

Energy Efficiency in Russia

The Federation of Finnish
Technology Industries

28/01/2014

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Introduction for the project

Background Information / Client Objectives

- The Federation of Finnish Technology Industries (FFTI) is an association representing the most important industrial sector in Finland. The mission of the FFTI is to ensure that the Finnish technology industry has the preconditions for success in the global marketplace.
- This study continues on the path of the 2011-2012 Finpro study about environmental legislation in China and India, but now focusing on Russia and energy efficiency.
- The main need is to identify implications of energy efficiency to possible new business opportunities for Finnish companies.

Assignment Objectives / Client benefits

- The main objective is to provide FFTI with focal information on prospects and requirements of energy efficiency based on environmental legislation in Russia. The assignment aims to recognize new business opportunities which are consequences of changing environmental pressures to different industry sectors.
- This study provides timely, unbiased information of Russian energy efficiency situation and future plans. Knowledge of Russian energy efficiency plans helps in recognizing new business opportunities.
- The report is practical, with examples of cases and business opportunities.

Methodology

- Data collection by desk studies from various sources.
- Interviews and meetings with selected market players
- Analyzing and reporting
- The main challenges in the project implementation were the huge amount of information related to energy efficiency issues and the fact that too often the matters are not as they are written, but practice differs from theory.

Project team

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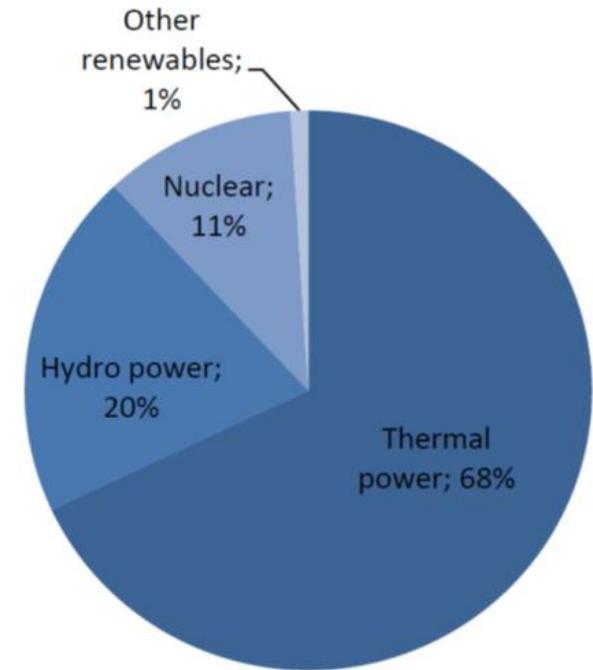
Executive Summary

- ❖ Energy efficiency has climbed to the top of the Russian political agenda because Russia has a huge energy-efficiency potential – both in reducing energy cost and in improving the environment.
- ❖ Sustainable energy policy framework is developing and central to this is the President's target **to reduce the energy intensity of the Russian economy by 40 percent by 2020**, as well as an objective to achieve the share of electricity production from **renewable energy sources at 4.5 percent** of the total electricity generation by 2020.
- ❖ A new Federal Law on Energy Efficiency (2009) as well as a State Target Program on Energy Efficiency (2010) has been adopted in order to facilitate the achievement of governmental objectives.
- ❖ Energy efficiency is interesting for both global and domestic market players and there are probably hundreds of presentations, studies and articles prepared by both Russian and foreign experts available for those who are interested in the subject.
- ❖ The **aim of this report** is to take more **practical approach** to the issue and give the reader first and foremost an overview of the Russian energy sector and describe the legislative framework and its influences to the Russian economy and business, again from the practical point of view, such as requirements for energy efficiency markings and energy service companies.
- ❖ Market barriers are discussed and kind of indirect **market barriers** for foreign suppliers exist, particularly in the sphere of procurement (public tendering), high requirements for certification and import duties.
- ❖ We also conducted interviews both by telephone and face to face in order to first of all understand, what the direct implications of energy efficiency laws are today in Russia and additionally to find out about business cases and opportunities. The latter ones were also identified in the open sources of information.
- ❖ **Opportunities in the public sector are moderate** due to their not cost effective and not high-quality preferences and also because of government procurement processes.
- ❖ In energy efficiency all actions are driven by economics; **environment does not play significant role in decision making**, yet
- ❖ Finally an outlook at the future prospects and foresight is made.
- ❖ Throughout the report useful links and contacts are given to the reader.



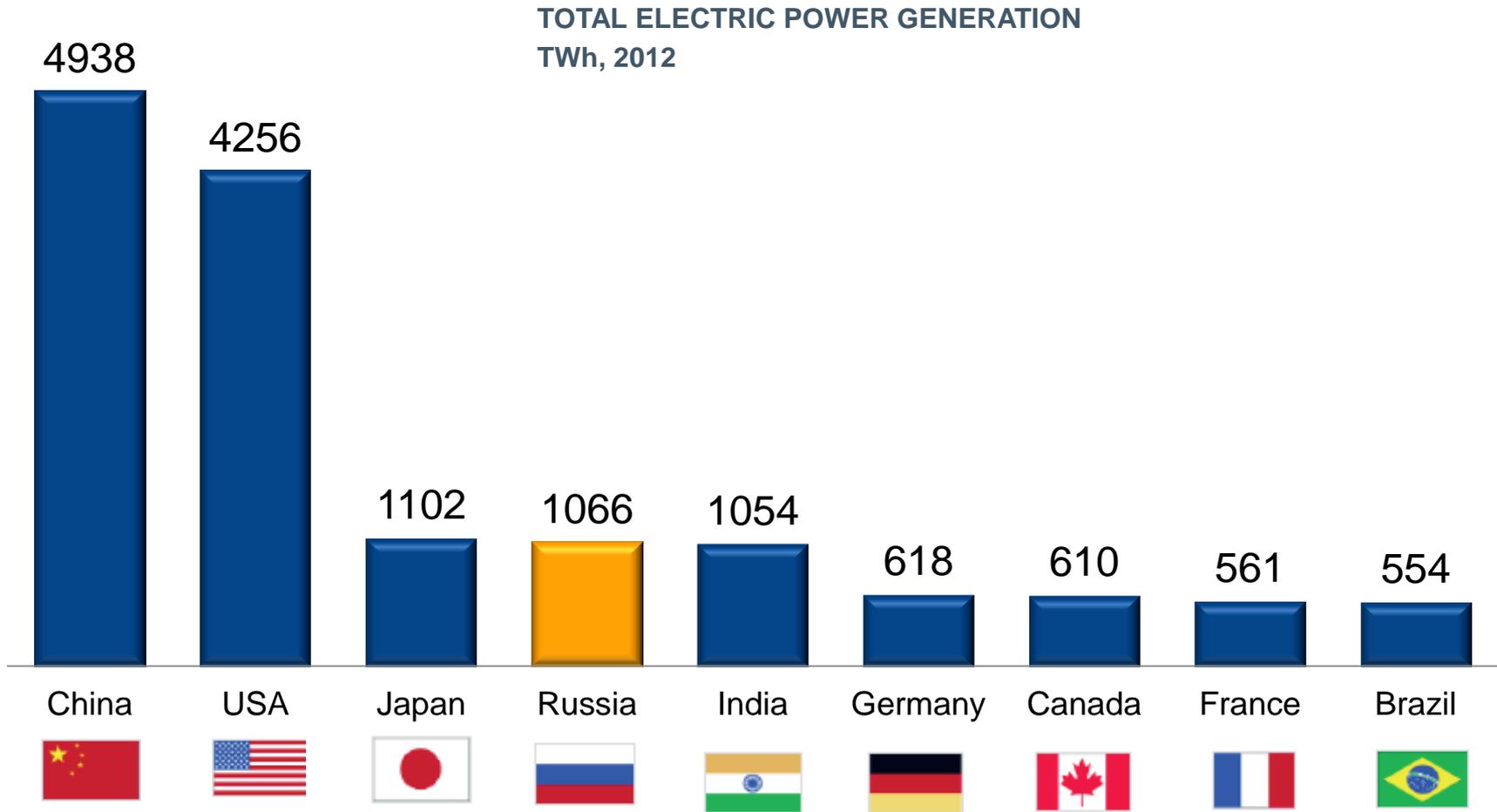
Short overview of Russian energy sector

- Russia is one of the world's leading energy powers.
- Nowadays the electric power industry of Russia encompasses about **600 power plants** each with a capacity of more than 5 MW.
- Total installed capacity of power plants in Russia is estimated at 220 GW. The **installed capacity of the existing power plants by type of generation** is shown in the Figure.
- The electric **power consumption** in the power system of Russia in the year 2012 **was 1016.3 TWh, an increase of 1.6%** compared to the consumption in the year 2011.
- Industrial companies use energy-intensive equipment – about 50% of the production assets in Russia have been installed before 1985.
- **According to IFC**, achieving Russia's full energy efficiency potential would cost a total of 320 billion USD to the economy.
- Furthermore, if its energy efficiency potential was to be fully realized, Russian CO2 emissions in 2030 would be approximately 20 percent below the 1990 level.



Russia is a leading energy power. There are about 600 power plants in Russia and 68% of them are thermal (oil, gas, coal).

Russia is the World's Fourth Largest Energy Generator



Source: BP Statistical Review of World Energy, June 2013

Energy sector and GDP

Role of fuel and energy complex in Russia's economy, %

	2010	2015		2020		2025		2030		2035		2040	
		1	2	1	2	1	2	1	2	1	2	1	2
The share of the energy sector in the GDP	28,5	25,6	25,5	22,9	23,1	20,0	20,4	18,4	18,8	17,0	17,3	15,6	15,9
Investments in the energy sector as a share of GDP	4,6	5,2	6,4	4,3	3,9	3,9	3,8	3,5	3,5	3,2	3,2	2,8	2,8
The share of the energy sector investments in the total investments	22,6	23,8	23,5	17,4	15,1	15,0	12,3	13,4	13,4	12,5	12,5	11,2	11,2

**In the 5-year average*

1 - Initial Scenario 2 - Baseline Scenario

Source: ERI RAS

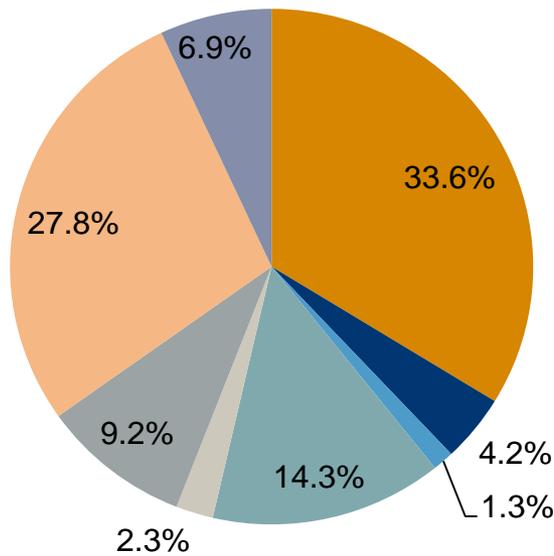
The overall role of energy sector in the Russian economy will go down during the coming years. The share of energy sector in GDP is estimated to diminish from the present 28.5% to 23% by year 2020.

Source: "Global and Russian Energy Outlook up to 2040" by The Energy Research Institute of the Russian Academy of Sciences (ERI RAS) and the Analytical Centre of the Government of the Russian Federation (ACRF), 2013.

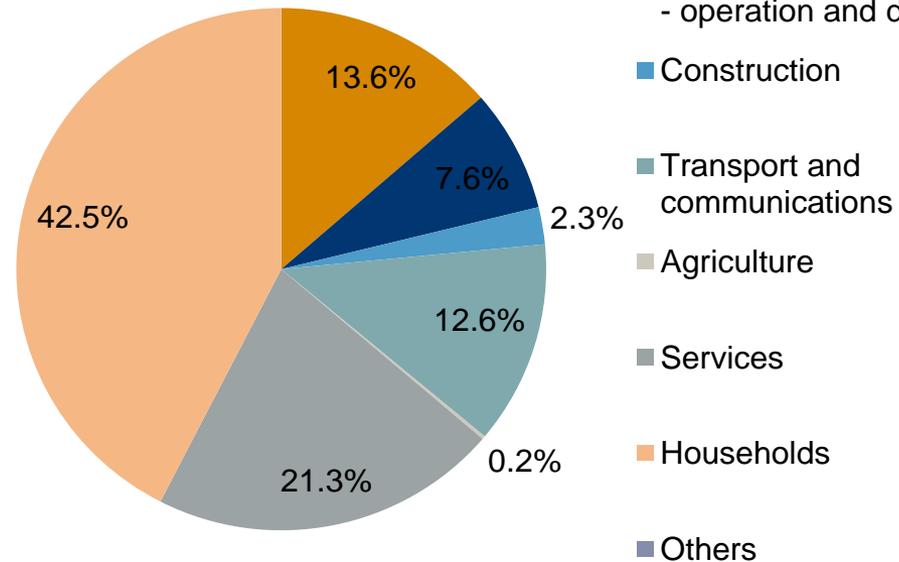
Electricity consumption in Russia by industry segments

This Figure gives an overview of the electricity consumption by industry segments on average for the whole of Russia and for Moscow.

Russia Average



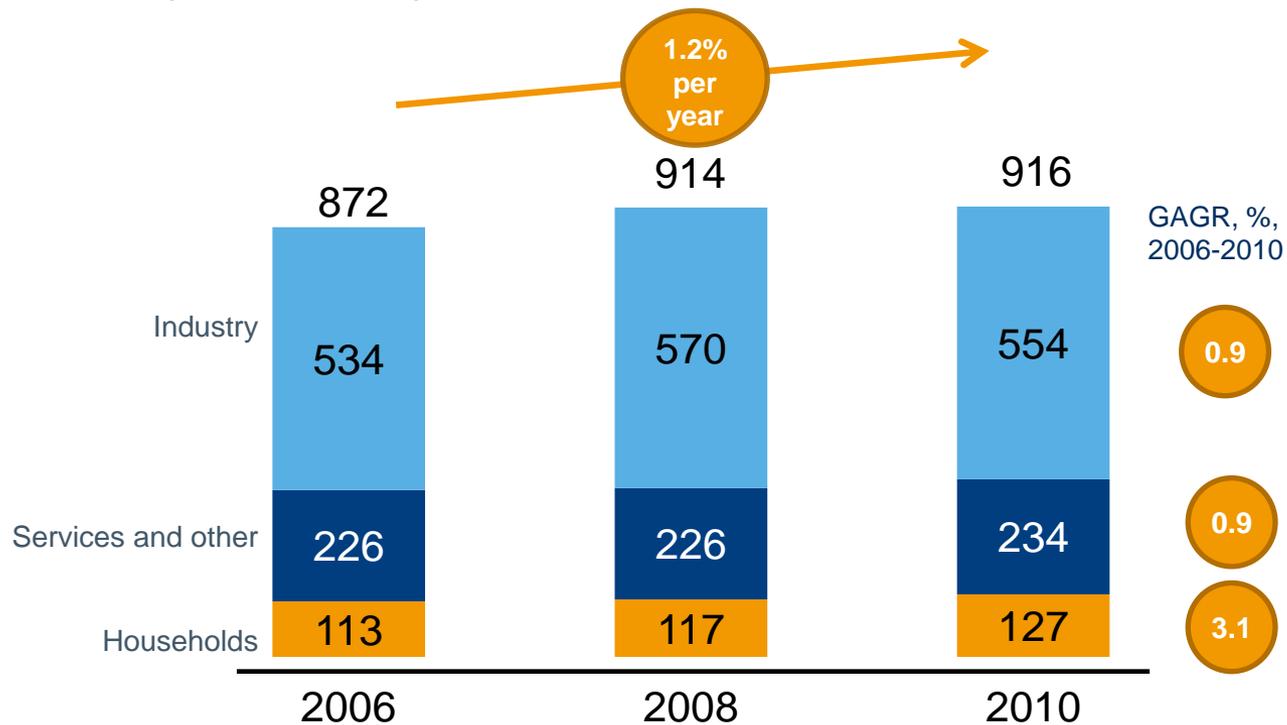
Moscow



Energy Consumption in Russia differs by regions – in the heavily populated cities the share of the households is much higher than in the industrial regions.

Power Consumption by Segments

Electric power consumption structure, TWh



- The industrial sector is the main energy consumer in Russia (60%)
- Russian economy is highly dependent on energy intensive sectors. The share of energy intensive industry in GDP is around 40% and over 90% in exports.
- This is the reason why energy efficiency was chosen as a key area of modernization of the Russian economy

Share (%) of energy intensive industry (extraction and heavy industries)

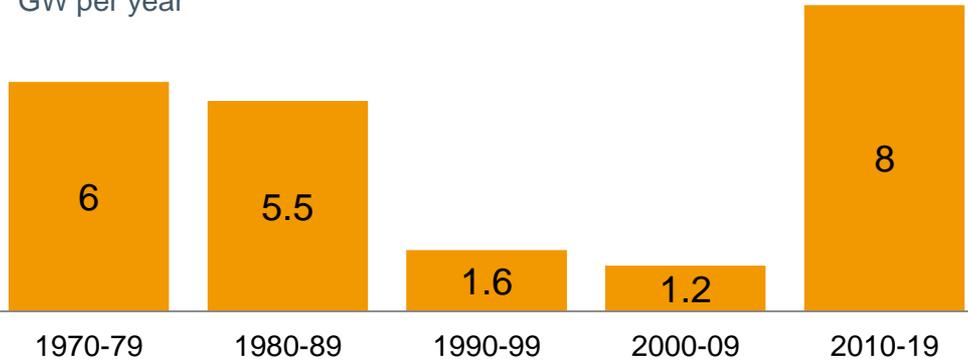


Source: Skolkovo report: Energy Efficiency in Russia, December 2011, Federal State Statistics Service (Russia)

Need for New Electricity Generating Facilities

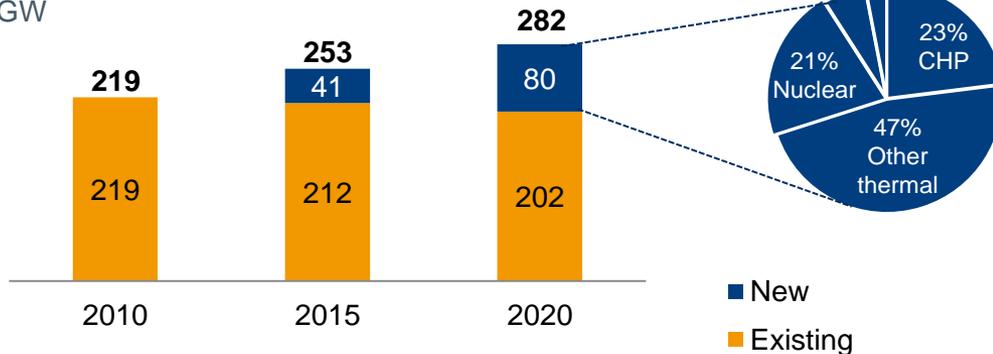
New generating capacity

GW per year



Demand for new generating capacity till 2020

GW

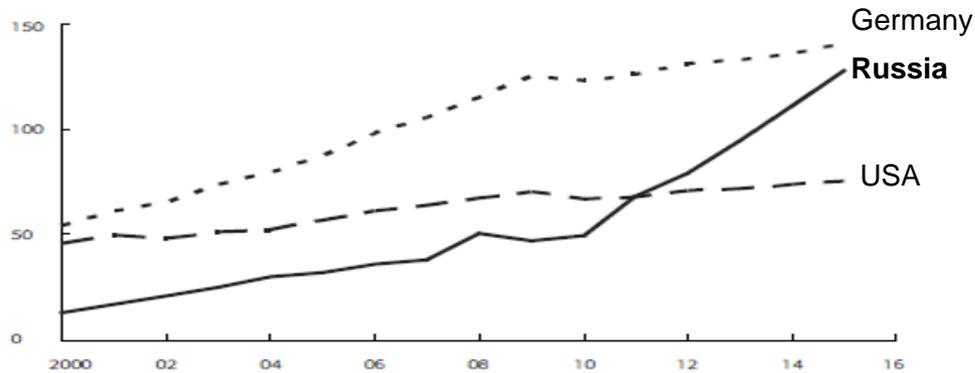


- Russia needs to build new generating facilities for electricity at a faster rate than over the past 20 years to ensure Economic Growth.
- Russia hasn't invested enough into building of new generating capacities over the past 20 years.
- Most of the new capacity is gas and coal-based generation that creates new opportunities for producers of energy efficient equipment.

Energy Is Not Cheap Anymore

Average energy price for industrial consumers

USD/MWh (nominal prices)



- The myth of cheap Russian energy doesn't work anymore. In 2011 the price of energy for industrial consumers reached the USA level. According to the forecasts by the Russian Ministry of Economic Development, the price can be 1.5 times as high as in the USA in 2015 and just 10% below the corresponding price in Germany
- Russia is the only country where the industry is subsidizing households.

On average, the price for 1 kWh in 2010 was 5.25 euro cents in Russia and 9.18 euro cents in the EU. With current growth rates, by the end of 2013, the price for electricity in Russia will already be 7.6 euro cents.

In September 2013 Minregionrazvitie initiated **a pilot in seven Russian regions**:

For a certain amount of consumption of electricity there is an agreed price for households.

If the agreed amount is exceeded, the price for this part is considerably higher.

The goal for this project is to:

Stimulate the households to energy efficiency and to reach the situation where households and industry both pay the same price for electricity.

Source: Skolkovo report: Energy Efficiency in Russia, December 2011.

Freezing energy prices

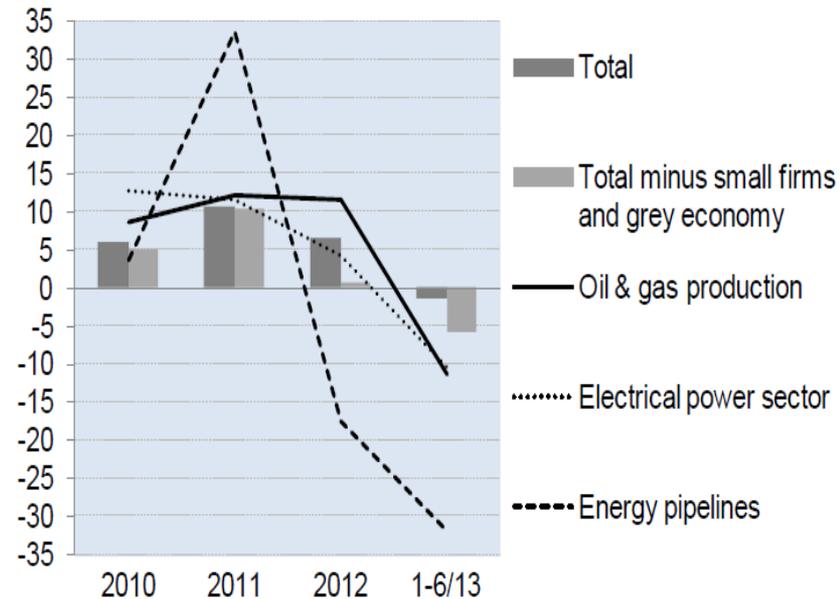


- **Partial freeze on regulated prices** is hoped to revive Russian economy. Regulated prices of goods and services produced by “natural monopolies” (e.g. gas, water, heating and rail transport) have been increased at a faster pace than inflation in recent years to achieve cost recovery levels. Such rate hikes have been a major factor in keeping inflation high. For example, **the rates households pay for gas were increased by 15 % last year** and again by the same amount this year, while rates for heating went up 10 %. Consumer price inflation in 2012 was 6.6 %.
- The **government wants to slow inflation** in order to boost economic activity and improve the competitiveness of the Russian industry (especially energy intensive industries like metallurgy and extraction industries).
- To accomplish this, it will **limit rate hikes of natural monopolies over the next few years**. Restraining rate hikes should also lead to a situation where infrastructure monopolies are forced to become more efficient.
- In September 2013, the government decided that rates of goods and services sold by monopolies **to the corporate sector would not be raised at all in 2014**. In 2015 and 2016, rates will only be increased to the extent of the previous year’s inflation.
- **Rates paid for household heating, water, electricity and gas** will be increased during 2014–2016. The average increase is to match the inflation rate of the previous year minus 30 %. Using this formula, the average rate hike next year would amount to **4.2 %**.
- The downside of reduced rate hikes is that they **lower the revenue projections of infrastructure monopolies and limit their investment possibilities** in a situation where all investments would be important in order to accelerate economic growth.
- To lower the monopolies’ operating and investment costs without harming their operations or reducing their investments, the government is considering partial financing of monopoly investments out of the federal budget, pension fund or oil tax revenues set aside in the National Welfare Fund.

Investments in the Energy sector

- Rosstat reports that after the end of the boom in construction of oil & gas pipelines in 2012, a further sharp contraction in the investments occurred in the first half of 2013. Investments in production of oil & gas and the electrical power sector also declined considerably and growth in manufacturing investment came to a halt. (These Rosstat figures do not include investment by small firms or investment in the grey economy. The data covers about 85–90 % of total energy sector and manufacturing investment.)
- Presidential adviser Andrei Belousov told the cabinet this summer that the **investments of large infrastructure** companies such as Gazprom, Russian Railways and the state-owned electrical grid operator FSK, as well as public sector investment, **fell about 10%** last year, and that a similar contraction is expected this year.
- Rosstat estimates that investment of small firms and grey economy investment rose considerably in 2012 and the first half of this year. Without such investment, growth in total investment came to a near standstill last year and went into precipitous decline in the first half of this year.

Fixed investment volumes, on-year change (%)



Source: Rosstat

In 2013 investment in production of oil & gas and the electrical power sector declined considerably and growth in manufacturing investment came to a halt.

Alternative, renewable energy

- A number of laws and regulations have been enacted to develop this industry sector, including Federal Law in 2009, setting the targets for generation and consumption of electricity from **renewable energy sources (RES)**:

2010 – target value 1.5 %

2015 – target value 2.5%

2020 – target value 4.5%

- Also, in October 2012, a set of measures was approved to incentivize production of electricity by generators operating on renewable energy.
- The goal is **to increase the share of renewables only in Heat&Power Generation by 2.5%** by 2020.
- RES development will provide with energy the territories which are isolated from the Unified Energy System through the use of local fuel resources and renewable energy.
- Mr. Vasily Belov, Executive director of Energy Efficiency Cluster in Skolkovo, said in an interview that **Russia is interested in all range of alternative energies**, including solar, wind, hydro, biomass and hydrogen. One of the reasons for this is that large part of Russia could not be connected to the central grid due to geographic reasons and in these territories the cost of energy could be significant, up to 5-7 USD per kWh.
- Thus, regional energy efficiency with the use of available local renewable sources should be paid more attention to.
- Russian government is preparing a **package of measures to support renewable energy**:
 - **Financial instruments**, such as compensation of costs related to grid connection.
 - Boosting **localization** of the production of equipment for renewables.
 - According to Russian Energy Agency only about 50% of the equipment for wind and solar generating plants are of local production.
 - In small hydro plants the share of local suppliers is only about 20%.
- Deputy minister Mihail Kurbatov agreed already at the end of 2012 with the market experts that **the target value for RES should be brought down to 2.5%**. Minister Kurbatov says that RES is luxury for Russia, since the country is rich in hydrocarbons and the switch over to RES must be concentrated to the isolated regions where expensive diesel stations can be compensated with alternative energy.

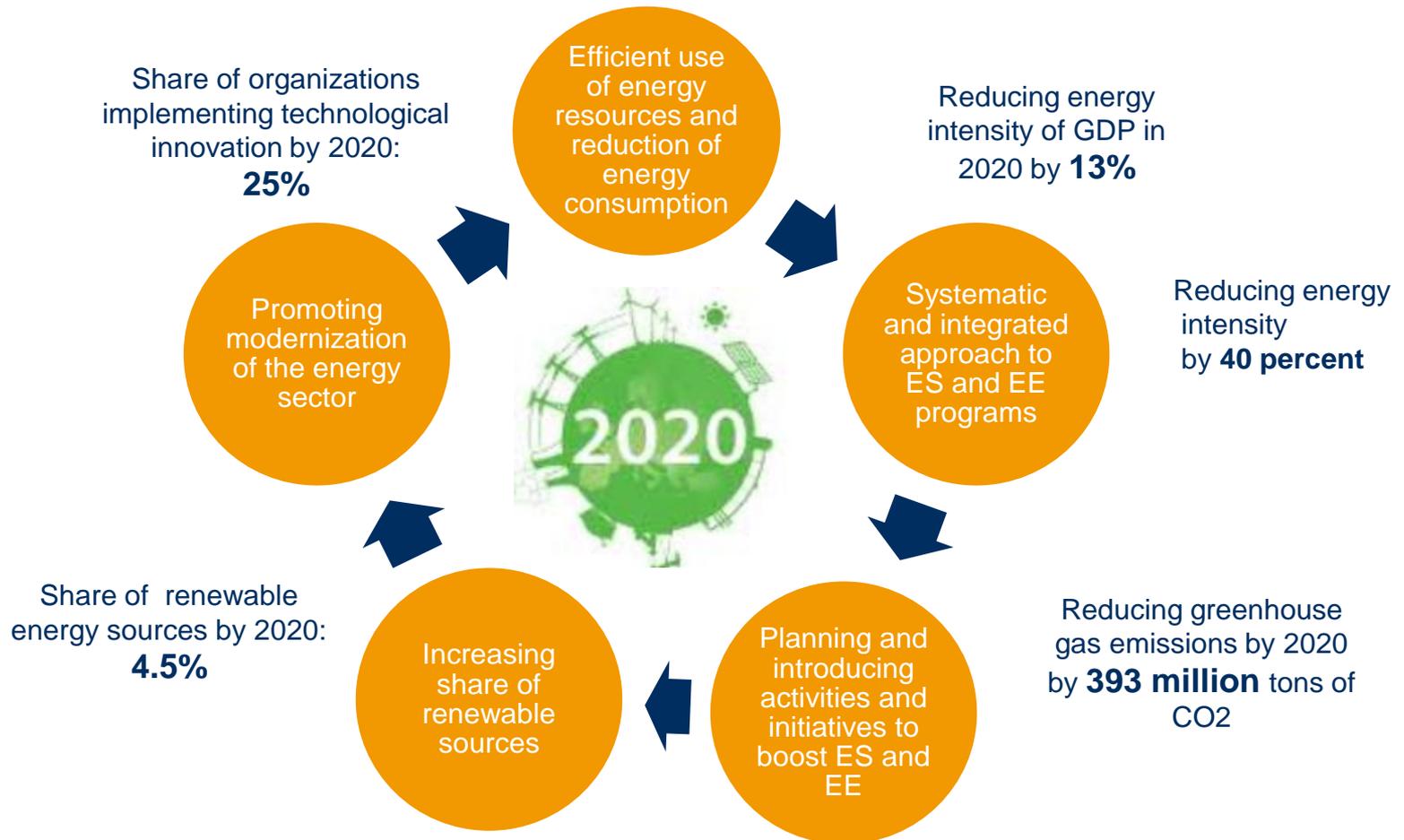




Legal framework covering Energy Efficiency in Russia

Core Targets of the Energy Policy

Energy Efficiency (EE) and Energy Savings (ES) are included in the five strategic priorities for the country's technological development.



State Approach to Energy Efficiency (EE)

June
2008

- June 2008: Presidential Decree No. 889 On Some Steps Towards Enhancing the **Energy and Environmental Efficiency** of the Russian Economy **sets a target** for reducing energy intensity by **40 percent** by 2020 compared to 2007 levels.

January
2009

- Resolution No. 1-p On the Main Directions for the State Policy to Improve the **Energy Efficiency** of the Electricity Sector on the Basis of **Renewable Energy Sources** for the Period up to 2020 implies the increase of renewable energy sources share to **4.5 percent** by 2020

November
2009

- **Federal Law No. 261 On Energy Saving and Improving Energy Efficiency** defined the term “energy efficiency” at the legislative level for the time. The objective of the law is to create the legal, economic and organizational **framework of incentives for energy saving and improvement of energy efficiency. (further called EE Law)**

November
2009

- Energy Strategy of Russia up to 2030 comprises three main stages: 2008-2015: Resource and investment development, 2015-2020: Investment and Innovation renovation, 2020-2030: Innovative Development. Target: **reduction of energy intensity of Russian GDP by 2.5-3 times by the year of 2030** (compared with the level of 2007)

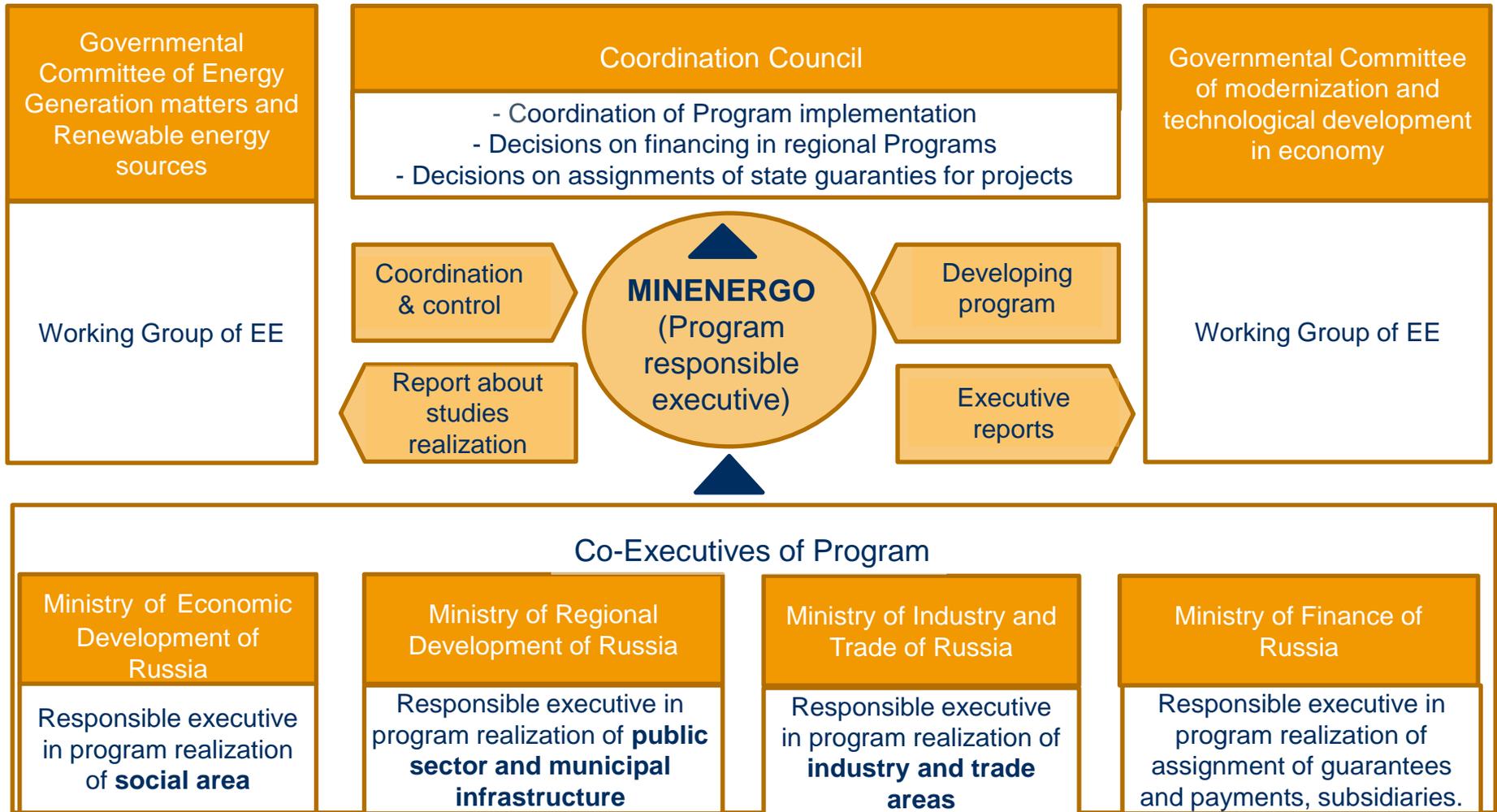
December
2010

- Russian Federal **Program for Energy Saving and Energy Efficiency** Improvement up to 2020 declares the improvement of energy efficiency as a vital economic policy direction of the state and aims to develop an appropriate **infrastructure to coordinate** energy efficiency management and monitor resources.

November
2013

- So far, the Russian energy efficiency legislation contains: 46 government regulations, 14 presidential decrees and federal laws, 45 orders and regulations of ministries and departments, 10 memorandums, 44 regional laws as well as 151 regional and 321 municipal programs.

Implementation of EE Policy



Source: Energy Efficiency State policy as innovative path of development of RF, by Nikolai Sviridov, Ministry of Energy, RF at the International EE Forum, September 2010, Astana, Kazakhstan

Energy Efficiency Law (2009) in practice

The Law covers all operations that involve **use of energy** by legal entities and individuals.

Examples of the effects of the EE Law:

- Information of **energy efficiency class** of both goods manufactured in Russia and imported must be disclosed (see [slide 28](#)).
- **Energy Efficiency lightning** - Ban on incandescent bulbs with the capacity of 100W and above since 1 January 2011 and ban of 75W since 1 January 2013.
- Obligation of budgetary institutions to ensure a **reduction by 15% of water, fuel, natural gas, thermal energy, electrical energy, coal and black oil consumption within five years** since 1 January 2010 with annual targets of about **three percent per year** for municipalities > budget financing will be decreased in the same proportion.
- **Energy efficiency of buildings**, structures and constructions (see [slide 22](#))
- **Accounting for the consumed energy** – the produced, transferred and consumed quantities of energy are subject to mandatory accounting that involves the use of meters.
- According to the Law, **payments for energy must be made** on the basis of **meter readings**.
- Legal provisions are set regarding **energy audits** (see [slide 24](#))
- The Law introduces the concept of **Energy Serving Contracts (ESCOs)** – see [slides 29-35](#).
- Government support is envisaged, however not specified and giving only directions.



The experts say that Energy Efficiency in Russia reaches today only intermediate goals - replacing of bulbs, installation of meters - as the real energy efficiency starts only when long term contracts with long term financing and structural changes take place. And the biggest challenge for Russia is tariff policy.

Key Barriers and Challenges

LEGAL ASPECTS:

- Legal regulatory framework is incomplete: **inconsistencies and gaps in the law**. A large number of by-laws will have to be adopted.
- **Delays** in adoption of important legal acts and missed deadlines.
- Lack of integrated and balanced approach to environmental policy. Many reference rules and regulations, e.g. law contains 41 pages, but there are already 500 proposed amendments!

ECONOMIC ASPECTS:

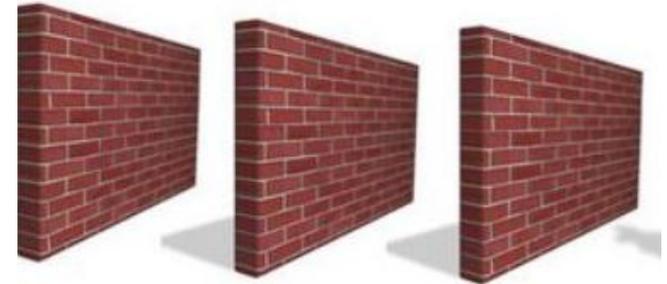
- Monopoly of energy producers. Abundance of cheap traditional energy sources.
- **Lack of** effective tax and other **stimulatory measures**.
- **Insufficient** access to **long term funding** and shortage of subsidies.

PRACTICAL ASPECTS:

- Deficiencies in law enforcement.
- Top-down approach. Most activities are formal. Russian municipalities, lack the expertise, funding and know-how to fulfil the requirements.
- Corruption hinders the effective implementation of the law.
- Absence of developed actions or implementation of plans.
- Lack of transparent and existing comprehensive state monitoring system.
- Poor coordination.
- Lack of national statistics.
- Shortage of incentives to conduct research and to introduce eco-innovations.

HUMAN ASPECTS:

- Lack of experience and expertise.
- **Low public awareness** of the role and benefits of environmental measures.



Need to fill in the gaps in Russian legislation and eliminate inconsistencies. Further development and improvement is required.

EE Requirements for Buildings

Order of Ministry for Regional Development No. 262 of May 28, 2010 “On requirements to energy efficiency of the buildings and structures”



Mandatory compliance of buildings, structures, and facilities with energy efficiency requirements (which are to be reviewed by authorities at least once every five years), for example:

- Usage of energy-efficient technologies and materials
- Systems of heating, ventilation, air conditioning and hot water have to have automatic or manual control
- Utility systems have to be fitted out with meters for heat, hot and cold water, electricity and gas*
- Energy Efficiency Classification for new buildings, see table below.

Classes of EE**	Value of deviation of actual energy consumption from a standard value	Measures recommended by local authorities
For new and renovated buildings		
A – very high	Less than -51%	Economic stimulation
B – high	From -10 to -50%	
C – normal	From +5 to +9%	
For existing buildings		
D – low	From +6 to +75%	Renovation
E – very low	More than +75%	Urgent renovation

* Deadline for the installation of energy meters (both collective – for the whole building, and individual – for separate apartments) has been postponed until 2015-

**Source: Thermal Performance of Buildings (SNiP 23-02-2003); SNiP - Construction Norms and Rules
28/01/2014



Residential Sector

- 20% of Russia's electricity usage
- 60% of Russia's heat energy resources
- Challenges: undeveloped status of homeowner associations + general lack of information/awareness of energy saving
- New **thermal insulation standards** have been put into place to meet thermal performance and heat efficiency requirements. Opportunities exist in the rehabilitation of existing buildings for products in heat and water saving technologies including **wall insulation, efficient water taps and windows**, window heat reflecting films, door weather-stripping (insulation, sealing), insulation for pipes, radiator heat reflectors and lighting systems in public buildings.
- **Green building** construction and practices are becoming more popular in the planning, design and construction of infrastructure, road building and other construction and building projects.
- Some of the perceived drivers of sustainable property development in Russia include:
 - the increasing perception by investors that green certification (BREEAM, LEED or DGNB) represents lower investment risk in these buildings
 - demand from international corporations for green offices due to international policies and standards
 - increasing government-led initiatives towards sustainability – energy efficiency and innovation
 - the attractive prospect of higher rental and sales levels in green certified buildings due to a growing demand, following increased awareness of green building concepts and anticipated increases in energy prices.
- See also [slide 43](#) about IFC's residential program and [slide 61](#) about VTT Ekograd Platform.

- Over 20 000 energy audit companies
- Low qualification of energy auditors, lack of specialists
- Only 5% of energy passports are considered by Ministry of Energy to have been well-done
- Cost: 1000-10 000 EUR (initially, the average cost was up to 25 000 EUR)

- Companies with a yearly energy bill higher than 10 million RUB (about 225 000 EUR) are obliged to perform a mandatory energy audit.

ENERGY AUDIT COMPANIES

- Making energy audits, filling energy certificates (“energy passports”)
- The standard energy passport is prescribed by the the Ministry of Energy (Order No. 182 dated 19 April 2010)



SELF-REGULATING ORGANISATIONS (SRO)

- controlling work of Energy audit companies, checking energy certificates
- only members of SRO are authorized to perform energy audits



MINISTRY OF ENERGY

- final check of certificates, state register of energy certificates

Tax Incentives/Encouragement Measures

- As of 1 January 2012, Russian taxpayers subject to corporate property tax are entitled to a three-year exemption for newly introduced assets that are included in the high energy efficiency category (Article 281 of the Tax Code). Only fixed assets with an efficiency rating of A, A+ or A++ qualify for the exemption from assets tax (see [slide 27](#) about the different energy efficiency ratings).
- Investments in energy efficient equipment also qualify for accelerated depreciation at twice the standard rate for profits tax purposes. The matter of actually applying the accelerated depreciation mechanism is, basically, the same as in the case of corporate property tax exemption. This relates to the relevant government regulations not having been adopted yet.
- Partial compensation of interest on loans granted by Russian banks for the purpose of investing in energy saving and energy efficiency technologies.
- The investment tax credit mechanism is a tax rescheduling arrangement, under which a company is allowed to **reduce its tax payments** during a certain period with a subsequent gradual credit and **accrued interest payment**. An investment tax credit (**up to 30% of the value of the equipment** acquired by the company and used for the purposes of energy efficiency) is granted on the basis of an agreement concluded between the taxpayer and the relevant tax authority for a **period of up to 5 years**. Also, the **interest rate**, when taking into account the Central Bank's current refinancing rate, **should be between 4 and 6%**.
 - > The mechanism is not completed and thus the incentive can not be used in practice.

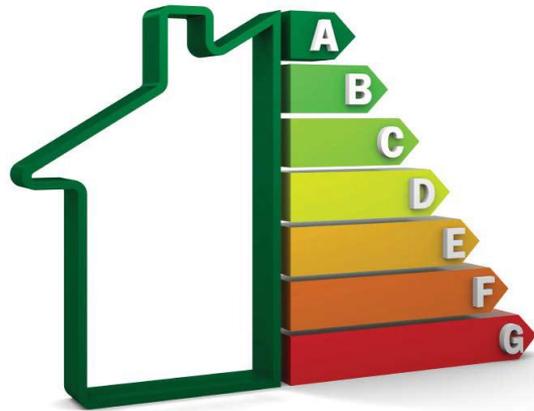




Requirements for Marking and Classification

Energy Efficiency Markings

Introduction of seven energy efficiency classes based on EU standards



Example:
Phase-out of incandescent light bulbs

- Energy Efficiency markings in Russia are based on the Order of the Ministry of Industry and Trade No 357 (amended on 12.12.2011), which contains Rules for determining **energy efficiency class of goods by producers and importers**.
- The order concerns:
Principal **household energy-consuming appliances** (TVs, refrigerators, washers, etc.) - since 1 January 2011.
Computers, computer electronic devices and office hardware (fax machines, copiers etc.) - since 1 January 2012.
Other goods (lifts used for the transportation of people, heating appliances) - from 1 January 2013.
“A” rating is most energy efficient, while “G” rating is the least efficient. Additional A+ and A++ classes can be assigned to extremely energy efficient items (A+++), assigned in some European countries, is currently not implemented in Russia).
- **Energy efficiency class must be specified:** in the technical documentation attached to the product, **on markings and on labels**.
Final definition of the energy efficiency class is the responsibility of producers and/or importers
- Federal Service for Supervision of Consumer Rights Protection and Human Welfare is responsible for control and monitoring.

- 100 Watt - since 1 January 2011
- 75 or more Watt - since 2013
- 25 or more Watt – from 2014.



Energy Labeling in Russia

- On 18 September 2013, the AEB (Association of European Businesses) and the European Bank for Reconstruction and Development (EBRD) held a joint event to launch “Energy Efficiency Labelling: Stimulating investment in energy efficient equipment in Russia”.
- This is a **voluntary energy efficient endorsement**. The labels will help stimulate investment in energy efficient equipment in Russia, reduce energy use, improve the quality of goods and modernize manufacturing processes. They will also increase demand for energy-efficient equipment.
- The new label offers consumers the opportunity to make a conscious decision about their purchases by providing information on the energy efficiency of designated goods.
- Only the most energy efficient equipment models will be granted the label. Strict standards will give consumers confidence that the designation - which has been **supported by the Government of Finland** – will only be awarded where all criteria are fulfilled.
- The first equipment type to be covered by the label is stationary electric motors.
- AEB has a system for granting the labels. So far ABB, Siemens and WEG Electric are participating the work. Finnish companies are more than welcome. Contact fedor.plaskovitskiy@aebrus.ru.



The first voluntary Energy Efficient Label has come out in September 2013. Finnish companies interested in getting the Label should contact AEB, Mr. Fedor Plaskovitskiy for further information.

Source: <http://www.ebrd.com/pages/news/press/2013/130918a.shtm>



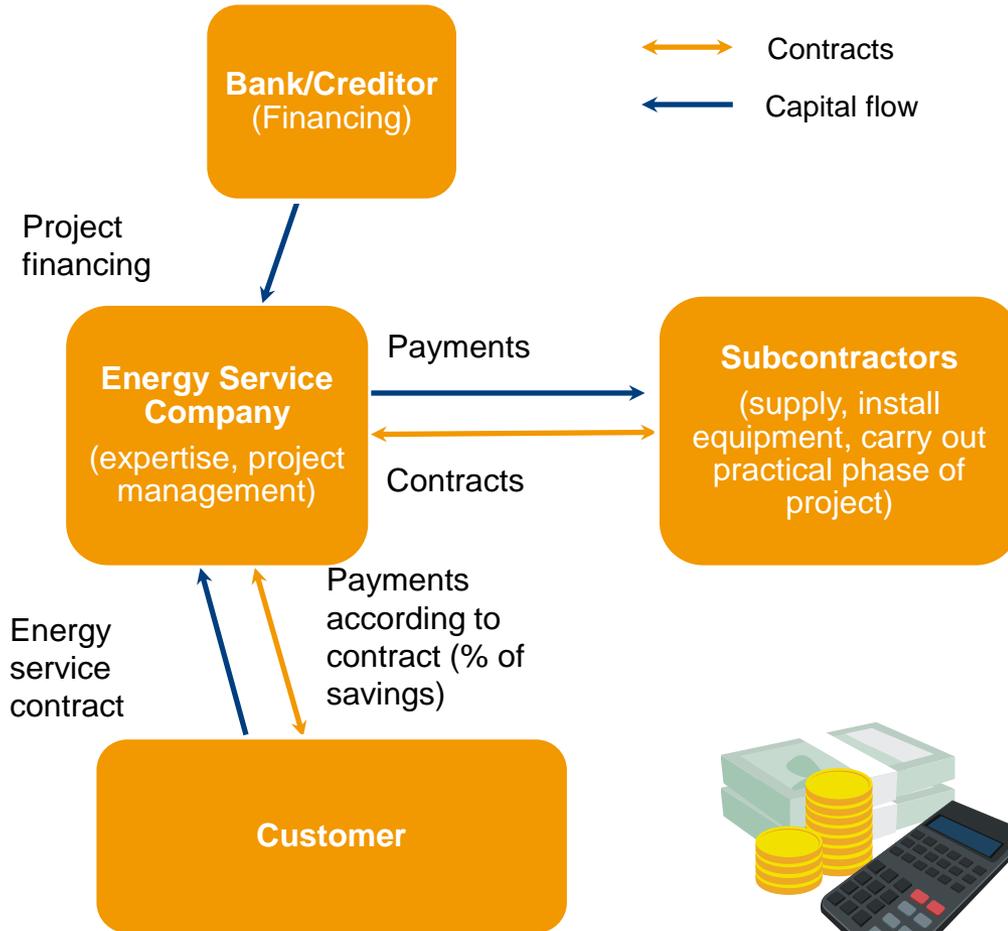
Service offering – Energy service companies, ESCOs

ESCOs and EPCs – how does it work?

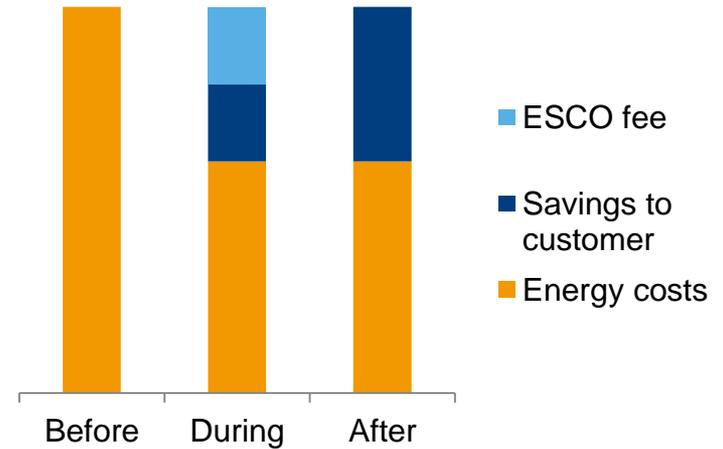
- Energy Service Company (ESCO) – an organization focused on providing various services in the field of improving energy efficiency, typically including auditing, design, project management, implementation and risk management.
- Globally, the existence of ESCOs is based on increased demand of energy savings and more efficient use of resources – roots in 1970's, when the battle against rising energy costs started.
- Traditionally, ESCO's operate through an Energy Performance Contract (EPC, also known as Energy Service Contract - ESC) – a scheme where the ESCO provides an energy saving service up front and collects a percent of the incurred savings as payment.
 - An energy consumer (typically an organization, public or private) has the need or wish to reduce the consumption of energy and thus the energy expenses, but perhaps no willingness or suitable way of carrying out required modernizations, renewals or investments by itself.
 - An ESCO has the know-how, resources and experience in carrying out long-term energy savings projects and typically also readily-available financing for carrying out investments.
 - The consumer and ESCO may sign an EPC, where the ESCO takes responsibility of carrying out the energy savings project – the incurred cost savings are partly used to pay off the investments, their interest, the ESCO's operating fees and partly passed directly back on to the consumer. This is also known as third-party financing. The payback/break-even period of the project is measured typically in years, depending on the scope of the project.

(*) European Association of Energy Service Companies EUESCO: About EPC. <http://www.eu-esco.org/index.php?id=21>.

Basic scheme of Energy Service Contracts



The effect of an ESCO EE-project on the customer's energy expenditure (basic model)



ESCOs and EPCs in Russia

- **Price of energy** has traditionally been **low** in Russia and thus, ESCO-type activity has not been attractive, thus practically no classis ESCOs on the Russian market.
- New concept, not yet integrated in the mentality of decision makers; the **internal solution is very often preferred**, and this limits projects actually realized (due to limits in resources and priorities).
- Human Resources: **lack of professionals** with Energy Efficiency background and experience.
- The **legislation** to characterize the energy performance contract (EPC) is **slowly developing** to have this model recognized by tax authorities.

Comments from experts:

- Federal law #261 from 2009 "On energy saving and increasing energy efficiency ..." *has brought some welcome change to this situation and caused a **small-scale burst of ESCO-activity** in Russia. However, the market is still very young and in relation to potential market size, there is only a **small handful of experienced, capable and serious companies offering ESCO-services**. Instead of traditional ESCO-companies and models, small and medium engineering companies, equipment manufacturers etc. are trying to expand into the market through **fixed-fee energy efficiency consulting services**. Great market potential exists especially in the public and private (residential) sectors but problems with legislature, access to financing and awareness and motivation are hindering fast growth.* ⁽¹⁾
- "There are **almost no state measures supporting the commercial ESCO sector**. Most of the projects are financed either through ESCOs' own funds and direct loans to customers, or by the customers themselves. In contrast, Russian banks rarely provide direct loan financing for energy efficiency projects of ESCOs, but rather offer financial leasing contracts." ⁽²⁾

(1) Nazarenko, Anastasia: Overview of the Russian ESCO market. The Lighthouse Group. 2013

(2) Garbuzova, Maria – Madlener, Reinhard: Russia's Emerging ESCO Market: Prospects and Barriers for Energy Efficiency Investments. FCN Working Paper No. 6/2012

Notable ESCOs on the Russian market 1/2

GPB EnergoEffect - <http://www.gpb-ee.ru/en/> ⁽¹⁾

- Energy-service company of Gazprombank; turn-key solution provider capable of providing full scale of ESCO-services, owned by one of the largest financial institutions in Russia – thus steady and stable access to financing
- Ongoing and completed projects:
 - Modernization of Boiler Houses in Nizhniy Novgorod
 - A project in cooperation with Nizhniy Novgorod's heating company Teploenergo, a 7-year energy service contract which is recognized as the biggest energy service deal in Russia.



GPB EnergoEffect

- Reconstruction of 16 boiler houses will allow increasing efficiency of boilers up to 94-95% or up to 16% from the level of 2012, decrease of fuel consumption from 73.7 million m³ up to 63.4 million m³ by 2020.
- Modernization of Engineering Infrastructure and Lighting at OMZ Group
 - Lighting modernization at Workshop Nr 3 of UZHM Ltd., Workshop Nr 33 of Igora Plant Ltd., Workshops Nr. 11 and 23 of UZTM, modernization of engineering infrastructure of UZTM Ltd.
 - Expected heat and electricity saving – 15%.

Fenice RUS LLC - <http://www.fenicerus.ru/en>

- Russian subsidiary of Italy-based EDF Fenice, a leading European energy efficiency company, part of the French EDF Group
- Ongoing and completed projects:
 - Compressed Air Modernization Project



- Client: JSC AVTOVAZ, signed: November 2009 (phase 1), January 2012 (phase 2)
- Duration: 10 years, investment: 10 million Euro (phase 1), 8 million Euro (phase 2).
- Electricity saving: 40%
- Compressed Air Modernization Project
 - Client: LLC "PC "Novocherkassk Electric Locomotive Plant", signed: November 2012
 - Duration: 10 years, investment: 2,5 million Euro
 - Electricity saving: 25%

(1) See also [slide 49](#) in the Interviews.

Notable ESCOs on the Russian market 2/2

OJSC “ESCO TyumenEnergo” - <http://www.esco-te.ru/escoen/>

- Part of a large holding company owning, amongst others, a number of electrical network companies
- Ongoing and completed projects:
 - Reconstruction of power distribution networks 10/0.4 kV using energy-saving measures
 - Total investment: 10.9 million RUB (250 000 EUR), ESCO contribution: 980 000 RUB (23 000 EUR)
 - Payback period: 6.5 years
 - Reconstruction of a combined heat and power plant:
 - Installation of combined cycle gas turbine (CCGT) 6.5 MW steam-heat recovery boiler
 - Total investment: 305 million RUB (7 million EUR), ESCO Contribution: 1.2 million RUB (27 000 EUR)
 - Payback period: 10 years



TBN Energoservis - <http://www.tbneenergo.ru/>

- Originally a manufacturer of mechanical and electrical meter units for measuring energy consumption, now a multi-profile company offering ESCO-services as well
- Ongoing and completed projects:
 - Various modernization and renewal projects of heat exchangers, pump stations, control systems



- ESCOs typically use (local) subcontractors and suppliers for the delivery and installation of new, energy-efficient equipment and other service work.
- The selection process of the best available technology may be for instance tender based.
- Most potential business opportunities are likely in subcontracting and co-operation with established market players.
- Focusing marketing efforts towards ESCOs might increase a company’s recognition and visibility and likelihood of being included in the supplier selection process.

Establishment of a federal "Super-ESCO", 2012: ⁽¹⁾

- Energy strategy of Russia and the government program for energy saving are in line and supporting the formation of the ESCO-market
- Barriers to entry, such as lack of knowledge, experience, trust and access to financing are preventing the rapid development of national ESCOs
- **Solution** – establishing a Federal Energy Service Company (FESCO) with the following goals:
 - *Creating conditions for dynamic development of the energy service market in the Russian Federation in accordance with the best international practices;*
 - *Ensuring the implementation of major projects in the public sector through bringing into effect energy service agreements (contracts), as well as projects in the field of alternative energy sources;*
 - *Supporting the development of energy saving in the Russian Federation, promoting domestic production of energy-saving products.*



European Bank for Reconstruction and Development granted a 20 million EUR loan to Fenice RUS, 2013: ⁽²⁾



- Fenice RUS, one of the first ESCOs in Russia and one of the few fully commercially acting ESCO-entities on the Russian markets has received the loan for a term of seven years.
- The loan enables the company to offer its customers direct access to financing, thus overcoming one of the greatest barriers to entry.
- The loan also enables the whole ESCO-concept to become more widely known and familiar on the Russian market.
- Customers will benefit from being able to modernize their equipment as well as reduce energy and maintenance costs without making upfront investments themselves.

⁽¹⁾Nadezhdin, E.V.: Development of Energy Service Companies in Russia. Russian Energy Agency. 2012.

⁽²⁾Wallis, Richard: EBRD backs innovative energy efficiency funding solution in Russia. <http://www.ebrd.com/pages/news/press/2013/130130c.shtml>.



Market Barriers in Russia

Procurement of Goods

- In Russia, different type of procurement procedures can be used and the **Law on Procurement concerns purchases done for State and Municipal Needs.**
- The forms are typically **tenders, auctions and open requests of quotations.**
- At the moment, 55% of government orders are realized through electronic auction portals.
- New rules regarding **governmental procurement** will come in to effect **from the beginning of 2014**, and according to the experts the new regulation of state purchases will become significantly **more complicated.**
- The new law not only changes the process of purchases, but also establishes a number of absolutely new aspects, like 15% of the purchases to be done from small and medium size enterprises.
- The **main focus is still on the lowest price**, while the quality is left to vague and arbitrary categories.
- The sphere of tender procedures' application will expand.
- The effect of energy efficiency requirements in the tender criteria on public tendering falls also into the vague areas.
- **The Energy Law No 261 adds energy efficiency to the list of criteria for project evaluation in public tenders**, so there are EE requirements for equipment and services procured through state budget, conducting public tenders.
 - > So far the requirements are made only for elements of buildings and for goods that require energy efficiency classification.
- Prime minister Medvedev has confirmed with the order 1999-r / 30.10.2013 a **list of goods** and services, which, in government procurement, **have to be purchased by arranging an electronic auction.** The list is very extensive, including machinery and equipment. However **if the project contract value is over 150 million RUB** (3.4 million EUR) in federal orders or 50 million RUB (1.1 million EUR) in municipal projects, **the purchaser can choose the contractor based on criteria of quality, special skills and experience.**
- There are not any direct requirements for **local content**, however Russia needs to develop its own industry and different kind of support and subsidizes exist for domestic industry. For instance in May 2013 the government decided that the **domestic suppliers will be favored in the governmental tenders:** Russian and Belorussian suppliers will get the 15% preference in prices (complicated rules prevail).

Participation in Procurement Tenders

- The public procurement is today more transparent and efficient than before and principally the tenders are published and they are open for all. Still, there are pitfalls, particularly to foreigners.
- To participate in the electronic tenders, the first step is to register onto one of the tender portals.
- For this, an electronic signature is needed.
- To be able to get an electronic signature, **the company needs to be registered in Russia** (needs to have a registration/tax number).
- As such, this makes it **impossible for foreign companies** to directly participate in the tenders.
- For a company that does not have their own office (legal entity) in Russia, a possible option for participating in the tenders is approaching the tender through **co-operation with a Russian partner company**, e.g. a distributor.
- There exist **five federal electronic tender market** sites/bases, through which governmental, municipal and other public procurement needs are announced. Of these, **Sberbank-AST** is by far the biggest; more than half of the tenders (both in value and volume) are handled through their system.
 1. ОАО «Единая электронная торговая площадка» www.roseltorg.ru
 2. ЗАО «Сбербанк-АСТ» www.sberbank-ast.ru
 3. ООО «РТС-тендер» www.rts-tender.ru
 4. ЗАО «ММВБ – Информационные Технологии» www.etp-micex.ru
 5. Общероссийская система электронной торговли www.zakazrf.ru
- In addition, municipalities can have their own electronic tender market sites/bases (for example the city of Moscow: <http://tender.mos.ru>). Private ones also exist (for example <http://www.zakupki.ru/>, <http://www.alltenders.ru>). Participating in the tenders can be complicated and time-consuming due to the intricate formal requirements of the actual tender process.



Help in tender participation

- Private companies may decide themselves how and by which rules to procure. Many companies and organizations publish their tenders also on their own internet sites.
- The consequence is that it is quite hard for any single supplier to comprehensively follow upcoming tenders.
- Today there are numerous **private companies offering consulting in tender participation**. This may include the **follow-up of tenders** and announcements when requests for products and services interesting to a particular company pop up.
- In addition, service providers can **offer assistance in filling the tender documents**, analyzing and monitoring the market as well as helping with filing corruption complaints to the anti-corruption agency regarding completed tenders.

Some examples of these companies:

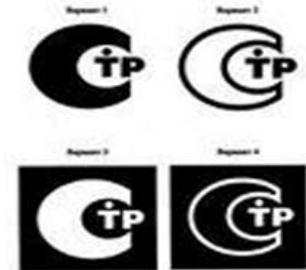
- <http://www.roszakupki.ru/en/pages/consulting.htm>
- <http://russiantender.com/english/about>
- <http://www.gos-express.ru/>
- <http://www.reorganizacia.ru/>
- <http://consulting.seldon.ru/>
- <http://united-trade.ru/>
- <http://garant-center.ru/> (offering a tender follow-up and analysis service for 5000RUB (~110€) per 10 days)
- <http://my-tender.ru> (offering a tender follow-up and announcement service for 6000RUB (~135€) per month)



Other market barriers



- Customs duties on imported equipment is still on the level of **8-15%**
- High **requirements for certification and licensing** for e.g. decentralized generation facilities by regulatory authorities
- **More than 80% of all products sold in Russia require mandatory certification**, i.e. they should be approved by relevant local authorities in terms of compliance to national standards.
- **Industrial equipment exported to Russia can be subject to one or several certification requirements**, depending on the type of equipment and area of use, such as but not limited to:
 - GOST R or TR Certificate of Conformity
 - Ex-proof certificate for equipment installed in hazardous areas
 - Pattern approval certificate for measuring instruments
 - Certificate of Fire safety
 - Rostekhnadzor (RTN, FSETAN) permit to operate the equipment
 - Technical passport
- Certification rules and guidelines are changing quite often
 - Not always that clear requirements
 - Requirements depending on customs code > causes different approaches
 - No standard price-list for certification services
- Valid certificates are required to ensure smooth customs clearance, for sale of equipment and allow to installation and use of equipment.
- Failure to present correct certification can result in severe delays at the customs and penalties from Russian supervisory authorities.





Interview results

IFC (International Financing Corporation)

IFC has two programs, both partly financed by the Finnish Government, directly **related to Energy Efficiency in Russia:**

1. Sustainable Energy Finance Program in Eastern Europe and Central Asia, since 2005, ongoing

http://www.ifc.org/wps/wcm/connect/RegProjects_Ext_Content/IFC_External_Corporate_Site/RSEFP_Home/

- Provides long-term credit to banks to enable energy efficiency loans
- Market research and public campaigns to raise general awareness about the energy efficiency issues
- Financing for over 200 projects worth more than 289 million USD
- What kind of projects are financed?
 - Generic energy technologies (motors, CHP, boiler equipment, compressors, lighting, etc.)
 - Industrial process modernization, resulting in lower energy consumption per unit of output
 - Renewable energy (where economically feasible)

Criteria for the projects (deal sizes up to banks):

- Private sector companies (<50% state ownership)
- Substantial energy efficiency effect
- Simple payback period of less than five years
- **Only projects using tested technologies** are financed

Project	Project Description
Bakery projects	Improving Energy Efficiency through modernization including upgrading heating, ventilation and lightning systems
Dairy projects	Improving e.g. cooling and freezing systems, bottle washing
UNK Agroprodukt	Investing in boilers producing heat from sun flour husks (waste); http://www.ifc.org/wps/wcm/connect/ff94b3004b5f68df8c71bd6eac26e1c2/ifc_Is_UNK_en.pdf?MOD=AJPERES

2. Russia Residential Energy Efficiency Project, since 2010, ongoing

- Aims to stimulate investment in the energy-efficient renovation of residential multifamily buildings, but also in other residential houses and to reduce CO2 emissions in Russia
- Work with Russian banks to develop and market financially viable energy efficient housing loan products targeted at homeowner associations and housing management companies.
 - IFC gives dedicated loans for five years to their partner banks – bank uses this loan as a credit line
 - The best partner is in Rostov-on-Don the Center-Invest Bank <http://www.centriinvest.ru/en/index.html>
- Investments worth **134 million USD** facilitated by the Project-end
 - Today 2.2 million USD lending to Home Associations and 39 million USD to individual house owners
- IFC does not take positions regarding equipment nor materials, they however share technical issues; have given partner banks EE calculators; have trained EE trainees in Russian association of Home owners
- Projects eligible for financing are typically modernization of: Heating, Electrical and Hot and Cold Water systems
- Another partner bank is Solidarnost Bank in Samara <http://www.solid.ru/>

Project	Project Description
Building Management Company in Rostov-on-Don	Improving Energy Efficiency of an apartment building: <ul style="list-style-type: none"> - New windows and roof repair - Energy-saving light bulbs - Gas and Water meters - Reconstruction of water supply, sewage and heating systems - Loan from Center-Invest Bank for 167 000 USD, annual savings about 20 000 USD
Building Management Company in Nizhny Novgorod	Reconstruction during 2001-2011 <ul style="list-style-type: none"> - Electricity meters – automation - Facade panels with insulation - Energy efficient lamps and new windows

EBRD (European Bank for Reconstruction and Development)

- EBRD has 767 projects in Russia and their cumulative business volume is 23.6 billion EUR, portfolio as of end 2012 was 9.7 billion EUR. Private sector's share of portfolio is 85%. Share of energy related projects is 14% (3.3 billion EUR).
- Energy efficiency is an integral part of the EBRD's activity in the country.
- EBRD has signed about 22 projects with significant Sustainable Energy Initiatives (SEI) components in Russia. These include:
 - A landmark loan with **Fenice Rus, an energy service company (ESCO)** providing turn-key energy efficiency solutions to industrial companies. – This project is said to be the only functioning ESCO in Russia (see also s. 33).
 - Energy efficiency has also been built in to projects such as the **75 million EUR loan to modernize municipal district heating** in the Far Eastern Republic of Sakha, Yakutia.
 - In the power sector the Bank engaged with RAO ES Vostoka (ESV) and RusHydro to finance a **100 million EUR switch from coal to gas fuel at the Vladivostok power plant.**
- **Industrial on-site generation** is one of the potential new projects.
- EBRD is also interested in finding projects in the field of **recycling**.
- **TEM (Ministry of Commerce and Employment of Finland)** also **cooperates with EBRD in Russia**. Typically TEM finances projects proposed to them by EBRD. In these cases **TEM finances the consultant's work** and these projects are "ear-marked" for Finnish companies. Annually TEM finances projects with few hundreds of thousands of euros. One example of the project financed by Finland is launching of energy efficiency label in Russia: <http://www.ebrd.com/pages/news/press/2013/130918a.shtml>, see also [s. 28](#)
- Mr. Laurson says EBRD is interested in new projects, with **minimum size of the investment about 20-30 million EUR**.
 - Typically **EBRD finances 30%** of the investments, time span is about 5-7 years.
 - With EBRD involvement it is usually easier to find complementing financing to the project .
- How to initiate projects with EBRD? Mr. Laurson says that the applicant should have a project proposal and the Russian partner, when contacting EBRD. The financing is given to the Russian legal entity; it is, in this case, the Russian customer of a Finnish company.



- EBRD has developed SEFF (Sustainable Energy Financing Facility) – a credit facility dedicated to energy saving and renewable energy investments – active in 10 countries, in Russia it is run by RUSEFF
- The aim is to channel technical support and dedicated loans for the implementation of small-scale energy efficiency projects to industrial companies and SMEs via participating banks.
- **RUSEFF partner banks provide loans of up to 300 million RUB (10 million USD)** to private companies for investments in modern equipment and materials resulting in **energy savings**.
- At the end of November 2013, the program had already been working with some 610 unique client projects worth a total of about **180 million USD** through ten different partner banks.
- Loans are given **for 5-7 years** at the market rates
- RUSEFF provides simple access to finance: A loan request which is combined with the equipment selection
- **Who can apply and what are the preconditions?**
 - **Russian private companies** (max 49% owned by public organizations)
 - Company needs an **energy efficiency plan**, min **10% savings required**
 - at least **10% energy savings** from the baseline
 - minimum of **10% IRR**
 - Equipment is accepted in RuSEFF's Equipment Selector



Becoming a RUSEFF approved supplier of energy-efficient equipment may increase the company's market visibility and sales volume.

- The program has faced some **challenges in finding prospective customers** and the Equipment Selector is not used that often, therefore RUSEFF project staff has started to look for potential clients from the Partner banks' existing client databases.
- Current trends show that the fields of agriculture, construction, real estate and food are working well and EE-investments are made in those sectors.
- Among the partner banks there are also two leasing companies since leasing schemes are also seen as acceptable, as they enable old, worn-out, polluting and inefficient equipment to be replaced with new and energy-efficient equipment
- For the evaluated projects **RUSEFF prepares a Project Assessment Report**, which includes calculation and analysis of:
 - Technical risk
 - Financial calculations, including IRR (internal rate of return)
 - Energy efficiency
- The work is realized in the form of **prefeasibility study**.
- Any chosen equipment can be directly combined with a loan request to one of the RUSEFF partner banks
- **Advantages of RUSEFF**
 - Donor funded, it is free of charge, technical support to validate energy savings
 - Reducing the investment risk through RUSEFF validation checks
 - Improved company image and product quality due to modernized production facilities
- The free-of-charge technical assistance provided is financed by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, International Climate Initiative and the EBRD Shareholder Special Fund.



RUSEFF Equipment Selector Opportunity 3(4)

From the **Equipment Selector** (see the **Equipment Selector** on RUSEFF site)

- One can select approved renowned equipment from already over 2 000 pieces of equipment - best available technology
- The Equipment Selector is a portal of energy efficient equipment in Russia.
- **Equipment selector** is likely used as a **free source of information**, a sort of market overview of approved and selected (by RUSEFF specialists) energy efficient technology. Thus, the equipment selector provides a bigger benefit both to the economy and environment and to the equipment supplier than can be directly measured.
- To get to the list of approved suppliers is simple enough:
 - Go to the RUSEFF site > choose "Equipment Suppliers in the middle of the page (click it) > click "Add equipment" and follow the instructions for New Suppliers
 - **Indicating a price is not necessary**, even though it is shown as a mandatory field.
 - There is an evaluation and approval process for new suppliers and one can start the process by filling in the above form online.
 - It is also possible that If the preferred equipment by the end customer is not on the Equipment Selector, either the customer or the supplier can provide RUSEFF with equipment details and RUSEFF will consider inserting the equipment to the Selector at that stage.



RUSEFF is a potential channel to business, and is also offering potential financing opportunities through its partner banks. RUSEFF is very interested in promoting their program also towards Finnish equipment suppliers and invites them to add their equipment to their database.

Typical projects financed under RUSEFF 4(4)

Project	Project description
<p>Wood Processing in Kirov</p> <ul style="list-style-type: none"> - Producing fabricated wood block flooring, skis, furniture board <p>http://www.ruseff.com/Practical-Cases/KIROV/43</p>	<ul style="list-style-type: none"> • Investment in biomass boiler to use wood waste to replace conventional fuel • Compensating air compressors with modern equipment • Installing steam turbine CHP*s to balance the electricity demand • Investment 2 million USD, annual savings 0.7 million USD
<p>Modernization of Building in Volga region</p> <p>http://www.ruseff.com/Practical-Cases/ENERGY-EFFICIENT-MODERNISATION-OF-A-BUILDING/256</p>	<ul style="list-style-type: none"> • Gas infrared heating • Modern energy efficient windows • Roof insulation • Energy efficient boilers • New lighting system • Investment 0.5 million USD, annual savings 114 000 USD
<p>Pig breeding and meat processing plant in Kemerovo</p> <ul style="list-style-type: none"> - installation of a steam turbine to replace the pressure reducing system <p>http://www.ruseff.com/Practical-Cases/KEMEROVO/44</p>	<ul style="list-style-type: none"> • Lower fuel consumption • Replacing pressure reducing system • Investment 1.3 million USD, annual savings 272 000 USD
<p>Ferroalloy manufacturer in Sverdlovsk</p> <p>http://www.ruseff.com/Practical-Cases/SVERDLOVSK/41</p>	<ul style="list-style-type: none"> • Replacing outdated air compressors • Installing variable speed drivers to regulate several motors • Reconstructing and insulating the hot water pipes. • Regulating the electric furnace • Investment 1.3 million USD, annual savings 272 000 USD

Gazprombank Energoeffekt, GPB-EE

- **GPB-EE** (<http://www.gpb-ee.ru/en/>), founded in 2011, is one of the major **ESCO market players** in Russia, 100% owned by Gazprombank > access to needed financial resources.
- Provides a **full package of services** both to public and private companies: from initial technical solution to financing, implementation and maintenance.
- GPB-EE says, It is not easy to sell ESCO services, business is slow, mainly because:
 - The subject is difficult enough for the potential customers
 - If a potential customer has know-how, they criticize the cost of the project with GPB's participation, which is typically double the price of investment itself.
 - **GPB-EE also says that the theoretical potential for energy savings** is much higher (at the level of 35%) than the real one, which is only about 12%.
 - Nobody knows the actual figures - no metering systems are typically installed in the industry, e.g. for heat supply.
 - The **government policies, particularly tariff policy, do not support energy efficiency measures**
- In GPB's portfolio the minimum size for the viable project is **100 million RUB (about 2.3 million EUR)**
- GPB-EE works with the world's leading companies when choosing a partner (solution supplier) and the partners are required to have **localized warehousing and service functions**.
- GPB-EE **tenders are typically placed on Fabrikant electronic trade system** (<http://www.fabrikant.ru/>) or at Gazprombank's one (<http://etp.gpb.ru/>).
- GPB-EE works with different kind of ESCO contracts, different level of involvement
 - The most typical is that the new assets are in the end-customer's balance, but the ownership of the assets remains with GPB-EE until the final payment is done.
- **Opportunity for the Finnish companies** is to participate in the GPB-EE's energy efficiency projects:
 - As a supplier of equipment: Follow-up of the tenders (sites Fabrikant and Gazprombank)
 - Opportunity for companies offering operation services – there is a lack of project management companies.
 - If Finnish company has a potential client, who is lacking financing, GPB-EE is willing to get involved.
 - To participate in GPB's networking events

Sperenergodevelopment (Sberenergo)

- Sberenergo (<http://www.sbrf-ed.ru/>) is owned and founded by Sberbank of Russia in 2009 as a competence center for investments and project management in the field of energy efficiency , serving both corporates and utilities.
- The company wants to meet the following needs in the energy efficiency market:
 - The growing need for financing by the regional authorities and corporate structures.
 - The lack of information about the international technical solutions and financial arrangements.
- Sberenergo performs two functions:
 - 1) Expertize and promotion of projects in the field of energy conservation and energy efficiency.
 - 2) Investment activities for projects in the field of energy efficiency.
- Sberenergo launched the first projects in 2011 and there are not that many of them yet (the number was not told). The **emphasis is in the Russian regions.**
- The main objective of Sberenergo is to provide its customers and partners in the regions of Russia a complete toolkit for the project from the planning stage until it reaches the target. It includes:
 - 1) Technical expertise and solutions
 - 2) Most optimal funding for the project
 - 3) Administrative and organizational help to achieve the targets of the project.
- Sberenergo also says there is **a lack of viable projects.**
- The essential part of their work is **education of energy efficiency issues.**
- Projects can be various, no specific requirements exist, though of course energy efficiency is a requirement and is verified.
- In big projects Cberenergo **works via SPV (Special Purpose Vehicle/Entity)**, founded separately for each project, which gets the credit, buys the equipment and owns it.
- Most of the projects today are in the field of housing and utility and are managed by Sberenergo. In these projects a **leasing scheme is used** and the equipment is owned either by the leasing company (in this case Sberenergo) or by the end-customer.



NIB, Nordic Investment Bank

- NIB (<http://www.nib.int/>) is **International financial institution of the Nordic and Baltic countries.**
- NIB finances projects that improve competitiveness and the environment of the Nordic and Baltic countries. The Bank offers **long-term loans and guarantees** on competitive market terms to its clients in the private and public sectors. NIB is owned by Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden
- **NIB has launched a 50 million EUR loan facility with Russia's Vnesheconombank (VEB) for on lending to energy efficiency investments located in northwest regions of Russia.**
 - The maturity of the new loan program is 10 years.
 - VEB is joining NIB's Russia Energy Efficiency Program (REEP), intended to support the country's industries in **improving the use of energy and heat** and gradually crowd out energy generation from fossil fuels.
 - As a REEP partner organization, VEB will benefit from the **consultancy services financed by Sweden** through its Ministry of Foreign Affairs.
- NIB **launched** a long-term **funding program** aimed at improving energy efficiency **in the industrial and district heating sectors** in the Russian Federation also **in August 2011.**
- NIB's **Russia Energy Efficiency Program (REEP)** is aimed to help potential borrowers in Russia to develop eligible projects and provide funds for them. The funds will be allocated by NIB with Russian [Gazprombank](#) and potentially some other intermediary banks. NIB has so far earmarked EUR 60 million for on-lending to REEP projects.
- Case of **Territorial Generating Company No 1 in Vuoksi, Leningrad Region, renovation of HydroPower Plants:** http://www.nib.int/loans/agreed_loans/331/territorial_generating_company_no_1.
- Contact: Mr Igor Kovtun, NIB's Chief Representative in Russia, tel. +7 985 643 2264, igor.kovtun@nib.int

Energy Saving Credits

- NEFCO offers small scale financing for energy saving measures in municipally-owned buildings such as schools, day care centers, hospitals and sports facilities (upgrading boiler plants in Komi, installing new heat exchangers in Novodvinsk, rebuilding the local heating plant in Petrozavodsk) .
- Raiffeisen Bank operates as NEFCO's intermediary bank in Russia since 2011 and disburses funds earmarked for energy saving projects.

Project criteria

- Municipality or municipal company as borrower in North-West region of Russia
- Energy Efficiency savings of about 25% of the investment cost annually
- Substantial environmental effects for the Nordic region
- Energy audit required before NEFCO's approval of the project
- Only Finnish equipment suppliers in case of project financing by the Finnish Ministry of the Environment.



Loan amount

- The maximum loan amount is the equivalent of 400 000 EUR in local currency. NEFCO can finance up to 90% of project costs.

Payback period of investment

- Up to 5 years.

Tenders

- Procurement notices are published on NEFCO website: <http://www.nefco.org/>

Contacts

- Finland: Elisabet Paulig-Tønnes, Senior Manager, tel. +358 10 6180 642, elisabet.paulig-tonnes@nefco.fi
- Russia: Vitaly Artyushenko, Chief Investment Advisor, +7 911 646 68 72, vitaly.arthyushenko@nefco-ru.ru

Vnesheconombank and EIB

Russian State Corporation "Bank for Development and Foreign Economic Affairs" (**VEB, Vnesheconombank**) has a loan program with the International Bank for Reconstruction and Development (the IBRD)

- Amount: 218 million Euro
- Maturity: 18 years
- Portfolio of projects is being formed.
- Minimum project's value: 2 billion RUB = 44 million EUR, minimum amount of credit by Vnesheconombank: 1 billion RUB= 22 million EUR, payback period: no less than 5 years
- <http://veb.ru/en/strategy/pmfi/vebmbrd1/>;
http://veb.ru/en/strategy/prj_rev/

EIB, European Investment Bank

- EIB opened the representative office in Russian in 2013
- EIB has a product called "Maximizing investment in sustainable energy" <http://www.eib.org/products/elena/index.htm>
- The target in Russia are project over 25 million USD
- Own product for SMEs (Small and Medium size companies)
- When financing the local banks (in Russia VEB, Sberbank, Raiffeisen Bank) there is no minimum
- Case with VEB: http://europa.eu/rapid/press-release_BEI-13-191_en.htm





Business Cases

1) EBRD

- See [slide 44](#) and slides for [RUSEFF 45-48](#)
- Russian Sustainable Energy Financing Facility (“RUSEFF”) OEB EE Loan II (Industrial), <http://www.ebrd.com/english/pages/project/psd/2013/44538.shtml>
- Russian Sustainable Energy Financing Facility (“RUSEFF”) OEB EE Loan III (Residential), <http://www.ebrd.com/english/pages/project/psd/2013/45327.shtml>
- UCLP Energy Efficiency Loan, <http://www.ebrd.com/english/pages/project/psd/2013/43969.shtml>
- Lorry Cargo Transportation, <http://www.ebrd.com/english/pages/project/psd/2013/45267.shtml>
- Inter RAO Capacity Replacement Loan, <http://www.ebrd.com/english/pages/project/psd/2013/44993.shtml>
- KKS Regional District Heating, <http://www.ebrd.com/english/pages/project/psd/2012/44763.shtml> see also Opportunities, [slide 60](#)

2) IFC

- See slides [42](#) and [43](#), please.

3) Gazprom EnergoEffekt

- See [slide 49](#) and <http://www.gpb-ee.ru/en/projects/>.
 - Modernization of Boiler Houses in Nizhny Novgorod
 - Modernization of Engineering Infrastructure and Lighting at OMZ Group
 - Modernization of Street Lighting in Klincy Town (Bryansk Oblast) and Kaluga

4) NIB

- See [slide 51](#)

5) NEFCO

- See [slide 52](#)

5) An Innovative case and a case of a small company cooperating with a giant:

- A small Dutch company, **Energy Floors** (<http://www.sustainabledanceclub.com/>) is cooperating with Russian Railways to develop a floor panels to create electricity (read the article: http://www.themoscowtimes.com/business/country_supplement/russia_holland/2013/eng/article/489281.html).

6) Case of constructing own diversified generation plant:

- **STEP** diversified construction company based in St.Petersburg (<http://stepcon.ru/en/>) and specializing in general contracting services, will reconstruct **power substation for Procter & Gamble's** plant in Tula Region.
- The value of the contract is 45.5 million RUB (over 1 million EUR).
- STEP is to complete the reconstruction of the power substation in January 2014.
- The P&G Novomoskovsk plant is one of Procter & Gamble's largest production facilities in the world and one of the largest FMCG manufacturers in Russia. The plant produces home care and children care products, with approximately 25% of the products exported to the CIS states.

7) Paroc opens its first stone wool production plant in Russia

- Paroc Group, which is the leading manufacturer of energy-efficient insulation solutions in the Baltic Sea region opens the company's first stone wool insulation factory in Russia in Tver Region.
- The opened production line is worth 60 million euros in investments, and it is a part of a larger investment plan that will be carried out in stages.
- Expanding activities in Russia from importation to local production improves the reliability of deliveries and availability of products for Russian customers. "With the new production plant, we are truly a part of the field of energy efficient, fire safe and responsible construction also in Russia", says company representative.
- **The demand in Russia for mineral wool insulation solutions is expected to increase 8–10% annually until 2020**

8) Hevel (<http://www.hevelsolar.com/en/>)

- Hevel Solar was founded in 2009 to develop clean solar energy in Russia as a sustainable alternative to conventional energy. The company is owned by Russian high-tech companies Rusnano and Renova and they offer turn-key services starting from design and production of photo electrical modules till turn-key construction of the power station.

9) OAO Arhoblenergo (<http://www.aoenergo.ru/aoenergo/>) (Magazin Ekspert No 45, 2013)

- Modernization of heating structure by combining boiler houses and transferring them to bioenergy; laying new polymer pipes.
 - New boilers by a Russian company "Avtomatik-Les" (coal was changed to wood chips or gas)
 - New heat exchangers, by "Ridan"

10) Fortum, Chelyabinsk – investment to co-generation of heat and electricity

- Construction of two energy complexes of 500 MVt (<http://www.fortum.com/en/mediaroom/pages/fortum-commissions-new-production-unit-at-its-chelyabinsk-power-plant-in-russia.aspx>).
 - New gas turbines
 - Investing also to automated metering system



Benchmarking other countries' activities

Denmark

- Denmark is actively promoting Danish know how and technologies via a **Green Capacity forum**, which is a forum for Danish companies within the sector of environmental friendly solutions and environmental sustainability (<http://greencapacity.ru/>).
- The intention is to create a platform for better development of energy efficiency and energy savings in the housing, district heating, water and waste water and industry sectors in Russia.
- Green Capacity includes: updates on the legislation, awareness campaigns, seminars, media campaigns, informative leaflets, clubs



Germany

- The Deutsche Energie-Agentur GmbH (**dena**) - the **German Energy Agency** - is the center of expertise for energy efficiency, renewable energy sources and intelligent energy systems. dena's mission is to generate economic growth and maintain prosperity with ever lower energy inputs (about dena: <http://www.dena.de/en/about-dena.html>).

dena in Russia

- In order to intensify the transfer of knowledge and to promote the development of joint pilot projects, dena makes a point of bringing together experts from German and Russian businesses, as well as ministerial representatives at Federal and regional levels. It also carries out e.g. training for managers of Russian businesses, www.dena.de/en/international/russia.html
- The Russian-German Energy Agency "rudea" was launched in 2009 to support the development of efficient and environmental friendly energy generation, conversion and use in Russia. In 2013 however the agency was liquidated.

Holland

- **The Project Delta Group Foundation** and the Ministry of Foreign Affairs of The Netherlands, in private-public partnership, promote international cooperation and trade to contribute to sustainable production and supply of energy, <http://projectdeltagroup.com/eng/home/>. Delta is a network and the goal is that the Russians know what the Netherlands has to offer in terms of knowledge and expertise and they also help companies to further strengthen and deepen their ties with the Russians.

Sweden – no specific program, working with NIB, see [slide 51](#)





Business Opportunities

Opportunities in the Russian Market

The opportunities that came up during the interviews:

1) IFC – kindly see [slides 42-43](#)

- When tendering, IFC does not favor the financing country anymore
- There are at least two ways to try to utilize IFC's EE work in Russia:
 1. Looking for potential customers in Russia and recommending them to utilize IFC's programs for financing, it is to give correct contacts to the potential end-customer.
 2. Russian end-customers can contact the following persons:
 - Katerina Levitanskaya, Project Manager in the IFC Residential Energy Efficiency Project
Tel +7(495)411 7555, klevitanskaya@ifc.org
 - Boris Nekrasov, Operations Officer, Sustainable Business Advisory
Tel +7(495)396 1089, bnekrasov@ifc.org

2) EBRD - kindly see [slide 44](#)

3) RUSEFF - kindly see [slides 45-47](#)

4) Gazprombank EnergoEffekt – kindly see [slide 49](#)

5) NEFCO – kindly see [slide 52](#)

6) OJSC KKS-Group (<http://www.in-vek.ru/-q-q>), a privately owned Russian operator of utility services. KKS-Group provides district heating services along with water and housing management services today in four cities in Tula and Kemerovo regions. Company has been awarded EBRD loan and it is looking for growth.

- For business opportunities, procurement contact Jurij Shchukin, General Director, shchukin@in-vek.ru



Opportunities in the Russian Market

- 1) Russia has set a **target to cut 50% in gas flaring**. Russia is a global leader in gas flaring today and burned over 17.1 billion m³ of associated petroleum gases in 2012. Government has raised fees for companies having negative impact on the environment, including sanctions for excessive burning of associated petroleum gas. This is **stimulating investments to reduce emissions of pollutants and greenhouse gases**.

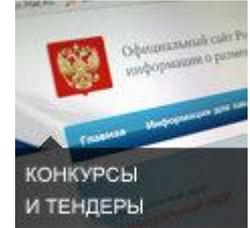
- 2) **St.Petersburg "Teploset"**, (<http://www.teplosetspb.ru/en/about>) has said that they are open for cooperation with Finnish companies and that there is potential in the following sectors:
 - 1) Project design, modernization of pumping stations and in new models of pipes for district heating.
 - 2) A meeting of General Consul Ms. Pirjo Tulokas with Artur Kiiski from Teploset in January 2013 and an article in Kommersant (29.4.2013) saying that St.Petersburg is the city where the amount of accidents in the heat grid is one of the biggest in the country.

- 3) **The Finnish-Russian EkoGrad Platform** by VTT, <http://ekograd.vtt.fi/fi/>
 - Promotes the cooperation and collaboration between Finnish and Russian construction companies. Activities cover both SMEs and large companies.
 - The new joint platform under development is called "ECOGRAD PLATFORM" to be created in 2013 – 2015 to define **innovative solutions for energy efficient building sector**. The goal is to create sub-platforms in the coordination of the building committee of St. Petersburg City and to boost activities with real business cases, task-forces and funding solutions.
 - Tekes-FASIE type funding sources will be aimed to be used for joint efforts between small and medium size enterprises, long-term funding possibilities will be initiated and real project cases launched.
 - Participation in the activities of the Centre is open to all Finnish and Russian companies, research organizations and other stakeholders.

- 4) **Moscow city** has a program called **"Energy Conservation 2012-2016 and on to 2020"** which objective is "To ensure more efficient use of energy resources by city consumers through a reduction in energy losses during production, conversion, transport and end use.
- "The program provides a long list of activities and **the city is interested and open for new technologies** and opportunities. Finnish companies can get acquainted with the objectives of the program and see if there is anything interesting for them:
<http://www.mos.ru/en/about/gprograms/energoberezhenie/>.
 - Many cities and regions have these kind of local programs (most of them are only in Russian), so it is possible to follow the chosen regions and cities, and their internet pages.
- 5) The goal to provide energy by **Renewable Energy sources** (see slide 15) to the **territories which are isolated from the Unified Energy System** through the use of local fuel resources and renewable energy provides opportunities also for Finnish companies, suppliers of equipment for wind and solar equipment as well as for peat and wood chips utilization.
- 6) **Industrial on-site generation** is one of the potential new projects, mentioned by EBRD and already shown a case of P&G. Finnish companies offering technology and/or services in this field should actively look for opportunities in Russia. An easier start can be made by mapping foreign industrial producers in Russia and proposing them services.



MOSCOW CITY
GOVERNMENT



Opportunities in the Russian Market

- 8) **AEB, Association of European Businesses**, has an Energy Efficiency Committee (<http://www.aebrus.ru/en/aeb-committees-and-working-groups>), a working group on energy efficiency issues to support members of the AEB in the questions related to EE. AEB site has a lot of useful information and they also participate proactively in initiating and commenting governmental proposals. Interested Finnish companies can become members and also non-members can participate different venues organized by AEB and the site is also quite good to get information easily and in English.
- 9) To participate in **GPB's networking events**, see [slide 49](#) and contact: Ms. Anna Chelnokova , anna.chelnokova@gpb-ee.ru (<http://www.gpb-ee.ru/en/about/contacts.html>).
- 10) Dutch experts say that the biggest opportunities lie in modernizing Russia's **power plants and grids**, though it requires major investments. Opportunities for smaller companies are in the field of energy efficiency. They **list LED illumination and economical kettles and boilers**.





Future Prospects and Foresight

The Future Outlook of Energy Sector

- The Energy Research Institute of the Russian Academy of Sciences and Analytical Center for the Government of the Russian Federation have published the Global and Russian Energy Outlook-2013 up to 2040*.
- **The Initial Scenario** (based on official scenario by Ministry of Economic Development of RF) looks like following:
 - By 2040 **the domestic energy demand will grow by 39%**
 - Electric Power Stations produce 40% of the domestic need, while 50% is covered by natural gas
 - Increase in the production of primary energy by 20%
- In the **Baseline Scenario** the forecast is made with world markets comparisons (Goldman Sachs and oil companies). It is forecasted that Russian **exports of oil and petroleum products will decline by 25-30%**, mainly because of becoming the most expensive supplier in the world market.
- According to that scenario also **gas exports will go down with 15-20%**
- This outlook shows serious potential threats to the Russian economy and energy sector, resulting from the transformation of global energy markets.
- The decrease in revenues from exports of both oil and gas will result in a slowdown in GDP growth, which will also lead to deterioration of the volume of investments in the Russian energy sector.
- The above described negative trend can actually be met only with:
 - **Investing in energy efficiency**, since Russia has potential e.g. in elimination of wastage and losses alone.
 - **Cost of investment projects should be reduced** – cost of projects in Russia are typically several times more expensive compared to analogous projects globally.
 - In Russia projects that have been completed are too often underutilized for years.
- Ministry of Energy is planning to create a federal energy service company (100% owned by the government). This company will take the risks in the project and can become a shareholder in the regional energy service companies, who will work with concrete industrial companies.



*Source: http://www.eriras.ru/files/Global_and_Russian_energy_outlook_up_to_2040.pdf

Future outlook of Energy Efficiency

- In December 2013 minister Uljukaev (Ministry of Economic Development of Russia) stated that **Russia will be able to reduce energy intensity only by 20-25% by 2020** compared to 2007 levels and the target of 40% will not be reached without additional measures.
- Therefore the government is considering different measures to increase demand for energy efficient technologies and equipment, such as:
 - To extend the law concerning governmental procurement to cover also municipal entities, government owned companies and institutes
 - To encourage private companies to modernization of equipment with tax incentives
- In the Moscow Times interview, the Dutch experts from Philips and Lighthouse say:
 - “At the moment, the **government is only announcing and establishing standards and they are only recommendations** — they are not obligatory as in many countries, the legislation was put into place long ago.”
 - “Energy efficiency in the West came about thanks to subsidies, effective legislation, regulations and best practices, tax incentives and public awareness campaigns. In Russia, all these factors crucial to the development of more efficient energy use have been lacking up to today.”
 - “According to the official Russian Energy Strategy to 2020, present-day energy consumption in Russia could be lowered by 40 percent to 48 percent, or 360 to 430 million tons of coal equivalents, in 2020 through effective energy efficiency measures and structural changes in the Russian economy, that means that **almost half of Russian energy consumption could be conserved if the country’s energy-saving potential were fully realized.**”
 - The general consensus among those involved in the business of saving energy is that it may take some time yet before legislation in Russia supports their goals. One hope the industry holds, however, is that a younger generation of officials will share the awareness and drive of their private-sector counterparts.

Read more:

http://www.themoscowtimes.com/business/country_supplement/russia_holland/2009/eng/article/401885.html#ixzz2nXKSczb9

Future of Decentralized energy generation

- Development of decentralized generation replacing centralized generation is a major trend in the global context.
- In Russia this trend could also:
 - **Increase energy efficiency** (e.g. the losses are biggest during the transmission of the electricity)
 - **Reduce CO2 emissions**
 - **Reduce the burning of gas in flares**
- The share of transmission fees in Russia is for large enterprises up to 40% from the final price of electricity and this share will grow in the future because of **large investments into grid stability will be needed.**
- As a consequence **autonomous generation will become cheaper** than grid-connected generation.
- However large generating companies will decrease profits and are naturally against the decentralized generation
- On the other hand as a consequence of autonomous generation there is a risk of the collapse of the unified system
- The **growth of decentralized generation opens new opportunities:**
 - Potential exchange of experiences in the regulation of grid companies and network operators
 - Development of standards and equipment requirements
 - Export of small, medium and large-scale generation technologies
- Mr. Alexander Gusev in his review of Energy Efficiency Policy in Russia in June 2013 says that in 2011 **major federal companies dealing with electricity generation and transmission** (such as Federal Grid Co, Russian Grids and RusHydro) **bought 70 % of their electricity equipment form European and Chinese companies**, only 30% was produced in Russia.
 - Import of gas turbines (5-50 MW) increase in the last three years threefold
 - Import of diesel generators increased fivefold
 - Main exporters are China, Germany, France, Switzerland, UK, Hungary, Czech Republic and Austria
- Because of the lack of generating capacities, Mr. Gusev sees opportunities for EU also in construction of power and heating plants, transformer substations and decentralized generation.



- The existing grid in Russia has limited automation and lack of customer data to manage and reduce energy use.
- Smart grid activities in Russia are focused on implementation of new grid technology, smart metering and the beginning of realizing demand response mechanism and energy awareness for end consumers.
- Important legislation regarding smart grids is **Federal Law nr 261, EE Law**, that states that (smart) meters and accounting systems should be installed at all participants of electricity market and thermal power in power plants and substations, in enterprises. It also calls for a Smart Grid Initiative/Roadmap
- Important to realize is that **more than half of the Russian grid is past its permitted operation time**. Given the expected growth in energy demand, many grid projects (replacements and new capacity) are expected. This might provide opportunities to review the current grid design approach and start with a smart grid view in mind.
- Important factors to develop smart grids:
 - 1) Increasing grid reliability and quality
 - 2) Accommodating decentralized (renewable) generation
 - 3) Reduce grid losses
 - 4) Defer or avoid investments in the distribution grid and in in central generating capacity
 - 5) Energy savings
 - 6) Distribution grid management
- **Average losses in electric networks in Russia are about 12-14%** compared with 4-9% in Europe, and substantial reduction in grid losses cannot be achieved using current equipment and control mechanisms. New equipment, control principles and better topological layout will therefore have to be deployed to drive increases in grid efficiency. - See more at: <http://smartgridresearch.org/standard/russia-smart-grid-market-analysis/#sthash.4cyo9URk.dpuf>
- A case example of cooperation of Germany and Russia in the field of smart grids: <http://www.smartgridgb.org/technology-commercial/item/314-new-deal-between-germany-and-russia-aims-to-find-smart-grid-solutions-for-russian-power-grid.html>.



District Heating

- Traditionally, Russia is using district heating for industrial and residential applications. District Heating network is the largest in the world, serving **92% of the urban areas** and 20% of the rural areas. This suggests that most residential buildings do not have a natural gas grid connection. The share of CHP (combined heat and power) with regard to the total production is high.
- The Law on Energy efficiency 261 of November 2009 includes several sections relevant to the residential heating sector:
 - obligation to install heat meters with financial solutions and to bill energy users according to metered consumption instead of norms.
- **District heating demand is declining**, due to decreasing demand from industry and the emergence of **more local decentralized heating solutions**, based on small boiler houses or heat pumps for (individual) buildings. This emergence of local solutions is partly due to the low quality of service of large district heating, according to Expert magazine (18/2013) **up to 60% of heat is produced in small boiler houses**.
- It is estimated that almost **70% of the district heating fixed assets require replacement**, largely due to the ageing of the infrastructure and generation units.
- Generally, low efficiency coal- and gas fired units are used and the **transmission losses are estimated at 20-25%** as compared to 5-10% for Western countries.
- District heating is owned by municipalities that lack financial resources to invest in CHP systems.
- Thus, there is much work regarding refurbishing district heating grids and replacement of large CHP units. This seems, however, a rather common service in a very competitive energy market that will probably be dominated by large energy companies and gas turbine manufacturers.
- Small scale district heating (one or several buildings) seems to be a competitor most likely because of lower investments, lower grid losses and better quality of service.
- One of the solutions the Government is offering is to create ETOs (a single heat supplying organization) in big cities to operate the whole heating system of the city in question. Pilot projects are being planned in e.g. Moscow, St. Petersburg, Perm.

Sources: Modernizing residential heating in Russia: End-use practices, legal developments and future prospects, Energy Policy, Vol 42, March 2012. <http://ideas.repec.org/a/eee/enepol/v42y2012icp213-220.html>. and DNV KEMA Energy & Sustainability, report March 2013, <http://www.agentschapnl.nl/sites/default/files/Final%20report%20DNV%20KEMA%20Market%20scan%20smart%20grids%20and%20smart%20meters%20in%20Russia.pdf>

Conclusions and Recommendations

Conclusions

- ✓ Sustainable energy policy framework is developing in Russia and central to this is the President's target **to reduce the energy intensity of the Russian economy by 40 per cent by 2020**, as well as an objective to achieve the share of electricity production from **renewable energy sources at 4.5 percent** of the total electricity generation by 2020.
- ✓ A new Federal Law on Energy Efficiency (2009) as well as a State Target Program on Energy Efficiency (2010) has been adopted in order to facilitate the achievement of governmental objectives.
- ✓ Russia offers excellent **opportunities as well as challenges** in the sphere of energy efficiency.
- ✓ Rising prices for electricity stimulate energy-saving programs both at the company and individual levels. On the other hand, the **public awareness** of energy efficiency issues in a country with abundance of energy resources **is low**.
- ✓ Major problems today are the **incomplete legal basis** concerning energy efficiency, low qualification of energy auditors and the lack of long-term financing capital.
- ✓ In energy efficiency all actions are driven by economics; **environment does not play significant role in decision making**, yet.
- ✓ The **energy market in Russia is closed** and private consumers can do very little to cut down on consumption since they do not have any influence on the centralized energy supply system.
- ✓ **ESCOs** will play an important role in the energy efficiency projects as soon as the ESCO concept starts to work in Russia, as it should > the role of ESCO will be substantial in choosing/recommending the technological solutions.
- ✓ Russia has taken certain legislative measures related to energy efficiency but today actions are needed to achieve the sustainable energy future (Energy Efficiency Committee, AEB):
 - ✓ Development of a **tariff system** reflecting real cost of consumed energy
 - ✓ Implementation of **country-wide energy measurement**
 - ✓ **Modernization** of energy generation, distribution and consumption
 - ✓ Establishment of a **system of penalties and incentives** – to enforce the compliance of the rules and regulations
 - ✓ Allowing for third party access to the grid
 - ✓ Changing **culture of how to deal with energy**

Conclusions

- ✓ The need to improve energy efficiency in companies will also increase the demand for European technologies and equipment in the Russian market.
- ✓ The **high prices, lack of energy generating capacities** (regional issues and issues related to connections to the network) and **inefficiency** of the big generators stimulate decentralized generation, which tends to be cheaper than centralized generation. (See P&G case, [slide 56](#))
 - ✓ Regarding decentralized generation the Russian market offers opportunities of new technologies and know-how.
- ✓ In Russia, there is an intense competition and many international players are present in the market. This concerns particularly Moscow where the suppliers from all countries wish to introduce their technologies
- ✓ **Opportunities in the public sector are moderate** due to their not cost effective and not high-quality preferences and also because of government procurement processes.
- ✓ Kind of indirect **market barriers** for foreign suppliers exist, particularly in the sphere of procurement (public tendering), high requirements for certification and import duties.
- ✓ There are quite many **international financing programs** and opportunities today offering energy efficiency projects both technical and financial support. However, taking into account the scope of Russia's energy sector, these programs represent "a drop in the ocean." Nevertheless they have quite an important role as a catalyst for the actions related to energy efficiency and also because they offer **credits with longer payoff periods** (5-7 years).
- ✓ In conclusion the projects financed by international institutions make an important example of promoting energy efficiency in Russia.
- ✓ One of the positive consequences is that many notable Russian banks and corporations have began their own energy efficiency projects and programs.

Recommendations

- We recommend Finnish companies to follow the **ESCO** concept development in Russia
- Finnish companies should **follow the tenders by financing institutions** (e.g. IFC and EBRD) and by different actors in the Russian market, e.g. ESCOs
- However, Finnish companies should concentrate their sales efforts directly to potential end-customers and actively promote their equipment, services and solutions in the Russian market. In case the financing of the purchases turns out to be a barrier, then it is good to know about different financing opportunities, listed also in this report. After all most of the Finnish offering of technology is energy efficient and fulfills the needed requirements.
- Many of the projects in Russia in the field of energy are **big turn-key projects**. Finnish companies should follow-up the market news and contact the suppliers of turn-key projects and offer their own services as a subcontractor.
- Naturally we recommend to go through this report to get an overall picture of what is happening today in the energy efficiency sector in Russia and read particularly carefully through the
 - Business Cases and
 - Business Opportunities
 - And Choose the most suitable information sites for follow up.
- RUSEFF is a potential channel to business, becoming a RUSEFF-approved supplier of certified, energy-efficient equipment might also increase the company's market visibility and sales volume. RUSEFF is very interested in promoting their program also towards Finnish equipment suppliers and invites them to add their equipment to their database.
- People need motivation, information to change their values and habits – Finland has experience in organizing awareness campaigns and could take more active role in participating to the work of different market actors in Russia. One example is the membership of Green Building Council in Russia (<http://www.rugbc.org/en>).



Appendices



Appendix A

ESCO Legislation

Legislation related to ESCOs and EPCs 1/2

Law/Decree	Main issues concerning ESC
<p>FL 261 “On Saving Energy and Increasing Energy Efficiency, and on Amendments to Certain Legislative Acts of the Russian Federation” (November 23, 2009) (followed by several additional decrees and special federal programs of action to make the law work)</p>	<ul style="list-style-type: none"> • Aim: Creation of legislative, economic and organizational incentives for energy savings and energy efficiency • Art. 19.1: Energy service contract (ESC) - a new type of civil law contract, under which a contractor undertakes steps aiming at energy savings and increasing the efficiency of energy resource consumption of customers • Art. 19.2: ESC <u>has to</u> include: (1) Quantity of energy savings to be achieved by the contractor (2) Term of the contract that is larger than the term necessary to achieve the volume of energy resource savings agreed to in the contract (3) Further obligatory conditions existing in line with Russian contractual legislation • Art. 19.3: ESC <u>may include</u> a clause: (1) With regard to the customer’s obligation to deliver the energy resource usage pattern during the energy service contact period (2) On obliged installation and putting into operation of energy resource meters by the contractor (3) On setting a price of the contract that is based on the attained or planned targets of the implementation of an energy service contract etc. • Art. 20.1: The fulfilled clauses of ESC (Art. 19) may be included in contracts of sale and purchase, supply or transmission of energy resources (apart from natural gas) • Art. 21.1-2: ESCs may be concluded by state and municipal customers in congruence with the Public Budget Law and the Law on Placement of Orders • Art. 27.1.2: The Russian government commits itself to support the promotion of regional energy efficiency programs and ESC

(*) Garbuzova, Maria – Madlener, Reinhard: Russia’s Emerging ESCO Market: Prospects and Barriers for Energy Efficiency Investments. FCN Working Paper No. 6/2012

Law/Decree	Main issues concerning ESC
<p>FL 94 of July 21, 2005 “On Placement of Orders to Supply Goods, Carry out Works and Render Services for Meeting State and Municipal Needs“ (amended in 2011)</p>	<ul style="list-style-type: none"> • Aim: Regulation of relations associated with the procurement of goods, works and services for state and municipal needs, and needs of budget-funded organizations • Amendment 2011: new Chapter 7.1 “On procurement of energy services for the state and municipal needs” (hereafter “customer needs”) • Art. 56.1 “Procurement of energy services for the customers’ needs”: (1) State and municipalities may conclude an ESC in order to implement energy-saving and energy-efficiency measures (2) ESC is to be separated from (resources) supply contracts (3) The initial (maximum) price of the ESC is based on the customer’s actual energy costs in the previous year (price setting order is defined in more detail in Art. 56.3-5) (4) The payment for energy services by customers should be financed through state budgetary funding (5) Procurement of energy services occurs through a tender, (open) auction in electronic format or a similar mechanism
<p>Decree No. 636 "On the Requirements for Energy Service Contract Terms and the Particularities of Determining the Starting (Maximum) Contract Price (Lot Price) for Energy Services" (August 18, 2010)</p>	<ul style="list-style-type: none"> • Aim: Introduction of requirements for an energy service contract concluded by state or municipality • Point 1: Specification of energy-saving and efficiency measures formulated by the customer (e.g. based on the energy passport issued after energy audit) • Point 3: A defined amount of energy savings to be provided by a contractor after the execution of an EPC • Point 6: Instructions on setting a baseline for energy consumption patterns before energy saving measures are implemented • Point 11: Duration of EPC has to be defined

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