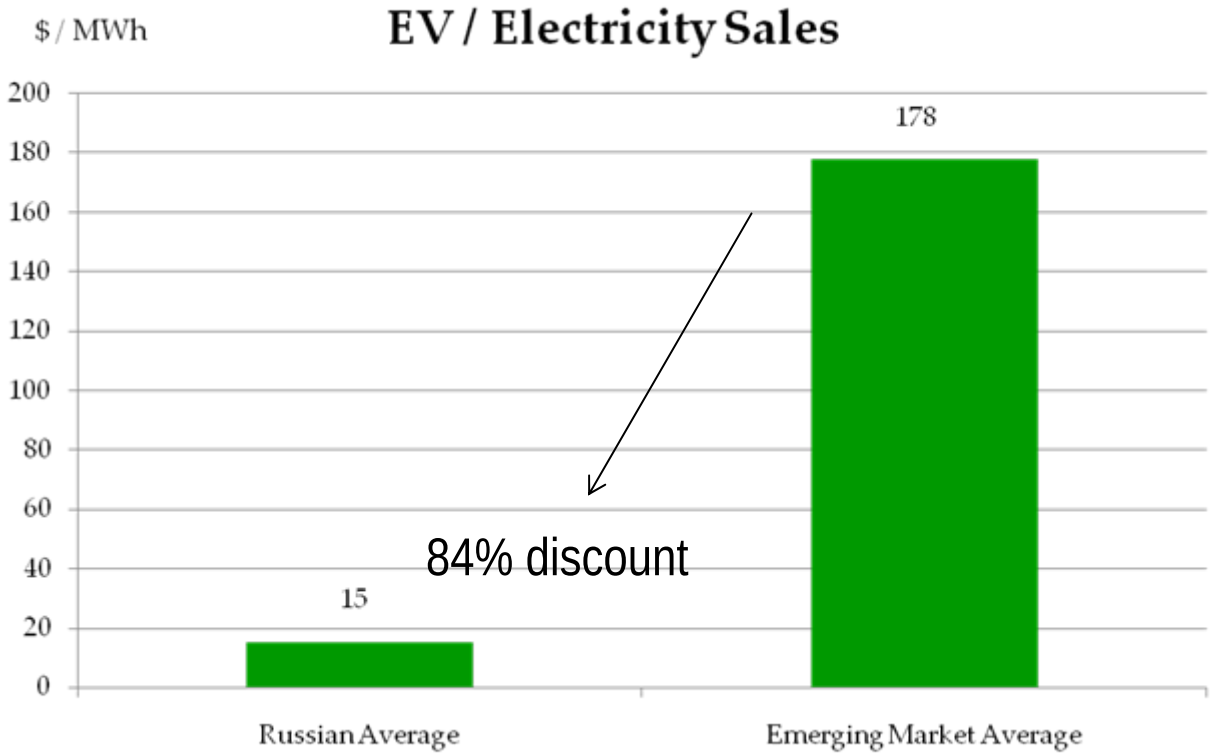


Russian distribution average includes Lenenergo, MRSK North-West, MRSK Center & Volga, MRSK Siberia, MRSK Urals, MRSK Volga, MRSK Center, MRSK North-Caucasus

EM peers include: Eletropaulo (BRA), Equatorial Energia (BRA), Coelce (BRA), Light (BRA), Manila Electric (PHI)

Source: EOS estimates

Distribution – Attractive Valuations

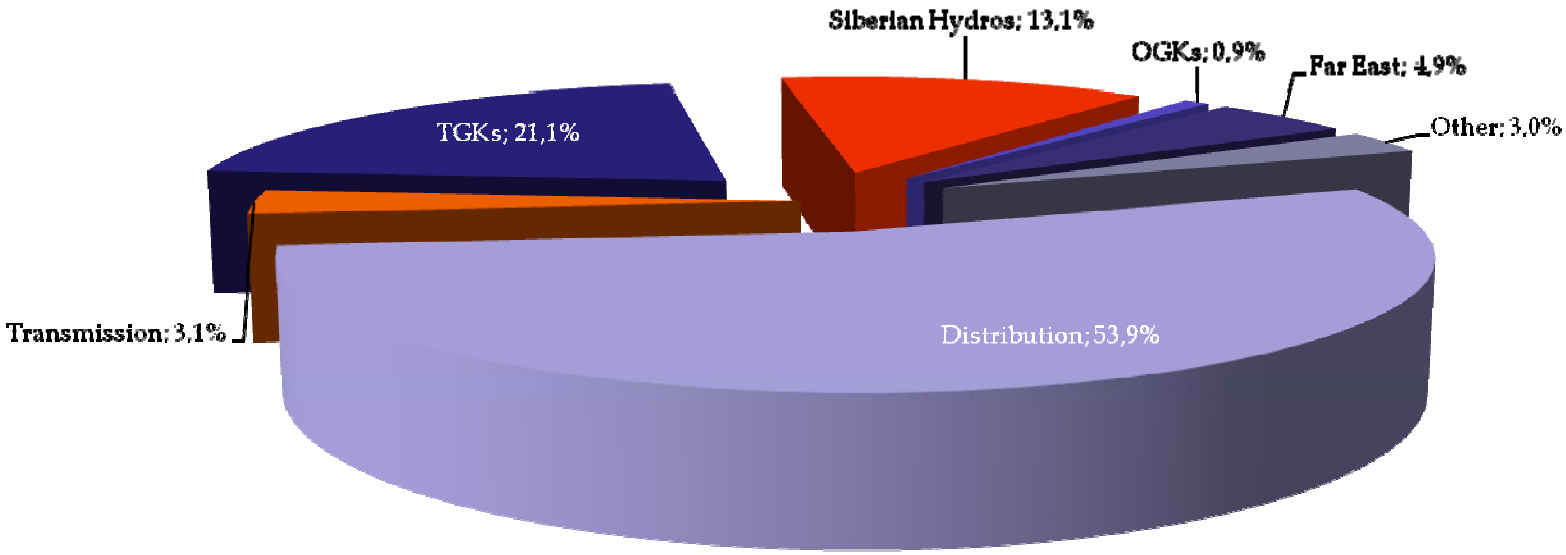


Notes: As of August 2009.
Emerging market average includes: Eletropaulo (BRA), Coelce (BRA), Manila Electric (PHI)
:Russian average includes: MRSK Moscow, Lenenergo, MRSK North-West, MRSK Center-Volga, MRSK Siberia, MRSK Urrals, MRSK Volga, MRSK Center, MRSK South and MRSK North Caucasus.

Source: Troika Dialog

EOS portfolio

January 24, 2011



Source: EOS

EOS Russia

www.eos-russia.com

NAV, 550 $m as of Feb, 28 2011