

ENERGY EFFICIENT BUILDINGS IN THE RUSSIAN NORTH: CROSS-BORDER TRADE FACILITATION



Sustainable Buildings
for the High North

SBHN

Project Report

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PREFACE

The report *“Energy Efficient Buildings in the Russian North: cross border trade facilitation”* considers energy efficiency in the context of Russia with a special emphasis on the energy efficiency in building sector in the Arkhangelsk and Murmansk regions. The Report is one of the outcomes of the project *“Sustainable Buildings for the High North: Cross border research and trade facilitation” (SBHN Project)* illustrates part of work performed by the High North Center at Bodø Graduate School of Business at University of Nordland under Work Package I of the SBHN Project.

Arkhangelsk and Murmansk regions have been chosen as project focus regions. These regions were chosen to be in focus for several reasons. First, both regions are located in the North of Russia under harsh climate conditions. Due to their geographical locations, both regions consume much energy for heating of buildings, which provides promising potential for commercial cooperation in the energy efficiency sector. Second, both regions are close neighbors to Norway, Finland and Sweden, presupposing good possibilities for energy efficiency technologies transfer and cross-border business cooperation between those three Nordic countries and Russia in the field of energy efficiency.

The main objectives of the report are to contribute to better understanding of the energy efficiency market in the Russian North and to facilitate cross-border trade and business cooperation between companies from Russia, Finland, Sweden and Norway. The report was conducted within the period from May 2013 to August 2014. The key component of the study is secondary data collection and analysis. However, interviews with different stakeholders and workshops have been actively used and helped navigate for types and sources of data collection, relevant reports and statistics.

We would like to express thanks for Consulting Group “Orto” that has been helping us with data collection and data interpretation, as well as with a more professional analysis of the Russian regulative environment (laws, decrees, official notices, etc.).

Authors would also like to express special thanks to Jessica Allen Hansen for reviewing and proofreading the report, thus enchanting the quality of the report.

EXECUTIVE SUMMARY

A number of studies have been conducted in relation to energy efficiency development in Russia and there are some volumes of statistic about certain energy efficiency aspects and elements, especially about technical measures and potential for savings of energy and electricity. However, we have experienced problems regarding systematized statistics and analyses about energy efficiency market in Russia, i.e. about companies' work on the market, market performance and conditions, share distribution in the light of certain service and product segments, etc. We had challenges collecting relevant market data about the whole Russian market, and it was even more challenging in relation to regional markets in Arkhangelsk and Murmansk regions. Some key problems are that oftentimes the necessary data doesn't exist or different sources of information represent different data about the same subjects and, in addition, much of the discovered data require verification and systematization. Also, most of information is in Russian language and can be obsolete. Furthermore, there is a lack of structured information and especially about energy efficiency in the building sector.

However, despite such obstacles, the report makes a comprehensive overview and struggles to get an understanding and structure of energy efficiency market and its potential in Russia, including the Arkhangelsk and Murmansk regions.

The report starts (*in Chapter I*) with description of social and economic conditions in the Arkhangelsk and Murmansk regions in comparison with the situation in Russia and in some other Russian regions. Our analysis of social and economic conditions in both regions shows that these regions are not in good standing. Even more, the regions are among those called "subsidized regions" and receive federal subsidies to cover regional budgets' deficit.

The Murmansk and Arkhangelsk regions are northern regions with more expensive and less comfortable living conditions, due to many factors, such as severe climate conditions, high prices, etc. In addition, outgoing migration has been increasing since 1991 (after the collapse of the Soviet Union). Without an efficient stay policy, or support and incentives for local businesses and population to stay and work in these Northern regions (lower tax burden, financial support for local industrial and infrastructural projects, etc.) it is difficult to expect positive social and economic trends in the regions in the foreseeable future.

Chapter II proceeds with the assessment of the regions in connection to local energy systems' structure and performance. The assessment shows that both regions are self-sufficient in terms of electricity and thermal production and supply. However, there are some challenges connected to growth of local demand for energy in some municipalities in the Arkhangelsk region, while there is a shortage in available local transformers' capacities for connecting new users or increasing power supply. Since the law limits the increase of tariffs, the possibilities for companies to generate enough profit and to invest into new transformers hubs development are also limited. Another challenge for the Arkhangelsk region is that part of the regional grid system has no direct connection to the united grid system of the North-West of Russia that challenges energy security of the regional energy supply. The energy system of the Murmansk region not only fully provides electric and thermal energy demanded in the region, but also produces some extra energy. Electricity from the region is transmitted to the United Energy System of Russia and to Norway and Finland via the power grid "Nordel". The peculiarity of the energy system in the Murmansk region is an efficient combination of advanced nuclear and hydropower. This provides significant advantages for the region in terms of the balance of the produced electricity. Such structure of

energy sources provides a sufficiently low cost of electricity and reduces dependence on imported fuel. The biggest challenge for the energy system in both regions is that the percentage of old and worn-out equipment used is high. This has a negative impact on the system's energy efficiency.

Energy efficiency development in building and construction sector is described in *Chapter III*, where we also provide information about trends in building and construction in the Arkhangelsk and Murmansk regions. The analysis of building and construction sector shows that, by percentage, construction of dwelling houses in 2012 in Arkhangelsk and Murmansk regions has decreased in comparison to 2011. However, 2013 has shown positive trends in the Arkhangelsk region, when construction of dwelling houses grew 55% in comparison to 2012, although Murmansk region is still not on a good track.

Chapter IV informs about the legislative framework that regulates the energy efficiency field in Russia as well as describes the different financial mechanisms used in this market. The chapter concludes that the Ministry of Energy of Russia has been focusing on developing the laws and other regulating documents aiming at ensuring freer entrance to the electricity network, the increase of attractiveness of the sector for investors and modernization of the industry. The main tasks ahead also involve introduction of unified standards for customer service networks, and the development of performance evaluation metrics for implementation of comparative analysis - benchmarking. Both, Arkhangelsk and Murmansk regions have developed regional laws on energy efficiency. As part of these legislative initiatives, regional governments have developed forward-looking action plans to improve energy efficiency, taking into account the territorial and economic features of the regions. However, reality shows that the legal and regulative background for the energy efficiency field still has room for development. The main obstacle is that there are many initiatives, which are not supported with finances, though several financial mechanisms are present and used on the market, including international grants and loans.

Chapter V warns about the constraints and barriers that exist in the Russian energy efficiency field. Key limitations for the development of energy efficient technologies, products and services (EETPS) market in Russia are connected to a lack of consistency and interdependence between different elements of the regulative system, which eliminated would provide a positive boost for EETPS market development. Among the key constraints, we can underline the low motivation to save energy for end users and EETPS producers and suppliers, a lack of economic incentives and preferences, an inconsistent tax system, a high level of bureaucracy, low competence and knowledge about modern energy efficient technologies and products. In the chapter, we also discuss and summarize the types of EETPS presented in Russia and their commercial potential. Despite the existing constraints, EETPS market has good commercial potential in the years to come.

At last, in *Chapter VI*, business opportunities and recommendations for entering the EETPS market in Russia are presented. The chapter concludes that Russia is still developing effective business environment for the whole country, and especially in the field of energy efficiency. Still new factors and changes in the field can emerge and may substantially influence EETPS market development. However, we don't expect growing difficulties for market entry, but it is highly recommended to check the market constantly and update knowledge about the Russian EETPS market, not at least before decision making about types of entry into the market. In addition, in the chapter we present and describe some promising EETPS market segments.

CONTENT

<i>PREFACE</i>	1
<i>EXECUTIVE SUMMARY</i>	2
I Social and Economic Conditions of the Arkhangelsk and Murmansk Regions	5
1.1 Social and Economic Conditions of the Arkhangelsk Region	5
1.2 Social and Economic Conditions of the Murmansk Region	8
1.3 Arkhangelsk and Murmansk regions as part of the Economy of the Russian Federation	10
II Energy Production and Consumption in the Arkhangelsk and Murmansk Regions	12
2.1 Energy Production and Consumption in the Arkhangelsk Region	12
2.2 Energy Production and Consumption in the Murmansk Region.....	16
III Energy Efficiency in Building and Construction Sector	19
3.1 Energy Efficiency in Building and Construction in Russia.....	19
3.2 Building and Construction trends in the Arkhangelsk Region.....	24
3.3 Building and Construction trends in the Murmansk Region.....	24
IV Legislative and Financial Framework for Energy Efficiency	26
4.1 Legislative Framework for Energy Efficiency in Russia	26
4.2 Legislative Framework for Energy Efficiency in the Arkhangelsk and Murmansk Regions.....	28
4.3 Financing of Energy Efficiency Projects in the Russian Building Sector	32
4.4 International Cooperation in the Field of Energy Efficiency	33
V. Energy Efficient Technologies and Products in the Russian Building Sector	35
5.1 Survey of the Market of Energy Efficiency Technologies and Products in the Building Sector	35
5.2 Constraints for Russian Energy Efficiency Market Development in the Building Sector	37
5.3 Types of Energy Efficiency Technologies and Materials in the Russian Building Sector.....	39
VI Business Opportunities & Recommendations	51
References	55
 Attachments:	
<i>Appendix 1</i>	57
<i>Appendix 2</i>	63
<i>Appendix 3</i>	68

I Social and Economic Conditions of the Arkhangelsk and Murmansk Regions

1.1 Social and Economic Conditions of the Arkhangelsk Region



The Arkhangelsk region is a region of Russia and is also called an “oblast”. It is located in the north of the European part of Russia covering a territory of about 590 sq. km, and has borders with the Republic of Karelia, Vologda region, the Komi Republic and Tyumen region. The region has coastlines of three Arctic Seas: The White Sea, The Barents Sea and The Kara Sea. The oblast is rich of natural resources such as forest, water, oil and gas, diamonds, bauxites, nickel, copper, gold and iodine. Forests cover 39% of this area; agricultural land 1%, reindeer pastures 24%, islands 19%, and the rest includes rivers, swamps and lakes.

As the biggest region of European part of Russia, the Arkhangelsk region occupies an extremely important geographical position in the country. For more than 400 years, Arkhangelsk has been the most important Russian seaport. The seaport ensures not only trade, but also scientific cooperation with the rest of the world, for example, being a center for scientific marine research. All great expeditions to the Arctic and to the North Pole began here.

Since January 2006 the territory of the region includes 229 municipalities:

- 7 city districts,
- 19 municipal districts,
- 24 urban settlements, and
- 179 rural settlements.

The administrative center of the region is the city of Arkhangelsk. Its proximity to the seas and oceans has a significant impact on the climate, which transitions between marine and continental. Winter is usually long (up to 250 days) and cold in the region, with an outside average temperature of minus 26 degrees Celsius and strong winds. Summers are usually cool with the average temperature about 14-16 degrees Celsius in July (though, temperature up to + 25-30 degrees Celsius is not surprising as well, during recent years). The length of the day ranges from 3 hours 30 minutes (22 December) to 21 hours 40 minutes (22 June).

Most residents live along railroads and along the basins of big rivers such as Severnaya (North) Dvina, Vaga, Pinega, Onega, and Mezen.

The density of the population was about 2.2 - 2.5 inhabitants per sq. km in 2006. The urban population counted for 74%; and the rural population was 26%. The average age of population is 37 years. The population of working people is about 64.3%.

Despite some positive trends in recent years, population in the Arkhangelsk region has been decreasing (see figure 1). The main reasons for this are the death rate and outgoing migration. For example, death rate is slowly decreasing (in 2005 it was 2% less than in 2004: and 8% and 10% less than in 2003 and 2002 accordingly). Outgoing migration is also decreasing from 10831 persons in 2001 down to 9198 in 2005 (*Arkhangelskstat, 2006*).

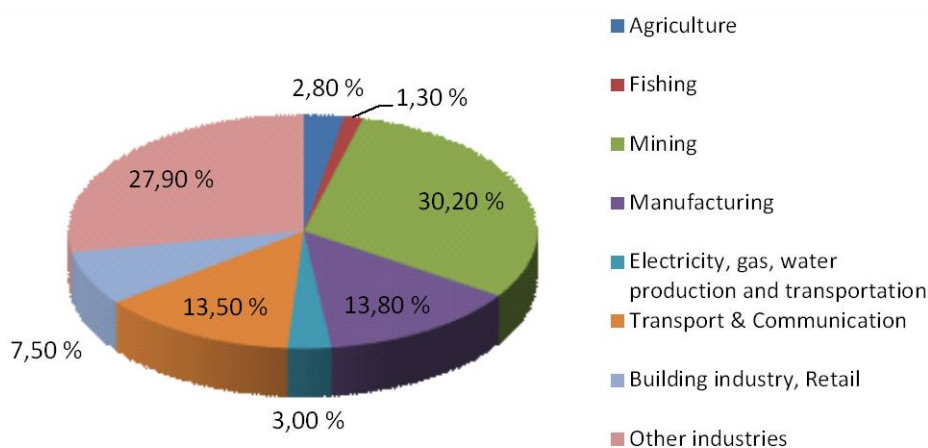
Figure 1: Population in the Arkhangelsk region

Population, thousand people						
Year	2002	2004	2005	2006	2010	2012
Total population	1332.7	1304.5	1291.4	1291.4	1227.6	1159.5
Economically active population	609.0	600.4	601.5	618.5	607.6	622.0

Source: Rosstat (www.gks.ru), Arkhangelskstat (www.arkhangelskstat.ru), www.rian.ru

Today, the Arkhangelsk regional economy is based primarily on mining, manufacturing and machine building industry (including shipbuilding), transport and communication. Figure 2 demonstrates the structure of the Gross Regional Product (GRP) of the Arkhangelsk region in 2012. Mining industry, other different industries, manufacture, transport and communication are the main contributors to GRP in the Arkhangelsk region in 2012.

Figure 2: The structure of the Gross Regional Product of the Arkhangelsk region (2012)



Source: Rosstat (www.gks.ru), Arkhangelskstat (www.arkhangelskstat.ru), www.rian.ru

Further, figure 3 describes some key social and economic indicators for the Arkhangelsk region in comparison with development of other Russian regions. This allows for better understanding of the regional economies performance.

Figure 3: Basic Social and Economic Indicators, 2013/lh

	Industrial Production Index, % to 2012/lh	House Construction		Investments in fixed assets		FDI, 000 USD		Average Salary,		Migration: Increase (+) / Decrease (-)	
		000, m ²	% to 2012/lh	RUR, mln.	% to 2012/lh	2012	2013/lh	RUR	% to 2102/lh	2012/lh	2013/lh
Arkhangelsk region	87.8	91.2	108.1	60912.8	86.6	855408	238434	30 934.7	106.3	-4196	-4236
Murmansk region	101.0	2.1	24.3	21828.9	112.1	20836	4871	38824.7	104.1	-2831	-3681
St. Petersburg	99.4	947.5	175.0	1222265.3	86.2	10767496	6027993	35618.1	106.0	34 756	29 106
Komi Republic	101.4	39.9	97.3	69637.5	63.8	357888	238434	36222.5	105.0	-4170	-4277

Source: www.rq.ru, www.minfin.ru, www.gks.ru

Generally, social and economic results for the Arkhangelsk region in 2012 are rather stable, though results for the first half (lh) of 2013 have already shown a negative trend as compared to a similar period in 2012. There are several industries in the region which may continue to grow in the next two years. Examples include oil production in Nenets Autonomous okrug (a part of the Arkhangelsk region), shipbuilding (federal investments into building of new military related vessels and submarines), pulp and paper industry (private investments) and diamond mining (Lomonosov mine).

There are also some important industries which face a slow growth or even slowdown. Among the industries suffering slow growth are forestry and wood processing (there are a number of bankruptcies among leading enterprises in this sector happened during 2012-2013), electricity, gas and water distribution and agriculture. It is also worth mention that the regional budget in 2013 is already experiencing a decline in main incomes such as taxes and federal transfers etc. The tendency forecasts that the regional budget will be experiencing increasing deficits in the years 2014-2016.

Finally, the ranking of social and economic development of the Arkhangelsk region can be demonstrated in comparison to other Russian regions. Such ranking of all Russian regions has been launched recently by several ranking agencies in Russia. One of them, developed by "RIA Ranking" www.riaranking.ru, is presented in figure 4. According to this integral ranking¹, by the year 2012 the Arkhangelsk region occupies the 35th position among 83 Russian regions (see figure 4).

Figure 4: Integral ranking (year 2012)

	RANK 2012	RANK 2011	RANK 2010
Arkhangelsk Region	35	41	34
Murmansk Region	41	38	33
St. Petersburg	2	2	2
Komi Republic	19	22	23

Source: "RIA Ranking" www.riaranking.ru

¹ Different social and economic indicators have been used, see www.riaranking.ru

1.2 Social and Economic Conditions of the Murmansk Region



The Murmansk region, or oblast, earlier known as the Kola Region, is located in the most northern territory of the North-West of Russia on the Kola Peninsula. Almost the entire region is located above the Arctic Circle. Despite its Arctic location the Kola Peninsula belongs to the “Near North” according to the Russian regional classification. It is well developed and populated, located relatively close to the country’s industrial centers (1 000 km from Saint-Petersburg, and 1600 km from Moscow), and has rail, road, and flight connections to them. The oblast is a part of the North-West Federal Okrug (region). The oblast borders Finland (and EU) to the west, Norway to the North and the Republic of Karelia to the South. The region covers a total area of 144,900 square kilometers.

The climate in the region is moderately cold. The economy of the Murmansk region is based on the unique mineral resources of the Kola Peninsula and biological resources of the Barents and White seas, its favorable geographical position due to its closeness to the central regions of the country and the possibility for year-round navigation with direct access to international sea trade routes.

According to the 2002 Census results, the population of the Murmansk region was 893,000 people. The number was decreased to 774,400 people by September 2013 (Figure 5). The average population density is about 5 persons per 1 km². The economically active population amounts to 470,900 people by the end of 2012. Demographics statistics show that 68.2% of the population are of working age, 16.9% are below the working age determined by the state, and 14.9% are beyond the working age.

The region’s major urban centers are Murmansk, Severomorsk and Apatity.

Figure 5: Population in Murmansk Region

Population, thousand people								
Year	2001	2002	2004	2005	2006	2010	2012	09.2013
Total population	989	893	879.8	864.4	856.8	738.3	780.4	774.4
Economically active population	577	580	441	443	446	517.4	470.9	-

Source: Murmanskstat, <http://murmanskstat.gks.ru/>

More than 60 major fields of different types of minerals have been discovered in the Kola Peninsula. The most valuable of them are copper-nickel, iron, apatite ores and ores of rare metals. The reserves of mica, raw materials for construction and ceramic products, decorative stone, precious and semi-precious stones are considerable as well. Along the shelf of the Barents Sea there are oil and gas resources explorations. One of them, the unique Shtokman gas condensate field, is of strategic importance not only for the region but also nationally.

Thus, the area plays an important role in the Russian economy. It responds to much of the national market demand for non-ferrous metals, iron ore, fish products, raw phosphate materials, and transport services. The major part of the regional production (over 60%) is created by enterprises in mining, metallurgical, chemical sectors, fishing and fish processing, and the production of electric power. These enterprises show the export potential of the region.

In 2012, the gross regional product (GRP) grew by 1.8% compared to 2011. Manufacturing sector, construction and trade contributed to the growth of GRP (Figure 6). In 2013 GRP in Murmansk region grew up 5 % (Murmanskstat). However, the 2014 numbers shows that some sectors have been experiencing a steady decline (such as manufacturing and construction) while others show neutral or positive trends.

Figure 6: The structure of the GRP of the Murmansk region, 2013

Industry	Contribution to GRP, 2013, %	Change: January 2014 to January 2013, %
Agriculture and hunting	0.3	90.8
Fishing	7.8	200
Mining	17.5	104.7
Manufacturing	9.4	77.2
Water and Electricity generation and distribution	18.0	111.6
Construction	1.0	40.4
Wholesale, Retail, Repair Services	29.7	104.5
Hotels and Restaurants	1.3	132.1
Transport and Communication	7.5	101.4
Health and Social Services	2.6	96.7
Real Estate	3.4	132.9
Other	1.5	-

Source: Murmanskstat, <http://murmanskstat.qks.ru/>

There is a slight growth in the production index, investments in main assets and consumer demand in the first half of 2013 in Murmansk region, (Figure 7). There is also a slight increase in salary level and households' income and a decrease of unemployment numbers. At the same time, there is a decline in the building industry, transportation and foreign direct investment (FDI) leading to increases in the regional budget's deficit.

Key social and economic indicators are presented in the figure 7. Similar to the previous section, the information is presented in comparison to several other regions in the north-west of Russia.

Figure 7: Basic Social and Economic Indicators

	Industrial Production Index, % to 2012/lh	House Construction		Investments in fixed assets		FDI, 000 USD		Average Salary,		Migration: Increase (+) / Decrease (-)	
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Komi Republic	101.4	39.9	97.3	69,637.5	63.8	357 888	238,434	36,222.5	105.0	-4170	-4277

Source: www.rq.ru, www.minfin.ru, www.gks.ru

Figure 8 demonstrates how the Murmansk region is ranked according some social and economic indicators among 83 Russian regions (RIA Ranking, www.riaranking.ru). According to this integral ranking², by the year 2012 Murmansk region occupies the 41th position, which is lower than the ranking in 2010 and 2011.

Figure 8: Integral Ranking (by the year 2012)

	RANK 2012	RANK 2011	RANK 2010
Murmansk Region	41	38	33
Arkhangelsk Region	35	41	34
St. Petersburg	2	2	2
Komi Republic	19	22	23

Source: www.riaranking.ru

1.3 Arkhangelsk and Murmansk Regions as part of the Economy of the Russian Federation

In this chapter, we summarize information about the social and economic situations in Arkhangelsk and Murmansk regions, in the context of the whole Russian economy, in order to show the position and status of regions in Russia as economic entities.

In the first half of 2013, the business activities of the Russian economy were characterized by a weakening of the external demand for Russian export goods, and also a slow growth in domestic demand. Investment in capital assets decreased during the first half of 2013, and the manufacturing industry has stagnated³. According to the Ministry of Economic Development of Russia, in the first half of 2013 the GDP grew just about 1.7% in comparison with the same period in 2012.

In the past six quarters, the slow-down of the economic growth rate resulted in industrial production stagnation and a drop in building and investments activities. In the first half of 2013, the volume of investments in capital assets and the volume of work in building amounted to 98.6%

² Different social and economic indicators have been used, see www.riaranking.ru

³ Based on GAIDAR INSTITUTE FOR ECONOMIC POLICY report N 11.2013, www.iep.ru

and 98.1% respectively, as compared to the relevant period in previous year. Net export from Russia dropped about 15% (source: Central Bank of Russia).

It is important to mention that the nature of households' consumer behavior has also changed in 2013. Households prefer saving to spending. In addition, a slowdown in growth of real disposable income and real wages is seen in June 2013. This effects greatly the dynamics of consumers' demand as well as households' credit activities.

The International Monetary Fund has revised its forecast for Russia for the third time, and has proposed that Russia's GDP growth might reach 1.5% and inflation rate might reach up to 6.2% in 2013. The latest data from the Federal Treasury shows that Russia's surplus of consolidated budget has decreased about 42% within January-September 2013, in comparison to the similar period in 2012. Such a situation may lead to a decrease of federal transfers to subsidize Russian regions and a reduction of many state financed programs and investments. This in turn may influence investments in capital assets in Russia, which largely depend on state funding⁴.

Federal attention and support policy is much needed by the Russian North. It is especially relevant for investments in big infrastructure projects, which are able to create "spin-off" effects and ignite development processes in the North. The launching of some private-public partnership projects has been announced lately in both regions. Some of these activities may greatly influence the regional development by increasing investments e.g. in development of the Belkomur Railway (www.belkomur.com) or the Northern Sea Route. The list of possible investment projects can be found at local investments portals accordingly (<http://invest.gov-murman.ru/en/> - for the Murmansk region and <http://www.dvinainvest.ru/> - for the Arkhangelsk region).

Most of the announced projects rely not only on governmental funding (federal and local) but also on investments from big Russian strategic corporations, where the state is actually the main owner. These are Gazprom, Russian Railways, United Shipbuilding Corporation and such. However, in the situation of regional budget deficits, there is an uncertainty concerning investments to big expensive infrastructure projects in the North, both from the state directly and from the state-controlled monopolies.

The Arkhangelsk and Murmansk regions are not the leading Russian regions in terms of economic development. In fact, these regions are referred to so called "subsidized regions". Both regions receive subsidies from the federal government to fill in income gaps, especially in relation to social and economic obligations. Hence, if federal subsidies decrease, it is possible to estimate that the overall economic situation in Murmansk and Arkhangelsk regions may become less optimistic as well.

Murmansk and Arkhangelsk regions are northern regions where life is more expensive and less comfortable due to many factors, such as severe climate conditions, lack of infrastructure and higher logistic costs, etc. In addition, outgoing migration has been increasing. Without incentives for businesses and local population to stay in the North and work in the North (lower taxes, stable state investments into local infrastructure and industries development, etc.) it may be difficult to expect positive social and economic trends for the regions in the foreseeable future.

⁴Based on IMF reports, <https://www.imf.org/external/country/RUS/index.htm?pn=0>

II Energy Production and Consumption in the Arkhangelsk and Murmansk Regions

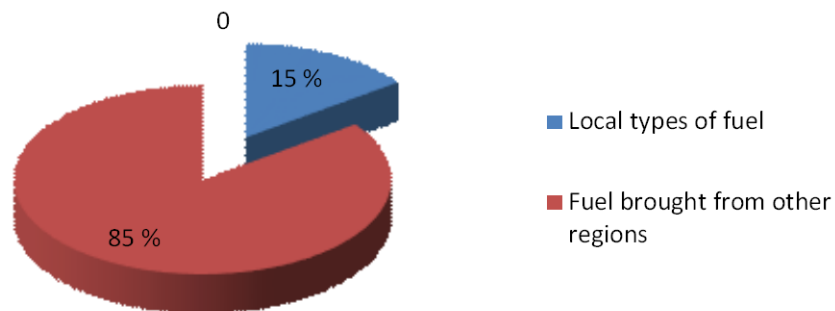
2.1 Energy Production and Consumption in the Arkhangelsk Region

The Arkhangelsk uses a wide range of different types of energy sources, including natural gas and liquefied petroleum gas, fuel oil, gasoline, diesel fuel, coal of various fields, peat, wood and others. To ensure energy system efficiency, the region's priority is the development of the renewable energy sector. The main goals are set for renewable energy and local fuels by the Arkhangelsk region in the regional strategy are:

- rational reduction in consumption of non-renewable energy resources;
- reduction of negative impact on environment from the activities of energy sector;
- sustainable production of heat and power for decentralized customers and regions with long-range and seasonal fuel imports. The High North and similar areas are in the first place;
- reduction the cost of fuel export and optimization of regional energy policy.

Total annual consumption of primary resources amounted to 10.8 million tons of conventional fuel in 2011. Figure 9 presents the structure of the fuel resources used in the Arkhangelsk region in 2011.

Figure 9: The structure of the fuel resources used in the Arkhangelsk region, 2011



Source: Federal Statistic Service, Arkhangelsk Regional Government, www.dvinaland.ru

The main types of fuel resources brought from outside the Arkhangelsk region are gas and steam coal. The resources are shipped to the region mainly from the Komi Republic, and partly from the Kuznetsk Basin and the Arctic (Spitsbergen). The main types of local energy resources are wood, wastes from wood and pulp processing, and wastes from the paper industry.

Usually the distance for delivery of fuel in the region is 1.8 thousand to 4.5 thousand kilometers. This greatly affects the final cost of household services. The forest is the most significant resource in the region, which is why the region municipal power supply has been slowly changed to renewable forest-based resources (mostly pellets).

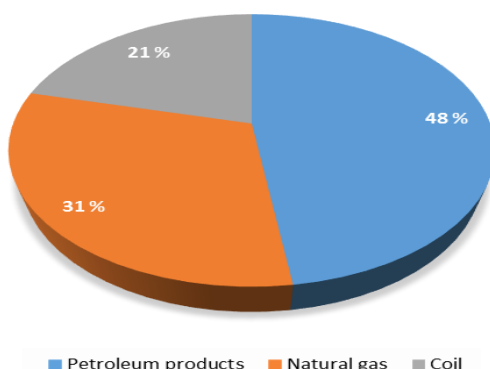
Reforms regarding electricity production and supply in Russia have resulted in energy production split between natural monopolies and other competitive electricity producers. In the Arkhangelsk region, the natural monopoly for transmission of electricity is JSC "Arkhangelsk Transmission Company".

Today, thermal networks and boiler rooms are the major heat production sources in the Arkhangelsk region. A small proportion of the total energy suppliers are private heating systems. Solid fuel boilers are used for heating private houses in the Arkhangelsk region. The system for water heating is organized similarly, using firewood or charcoal. In some areas of the Arkhangelsk region with a lack of gas and electricity, however, liquid-fuel generators, mainly diesel, are currently used, but their operational costs are 4-5 times more expensive than solid fuel boilers.

There are three fuel-energy plants in the Arkhangelsk region. The largest power plant in the region is the Thermal Power Plant (TPP) owned by JSC “Territorial Generating Company № 2”. It is also a major producer of electricity and thermal energy for the district heating of residential and non-residential premises and the surrounding areas of Arkhangelsk. Electrical power ATEC is 450 MW thermal power - 1358 Gcal / h. The main fuel for the plant is a gas reserve - fuel oil. The Arkhangelsk TPP boilers are now converted to burn natural gas. Other smaller electricity producers in the region are power stations, which belong to the field of industrial organizations and decentralized diesel power utility organizations.

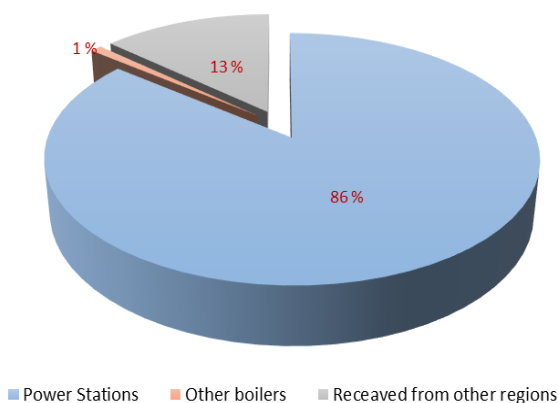
In general, the balance of the electrical energy produced in the Arkhangelsk region is based on petroleum products such as gas and oil. Figure 10 below demonstrates the share and types of fuel brought to the Arkhangelsk region. In addition, Figure 11 presents the main producers of electricity in the Arkhangelsk region and their share of electricity production.

Figure 10: Share and types of fuel brought to Arkhangelsk region, 2012



Source: Adapted from Arkhangelsk Regional Government, www.dvinaland.ru

Figure 11: Shares occupied by main producers of electricity in the Arkhangelsk region, 2012



Source: Adapted from Arkhangelsk Regional Government, www.dvinaland.ru

Russia's economy is one of the most energy-intensive economies in the world. In particular, northern areas, including the Arkhangelsk region, are highly energy intensive, so they face a special situation regarding energy production. There are more than 30 thousand kilometers of electric networks of different voltage levels (from 0.4 to 220 kV) and more than 4 million kilometers of municipal and departmental networks system in the Arkhangelsk region. The losses in the municipal power grids are 0.4 - 35 kV and up to about 30 percent due to non-compliance of worn and regulatory parameters. The physical wear of networks is at 60 - 80 percent.

Heating energy is transferred to consumers from the stations of JSC "Territorial Generating Company № 2", other generating companies and 803 boilers operating both on imported fuels (coal, oil, diesel fuel) and on local types of fuel (wood waste, wood pellets, firewood).

In 2012, 330 boilers operate on coal, 1 boiler on natural gas, and there are 19 oil-fired boilers and 11 diesel boilers in the region. The remoteness of some of the northern territories led to the decentralized type of energy supply and fuel import. As a result, the cost of electricity and heat in the Arkhangelsk region is among the highest in the North-West Federal District.

The bioenergy resources in the Arkhangelsk region are mainly produced from forestry waste (more than 5 million cubic meters of waste). Waste processing areas with more than 2 million cubic meters of waste are scattered throughout the Arkhangelsk region. The region has more potential resources for recycling. There are about 500 thousand cubic meters of slabs and strips of deadwood in the area between the Northern Dvina and Pinega, the area of 2 million hectares with 200 million cubic meters of spruce forests.

The execution of the Energy Efficiency Program 2010-2020 in the Arkhangelsk region has created some changes in energy system of the Arkhangelsk region during the period 2010-2012. Six new biofuel boilers have been built, 31 boilers have been switched to local fuel use and 14 obsolete boilers have been shut down. According to Igor Orlov, Governor of the Arkhangelsk region, the regional government highlights the importance of the use of low-quality wood and timber waste in biofuel production. The government is ready to maintain long-term projects and to provide the necessary support to investors in the assessments of benefits and privileges. Consequently, the regional Government expects that the share of alternative energy sources used in the Arkhangelsk region to grow to 60% by 2020.

One of the main priorities for the Arkhangelsk regional government remains the gasification of the region. During the period from 2012 to 2013, the development of gas pipeline network throughout the region has been continued in cooperation with Gazprom. The regional government believes that gasification of the region is finally developing quite well from economic, social and environmental points of view. Local authorities note that for private and business users, gasification will lead to decreasing of tariffs for heat and electricity and increasing of energy security in the region. Gasification will also help to decrease those expenses of the regional budgets to compensation of losses created by the state regulation of tariffs. Finally, for energy producers, gasification will help to increase energy efficiency, especially by decreasing of production costs, using modern equipment, lower environmental pollution fees and less dependence on the fuel supply from other regions.

Another important aspect is tariffs on electricity. The real situation with tariffs on electricity and heat in the Arkhangelsk region does not fully correspond to the governmental intentions. Tariffs for electricity energy consumption grew up in the Arkhangelsk region in 2013 (see figure 12).

Tariffs for thermal energy have been more or less stable throughout the region, though in some areas, such as Novaya Zemlja, the tariff for thermal energy has grown 50%.

Figure 12: Tariffs in Arkhangelsk region, 2013⁵

Energy type	Tariff		Growth, %
	01.01.13-30.06.2013	01.07.13-31.12.2013	
Electricity, <i>RUR (kwt/h)</i>	3.32	3.87	116.6
Thermal (Arkhangelsk), <i>RUR, Gcal</i>	1480.55	1480.55	100.0
Thermal (Novaya Zemlja), <i>RUR, Gcal</i>	3661.54	5531.84	151.1

Source: Adapted from www.tarif29.ru

In the overall structure of electricity consumption, communal services, the social sphere and private households occupy a share of 30% and take second place after industrial users. The overall consumption of electricity in the Arkhangelsk region in 2012 (in comparison with 2011) grew by 0.6%⁶. Growth has mainly been influenced by the increase in the purchase of electricity by private households (0,5%). The annual energy consumption in the region is presented in Figure 13.

Figure 13: Annual energy consumption of the housing stock of the Arkhangelsk region, 2012

Sector	Number of objects, pieces	Total square, 000, km ²	Energy consumption per year, million kWh /year	Share in total volume of consumption Percentage, %
Block of flats	42 534	22 529.1	5 637.9	76.8
<i>including municipal</i>	13 721	7 268	1 820.6	24.8
Other residential buildings	124 143	6 776.9	1 703.1	23.2
Total	166 677	29 306	7 341	100.0

Source: Adapted from Arkhangelsk Regional Government, www.dvinaland.ru

Presently, the energy market in the Arkhangelsk region is quite promising for today's Russian economy. Government support is provided through legislative initiatives in order to give an opportunity to attract additional investment to the industry. However, it is important to remind about one aspect about the realization of plans of the Arkhangelsk Regional Government. It depends on investments coming through state financed programs and from Gazprom.

In general, the Arkhangelsk region has been self-sufficient in terms of electricity and thermal production and supply through 2013-2014⁷. There are, however, already some challenges being faced. One of them is the growth of local demand for energy in some municipalities, while there is a shortage in available local transformers' capacities for connecting new users or increasing power supply. Since the law limits the increase of tariffs, the possibilities for companies to generate enough profit and to invest into new transformers hubs development are also limited.

Another challenge is that the energy system of the Arkhangelsk region has no direct connection to the united grid system of the North-West of Russia, but is connected to the grid system of the neighboring Vologda region. This challenges energy security of the regional energy system. The local government is going to diminish this potential challenge during the upcoming years by developing new grids with capacities of 220kwt and higher.

⁵ Basic tariff, 24 hours (Arkhangelsk Agency on Tariffs and Prices, www.tarif29.ru)

⁶ Regional Government, www.dvinaland.ru.

⁷ Regional Government's forecast, www.dvinaland.ru

The above-mentioned challenges also influence the competitiveness of the region. They influence electricity prices, which in their turn is the main criterion for investors choosing spots for new industrial projects.

2.2 Energy Production and Consumption in the Murmansk Region

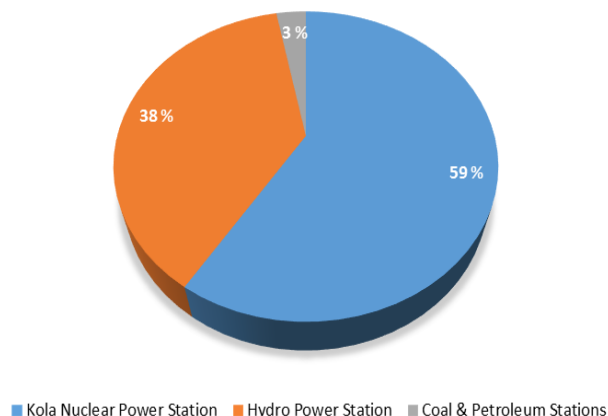
Energy demand in the Murmansk region has been growing since 1930 with maximum numbers achieved in 1990. However, from 1991 and until 1994 the energy demand decreased and from 1994 to 2005 it stabilized to the level of 12,2Twt/h. After 2005, the demand started to grow again. Energy and thermo production in the region is based at the Kola Nuclear Power Plant. More than 50% of all electricity are produced there. It has 17 hydro power stations, 2 thermo power plants and a network of grids. The Murmansk regional energy system is a part of the Federal Energy Network of Russia.

The Murmansk region is characterized by high level of centralization of heat supply. For example, in Murmansk more than 90% of dwelling housing are heated by two main sources - Murmansk thermoelectric power plant (including two bowlers) and the Northern bowler station. Another city in the region, Apatity, is heated by one thermo-electric power plant. Other regional municipalities have similar situation. It can be underlined that coal, fuel oil and diesel dominate as a type of fuel used in the region for the production of thermal energy.

The energy system of the Murmansk region is quite worn out: 27% of primary energy equipment is under the age of 15 to 20 years, 20% - from 20 to 35 years, and 53% - more than 25 years, which certainly has an impact on the effectiveness of its work. That is why still the region is dependent on some types of imported fuels, particularly on fuel black oil. The level of the imported fuel in the Murmansk region reaches 4,1 million tons.

About 25 billion kW/h of electricity is produced in the Murmansk region per year. Annual production of heat in the area is about 13.5 million Gcal and is provided for 52% by boilers, and for 48% by CHP. The basis of electric and thermal power industry of the Murmansk region is the Kola Nuclear Power Plant (KNPP), 17 hydroelectric power plants (HPP), 2 heat and power plant and a network of transmission and distribution lines (LEP). The LEP unites other stations to the grid area, which is part of the Unified Energy System of Russia. The KNPP generates more than 50% of the total amount of electricity produced in the Murmansk region (Figure 14).

Figure 14: Electricity production in the Murmansk region, by main sources



Source: Murmansk Statistic Service, <http://murmanskstat.gks.ru/>;
Murmansk Regional Government, www.new.gov-murman.ru/

More than 80% of the imported resources are oil products. According to the statistics, 50% of oil is used for energy purposes, including the production of electric energy - 0.5%. About 70% of coal consumption is for energy needs. Coal-fired thermal power station operates in the large area – Apatity, where annual coal consumption holds a level of 400 thousand tons (300 thousand tons of oil equivalent). The essential feature of the Murmansk region is the lack of natural gas. Liquefied petroleum gas is also used in the region, but in lower volume and mainly for private needs of the population. The potential for renewable energy resources in the Murmansk region is presented in the Figure 15. The gross potential for usage of renewable energy in the region, including sun and wind sources, is much bigger than the technical potential in this region (see table 15).

Figure 15: The potential for renewable energy resources in the Murmansk region, billion kW/h

Sources	Gross potential	Technical capacity
Sun	110000	11000
Wind	21000	360
Small rivers	7	4.4
Tides	11	2.0
Waves	3	1.6
Wood waste	1.5	0.9
Animal and poultry breeding waste	0.13	0.09

Source: Murmansk Regional Government, www.new.gov-murman.ru/

Annual energy consumption in the Murmansk region calculated in 2012 amounted to 12570.3 million kWh / year. The main consumers of energy are industry, housing, construction, transportation, state and local government agencies, commercial real estate. In particular, the industrial complex (metallurgy, mining) consumes about 63% of all electricity, and the private housing sector consumes about 10%. To compare, in the Arkhangelsk region industries are the biggest consumer, and municipalities, social services and the region’s population consume about 30% of the total energy.

Despite the Murmansk region is self-consistent in terms of energy supply, questions connected to energy efficiency are among priority issues for the regional government. A long-term target program called “Energy Saving and Energy Efficiency in the Murmansk Region for 2010 - 2015 and in perspective up to 2020” and a new regional program “Energy Efficiency and Energy Industry Development for the period 2014-2020” meet constraints from the regional and municipal budgets. Therefore, the changes in the energy system of the Murmansk region towards energy efficiency have been very slow.

Existing industrial facilities, public buildings and houses are being equipped with meters and control of energy consumption in the manner specified by regulations of the Governor of the Murmansk region and municipal administrations. In construction, reconstruction and repair of energy-consuming facilities, the installation of meters for consumed resources is included in the estimated project costs.

Generally, energy system of the Murmansk region not only fully provides electric and thermal energy demanded in the region, but also produces some extra energy. Electricity from the region is transmitted to the UES of Russia and to the power grid “Nordel” in Norway and Finland.

The energy system in the Murmansk region is an efficient combination of advanced nuclear and

hydropower, providing significant advantages for the region in terms of the balance of produced electricity. Such structure of energy sources provides a sufficiently low cost of electricity and reduces dependence on imported fuel. This is very important for many regions of the Russian North.

The biggest challenge of the energy system is that the high percentage of the equipment is old and worn out. This has a negative impact on the effectiveness of the energy system in the Murmansk region, and challenges the energy security of the whole region.

III Energy Efficiency in the Building and Construction Sector

3.1 Energy Efficiency in the Building and Construction Sector in Russia

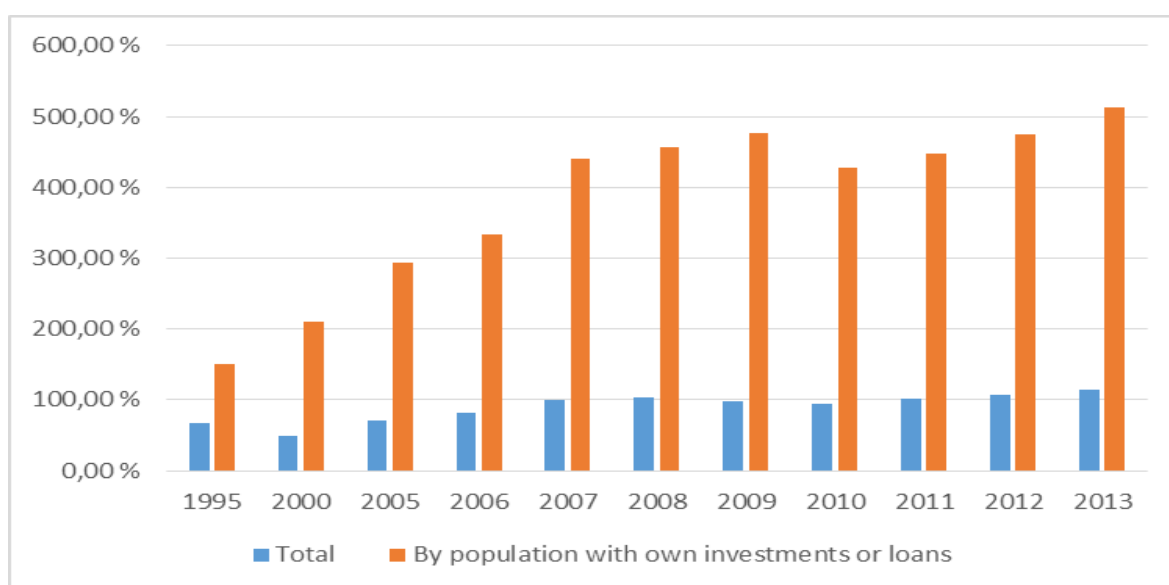
The building and construction industry in Russia in 2012 gained higher results in comparison to the year 2011 (see figure 16). A positive trend is also seen in relation to the building of residential houses (figure 17).

Figure 16: Main indicators of construction in Russia

CONSTRUCTION			
MAIN INDICATORS OF CONSTRUCTION			
	2011	2012	
Volume of work performed by "Construction":			
bln. roubles (at actual prices)	5140.3	5711.8	
percent of previous year (at constant prices)	105.1	102.4	
BUILDINGS PUT IN PLACE in 2012			
	Number of buildings	Total construction volume of buildings, mln. cu.m	Total floor space of buildings, mln. sq.m
Buildings put in place, total including:	235173	447.1	103.9
residential buildings	219364	314.1	81.5
non-residential buildings of which:	15809	133.0	22.4
industrial	2332	31.4	3.0
agricultural	2383	20.5	4.4
commercial	5706	38.8	6.5
office	943	6.6	1.5
educational	555	9.4	2.1
public health system	455	4.7	1.1
other	3435	21.6	3.8

Source: The Russian State Statistical Committee (www.gks.ru)

Figure 17: Construction of dwellings and social and cultural facilities in Russia



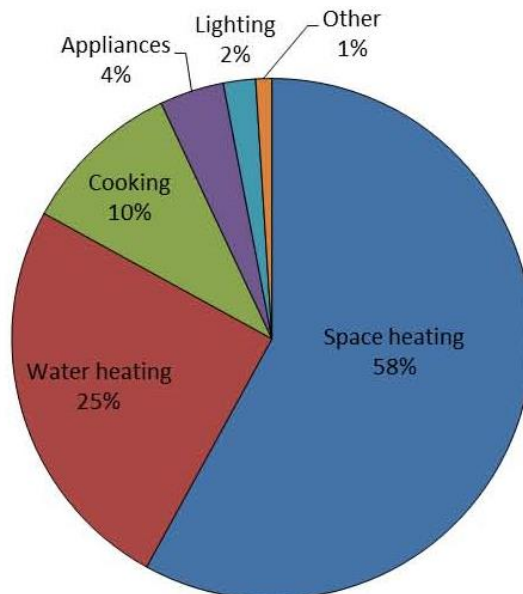
Source: The Russian State Statistical Service, 2014 (www.gks.ru)

The increased construction activity is promising for the involved businesses, including suppliers of energy efficiency technologies. Energy efficiency technologies can be seen as business opportunities. However, the country's energy infrastructure is quite inefficient, even though it consists of both new and old facilities. The Government Program "Energy Savings and Energy Efficiency up to 2020" points out that more than 90 percent of the capacity of active power stations, 83 percent of residential buildings, 70 percent of water boilers, 70 percent of electric grid technologies and 66 percent of district heating networks were constructed before 1990 (Government of the Russian Federation, 2010). Russia's seven major areas of economic activity (which are agriculture, forestry, construction, manufacturing, transport, storage and services) are ranked among the top 25 most energy intensive globally. Not surprisingly, energy efficiency was identified by the Russian Prime Minister Medvedev as one of the priorities for the modernization of the Russian economy.

Russian buildings are particularly energy intensive, due to their inefficient design and the long heating season. A recent study of International Energy Agency (IEA, 2010) compares energy use in buildings across countries. The IEA have found out that Russian residential buildings use more than twice as much energy to heat a square meter of space as they use in Canada, a country with similar geographic and climatic conditions.

According to the IEA estimates, the building sector of Russia possesses the largest potential savings out of all energy-consuming sectors. In this sector, about three-fourths of the energy is consumed by residential buildings (IEA, 2010). Most of residential energy consumption is in the form of space heating (58 percent), with district heating supplying three-fourths of residents (IFC and World Bank 2008). Water heating consumes about 25 percent of the energy used in residential buildings (figure 18). The remaining 17 percent of overall consumption in residential buildings is cooking - 10 %, appliances - 4% and lighting - 2% (Center of Energy Efficiency/CENEf, 2008).

Figure 18: Residential Energy Consumption in Russia, 2010



Source: Adapted from IFC and World Bank, 2010

Most of the potential energy savings may come from improvements in space heating and water heating (IFC and World Bank 2008, CENef 2008). Another view expressed by the IFC/World Bank shows that there is a strong correlation between the energy intensity of water heating and the age of buildings. Newer and renovated buildings have significantly lower hot water energy intensity especially compared to buildings built before 1990.

The IFC and the European Bank for Reconstruction and Development estimate the current Russian residential housing stock as 19.7 million buildings, with 3.2 billion m² of floor space. 72 percent of that floor space is estimated to be in urban areas. The predominant housing option is multi-family apartment buildings. Most of the apartments are privately owned, although municipal management companies maintain the common spaces. It is also stated that there is a strong need for modernization. About 58–60 percent of the country's total multi-family apartment buildings require extensive capital repair, as do 93–95 percent in those apartment blocks with an average age of not less than 25 years (IFC/EBRD, 2012).

According to the Russian Government's plans and projects, Russia aims to increase the amount of housing by 50% by 2015. Another important task underlined by the Russian Government is to reduce the energy consumption of the construction materials industry while improving the skills and competencies of staff.

The analysis of the construction industry in Russia, its dynamics of improvements and trends suggests that there are some statements that are announced by the Russian authorities and that can be implemented to different extent. In 2012, two documents came into effect - the Presidential Decree № 600 and the subsequent disposal of the Government for its implementation. These two documents have caused changes in the domestic construction sector. The decree is entitled "On measures to ensure the citizens of the Russian Federation, affordable and comfortable housing and to improve the quality of housing and communal services". The main change that has been instigated by these orders is a significant reduction in the number of administrative procedures from 51 to 15 in 2013. Moreover, by 2018 it should be reduced to 11 procedures, and the time spent should be reduced. As estimated by experts, during 2014 the time spent will decrease from 423 to 130 days. Therefore, it is possible to assume that the data of decrees and orders is the result of the desire of the authorities to optimize builders' work. They are simplifying bureaucratic obstacles, which actually means providing them with the "green light" for their work on an even grander scale. Thus, over the 10 months of 2012, the amount of work carried out cost 4.2 trillion rubles. The past year's work cost 5 trillion rubles.

The Russian building and construction sector is a big part of domestic construction activities. There is no clear statistical data on this sector in Russia, but, in general, industry experts estimate the total floor space of the sector at 700 to 740 million m². CENef also estimates that approximately half of this floor space belongs to the public sector. Regarding the residential sector, heating and hot water use is important, so energy conservation measures are recommended (meters and other hot water efficiency measures). The lighting systems in schools are very old and need to be replaced. At the same time, comfort problems caused by both under- and over-heating are highlighted.

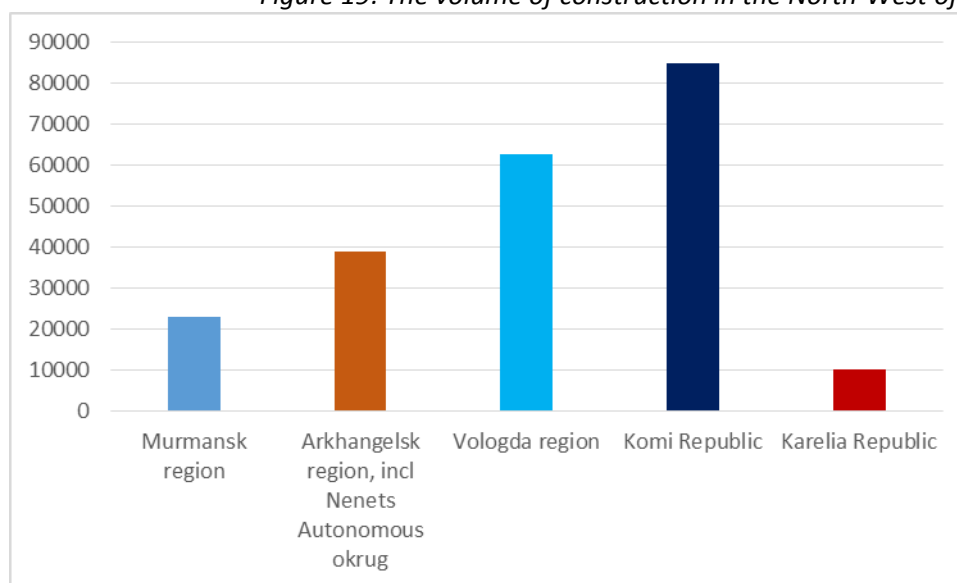
CENef also reports on issues with building thermal envelopes, in particular, with windows and interpanel joints. The breakdown of energy use in the public sector is as follows: space heating 60.3 percent, cooking 11.4 percent, lighting 8.6 percent, hot water 7.1 percent and other use 12.6 percent.

Many experts estimate that the residential buildings sector offers the greatest potential for improving energy efficiency in Russia. This potential for energy savings is hidden in improvements in space heating and water heating segments (IFC and World Bank 2008, CENef 2008). Some research describes in addition that over 80 percent of the potential to reduce energy consumption is achievable through investments that are economically viable and 46 percent is achievable through investments that are financially viable under the current domestic fuel prices (CENef, 2008).

Significant potential savings can be achieved by renewal of hot water delivery systems, including investments to improve regulation of water temperature and insulation of hot water pipes. Another investment causing great potential savings is installation of hot water meters in individual apartments, which can encourage changes in consumer behavior (IFC and World Bank).

When it comes to construction activities in the North-West region of Russia as part of the construction volume in Russia in 2012, we say that the Arkhangelsk region has a higher performance than the Murmansk region, though both regions do not top the list of the leaders (see figure 19).

Figure 19: The volume of construction in the North-West of Russia in 2012

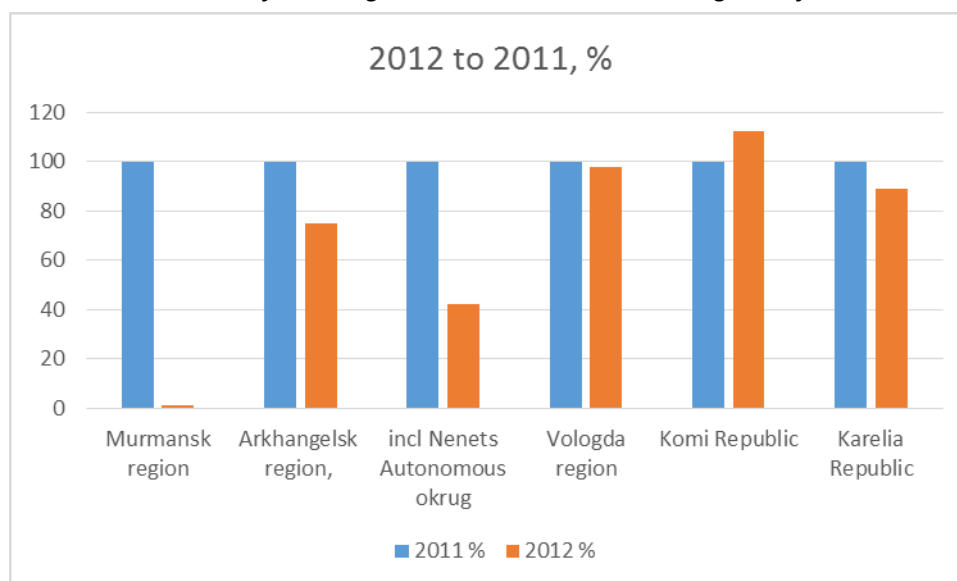


Source: Adopted from Murmansk Regional Government's Report 2012

In percentage, the construction of dwelling houses in 2012 in the Arkhangelsk and Murmansk regions has decreased in comparison to 2011 (see figure 20), as in several other North-West regions of Russia.

One important issue should be mentioned regarding the construction of dwelling houses - most of the residential buildings in Arkhangelsk and Murmansk regions have bad conditions, they are very old and do not comply with modern requirements for living conditions. Both regions focus on solving this problem by maintaining their own regional programs and by participating in federal programs devoted to solving these problems. However, as it is discussed further in the report, the economic conditions in 2013 and upcoming years are not so favorable, therefore the fulfillment of the goals indicated in different regional and states programs is uncertain.

Figure 20: Construction of dwelling houses in some Northern regions of Russia in 2012 (to 2011, %)



Source: Adopted from Murmansk Ministry of Construction and Regional Development, 2012

In general, among 8 Federal districts in Russia, the North-West Federal region occupies third place regarding the volume of construction. However, such results for the North-West region are mostly achieved because of the contribution of the city of St. Petersburg.

According to the survey of business activity of construction companies, 77 percent of heads of construction companies described the economic situation in the industry as “normal”⁸, while, according to an Ernst & Young survey⁹, 87% of respondents described the real estate market in Russia as “attractive”.

Main constraint to construction activities in the 3rd quarter of 2013, as perceived by the heads of the organizations are: high taxes, high cost of materials, structures and products, insolvency of customers, competition with other construction firms and lack of materials. However, in the 3rd q of 2013, entrepreneurship index has grown 4 points, though it kept its negative value (-4%).¹⁰

Over the past four years, 533 places in preschool educational institutions were commissioned in the region (including 123 in rural areas) and hospital outpatient clinics also expanded by 125 beds and 480 visits per shift. In the field of tourism, tourist centers in 28 locations and ski slopes 6059 meters long have been built in the region.

In addition, due to new construction, expansion, reconstruction and technical renovation, new construction facilitates economic activity in various areas: warehouses, facilities for trade and public catering, roads, networks of heat and water, and others.

⁸ High School of Economics, Business Climate in Construction Industry (in Russian), 3 q, 2013, www.hse.ru

⁹ Ernst & Young, Investments attractiveness of real estate market in Russia (in Russian), 2013, www.ey.com

¹⁰ High School of Economics, Business Climate in Construction Industry (in Russian), 3 q, 2013, www.hse.ru

3.2 Building and Construction Trends in the Arkhangelsk Region

In the Arkhangelsk region, the housing capacity includes 166, 677 buildings with heated area of 18,005.6 thousand square meters including district heating at 17,719 m². The annual energy housing reserve amounts to 7,341 million kWh per year. Around 20,000 buildings are dilapidated or require solid renovation.

Since 2012, the Arkhangelsk region develops the construction of new buildings as well as residential housing in a positive direction. According to information from Gosstroinadzor (the supervision authority for building sector in the Arkhangelsk region) the residential housing stock in 2013 grew by 55% comparison to 2012, from 91,000 m² to 141,000 m².

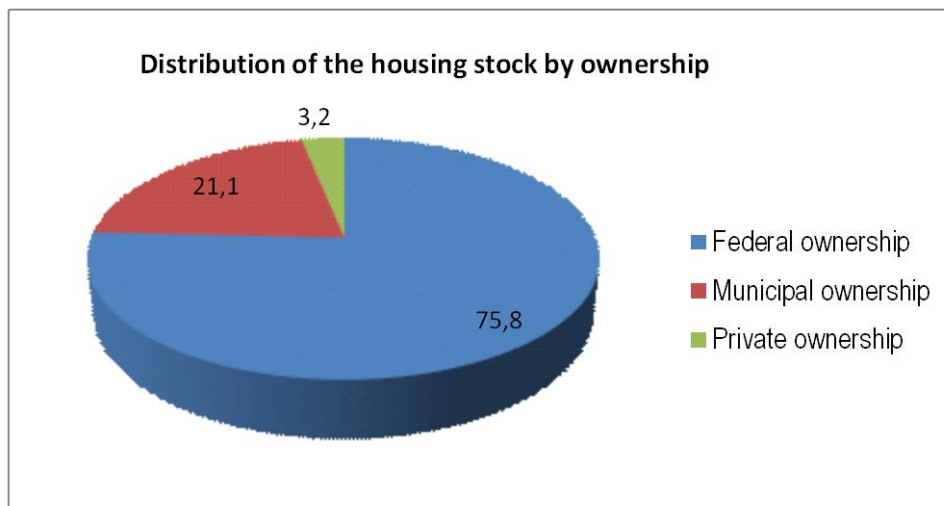
In general, one resident in urban areas of the Arkhangelsk region has 25.9 m² of living space and in rural areas, about 34.2 m². Compared to 2010, the living space per capita of the population has increased by an average of 0.5 m², which indicates the slow rate of growth of the housing stock of the Arkhangelsk region.

According to a forecast of the Arkhangelsk Regional Government (www.dvinaland.ru), the volume of new investments in construction industry should be growing until 2016.

3.3 Building and Construction trends in the Murmansk region

By the end of 2012, the housing stock in the Murmansk region was 19,290.7 m², with an average of 24.5 m² per capita. In the total housing stock, the urban housing is 17,742.4 m², the property of citizens is 14,535.6 m². By ownership, housing is distributed as follows in Figure 21:

Figure 21. Distribution of the housing stock by ownership



Source: Murmanskstat, <http://murmanskstat.gks.ru/>

Construction activity in 2013 shows a downward trend both in total and specifically in the construction of dwelling houses (see figure 22).

Figure 22: Construction activity in Murmansk region

Murmansk region	2012	2013 to 2012 (Jan-May), %
Construction activities, TOTAL, bln, RUR	22.8	79.8
Including building of dwelling houses, m ² ,000	24.3	75.7

Source: Murmanskstat, <http://murmanskstat.gks.ru/>

According to the regional plan as expressed by the Report from the Regional Government 2013, about 120,000 m² should be built until 2016. Optimistic plans for the period 2013-2016 are also set for construction activities in general, which aim to increase construction by about 1.8 times in comparison to 2012. However, according to conventional trends of development, if the economic situation continues to be unfavorable, it can cause a decrease in construction activities by about 6.9% (Murmansk Government Report, 2013).

IV Legislative and Financial Frameworks for Energy Efficiency

4.1 Legislative Framework for Energy Efficiency in Russia

Under Dmitry Medvedev's presidency from 2008 to 2012, discussions about improving energy efficiency have been awakened, and the development of the national policy on energy efficiency has begun. The Presidential Decree of June 2008 was intended to decrease the energy intensity of Russia's GDP by 40 percent by 2020, considering 2007 as a basis. A new federal law on "Energy saving and energy efficiency increase" was adopted in 2009 (261-FZ). The main provisions of the Federal Law № 261-FZ are:

- Prohibition of energy intensity goods traffic;
- Introduction of energy efficiency classes of goods;
- Description of measures of technical regulation;
- Increased requirements and responsibilities for those accountable for all types of energy resources;
- Requirements for energy efficiency of buildings and structures;
- Measures to improve energy efficiency in the housing stock;
- Development of the Institute of Energy surveys and energy services (SRO Energy Auditors, Energy Performance, energy service contract);
- Measures to improve energy efficiency in public sector (public procurement, energy service contracts);
- Regional and municipal programs for energy conservation and energy efficiency;
- Cost regulation as a tool to improve energy efficiency;
- Measures to improve energy efficiency in the business environment.

With regard to energy efficiency of buildings and structures, the Federal Law 261-FZ describes:

- Indicators of the specific value of energy flow;
- Requirements for influencing energy efficiency of architectural, functional, technological, design and engineering solutions;
- Requirements for individual elements, structures of buildings, structures and their properties, devices, and technologies;
- Requirements for energy efficiency of buildings and structures shall be reviewed at least once every five years;
- Requirements not to commissioning the buildings, structures, constructed, reconstructed after a major overhaul, and to comply with the energy efficiency requirements of equipment and metering devices used their energy resources.
- Developers are required to ensure compliance with the requirements of energy efficiency of buildings, structures and for not less than five years from the date of commissioning;
- Owners of buildings, structures, premises, owners of apartment buildings are required to ensure compliance with the requirements of energy efficiency for the duration of their service.

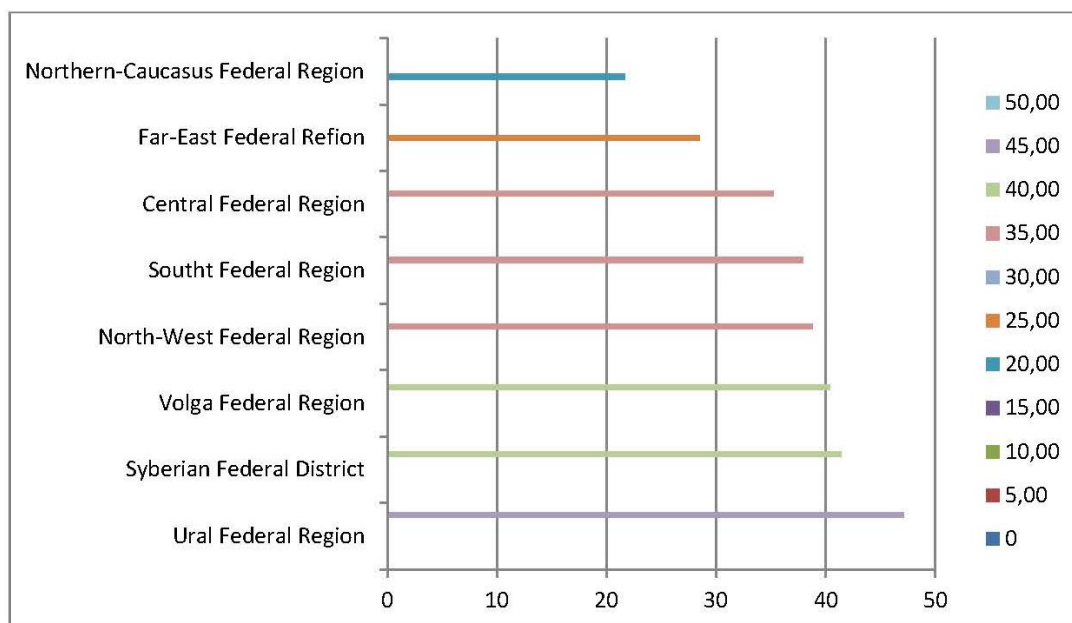
Although the current law creates a legal basis for the implementation of energy efficiency measures, it has been widely criticized by experts for incompleteness, prioritizing administrative methods and lacking long-term financial capital. By November 2010, there were 38 additional regulatory acts that were to be approved, though, in fact, they not adopted until 2012. The lack of an appropriate legal basis hindered the realization of energy efficiency measures. For example, the article 27 of the Federal Law on energy saving (FZ-261) declares the governmental support for energy efficient building construction. However, for every specific measure that increases energy

efficiency, it is necessary to develop a corresponding regulatory act. The lack of necessary requirements on energy-efficiency (standards and labels) in house building led to uncertainty in design, construction and renovation of buildings. Moreover, the law itself contains 41 pages, but there are already 500 proposed amendments, among which 150 are considered to be crucial to support the realization of energy efficiency measures. Thus, the incomplete legal basis, and the time lag in the approval of regulatory acts, has led to the very slow implementation of energy efficiency programs¹¹.

Many experts in Russia claim¹² that the Federal law 261-FZ and other decrees and regulations do not provide enough stimuli for energy efficiency actions, especially in regions. The first reason for this is while the main target to reduce the energy intensity of the GDP are indicators, there are absence of a suitable indicators to assess the impact on the production and consumption of energy resources. Second, the law focuses on a sector that consumes only 12 percent of electricity (state-funded organizations). Third, it does not seek to solve the conflict of interest between suppliers and consumers of energy resources. Finally, the law does not pay any attention to electricity grids, which play a crucial role in energy efficiency¹³.

In addition to this, in 2012 the rate of the activity of regions of the Russian Federation on implementation of the Federal Law FZ-261 was examined (figure 23). The rate is defined as the set of indicators reflects the number of energy efficiency programs for the period.

Figure 23: Rating of activity of Russian regions in implementing FZ-261, 2012.



Source: Ministry of Energy of the Russian Federation, <http://minenergo.gov.ru>

Based on the rating of activity of the Russian regions, the Arkhangelsk and Murmansk regions, which are part of the North-West Federal Region, have a high activity level of legislative initiatives. This is a positive sign of energy efficiency market potential.

¹¹ German Institute for International and Security Affairs (Energy Efficiency Policy in Russia: Scope for EU-Russia Cooperation), June 2013

¹² Statistics adopted from www.portal-energo.ru

¹³ German Institute for International and Security Affairs (Energy Efficiency Policy in Russia: Scope for EU-Russia Cooperation), June 2013

In addition, since November 2010 the Russian State Program “Energy Efficiency and Energy Sector Development, 2013-2020” has been executed with the main goal of ensuring a reliable supply of fuel and energy resources in Russia, more efficient use of these resources and a lesser impact on the environment from the fuel and energy industries.

The Ministry of Energy of Russia has been focusing on developing the orders, decrees and other regulating documents aiming at ensuring freer entrance to the electricity network, increase of attractiveness of the sector for investors and industry modernization. Some key steps are setting up the basis for price regulation, transmission of electric energy based on reliability and quality of customer service, enhancing operational efficiency and attracting investment from strategic organizations. The main work involves the introduction of unified standards for customer service networks, and the development of performance evaluation metrics for implementation of comparative analysis, such as benchmarking.

4.2 Legislative Framework for Energy Efficiency in Arkhangelsk and Murmansk regions

Both, the Arkhangelsk and Murmansk regions have regional laws on energy development strategy. As part of these legislative initiatives, regional governments have developed forward-looking action plans to improve energy efficiency, taking into account the territorial and economic characteristics of the regions. The main objectives of such initiatives include creation of new energy sources in the regions, as well as reducing costs and improving the efficiency of energy consumption.

According to the Decree of the Government of the Arkhangelsk region from 27.07.2010 N 210-PP “On approval of the long-term program of the Arkhangelsk region,” an energy efficiency program was approved for the Arkhangelsk region for the period 2010 – 2020. The main purpose of the program is to ensure the use of energy resources and to implement the measurement system for payments for energy resources.

The tasks of the Regional Energy Efficiency Program include:

- Information provision and promotion of energy-saving;
- Training in the field of energy saving;
- Implementation of mandatory energy audits of state (regional) and municipal and property;
- Phased transition of energy and water systems at consumers in accordance with counters readings;
- Reduction of energy intensity of gross regional product in 2020 for at least 40 percent compared to the level in 2007.
- Increase the share of energy produced from renewable energy sources and (or) of secondary energy resources in the total energy produced in the Arkhangelsk region, up 30.59 percent by 2020.

According to the Order of the Government of the Murmansk region from 27.07.2010 № 340-PP/12, the region adopted a long-term target program “Energy saving and energy efficiency in the Murmansk region” for 2010 - 2015 and on perspective up to 2020.

The tasks of the Regional Energy Efficiency Program include:

- Increase in the efficient use of energy resources;
- Reduction of budget expenditures in state-controlled organizations and municipalities, and improving energy efficiency of these organizations;
- Increase in the use of secondary and (or) renewable energy resources;
- Information and analytical support of state policy in the field of energy conservation and energy efficiency.

The program is funded through different sources, budgetary and extra-budgetary funds, including funding from the EBRD, NEFCO and the World Bank Group. Currently, there is a proposal for a new regional program for the Murmansk region called “Energy Efficiency and Energy Industry Development for the period 2014-2020”. The main change in the program, compared to the previous one, is the focus on investments and innovation based modernization of the energy sector in the region. The financing for this program is planned: about 60% of financing is from the regional budget, about 10% from the municipalities and the rest from unspecified sources outside regional and municipal budgets.

In summarizing these two regional programs we may say that, for the present moment, both regional governments did not perform all planned actions. Most of the planned construction of new sources of alternative energy at the current moment is under either development, or “frozen” due to the lack of funding. This situation could be improved by attracting investment, but, to date, the amount of investment in energy in the Arkhangelsk and Murmansk regions is still low.

Regarding the power industry of the northern regions, one of the important issues for the Murmansk region is the synchronization of energy systems of the Murmansk region and the northern regions of Norway (and in the future, also Finland). This cooperation would significantly improve the reliability of power supply in these countries. Moreover, it would reflect positively on electricity costs for consumers. Now, the capacity load of the Kola Nuclear Power Plant is only 69%, which is one of the lowest rates among the Russian nuclear power plants. This is primarily due to lower demand from the consumers of the Murmansk region and network constraints on the electricity transmission grid, as analyzed by ECO Northwest. Growth in exports of electricity in Norway will reduce the cost of production due to reduction in unit fixed costs with an increase in load factor. This is a positive factor for the economic development of the Murmansk region in addition to the growth of the tax base. This solution can also be seen as a benefit for Norway. The final price of electricity, as well as the cost of production in Northern Norway, is significantly higher (2.6-2.8 times) in comparison to the Murmansk region.

The Ministry of Energy of Russia has been focusing on developing the orders, decrees and other regulating documents aiming at ensuring freer entrance to the electricity network, increase of attractiveness of the sector for investors and the industry modernization. Some key steps are to set up foundations to regulate prices for the transmission of electric energy based on parameters such as reliability and quality of customer service, operational efficiency and investment network organizations. It involves the introduction of unified standards for service network organizations, and the development of performance evaluation metrics for implementation of comparative analysis, such as benchmarking.

The Ministry of Energy of Russia works closely with other federal ministries, such as the Ministry of regional development, which controls and monitors regional activities.

The main objectives of the Ministry of Construction and Territorial Development in the regions are:

- To develop and implement regional state policies in construction and urban development;
- To regulate activities relevant to the present-day economic circumstances and aimed at improving organizational structures, forms and methods of management and boosting investment in building and construction;
- To coordinate activities of enterprises and organizations in implementing strategies of regional development regarding construction and architecture. Those include measures set forth in annual action plans of the Region Government;
- To organize interaction of regional executive state authorities with federal executive state authorities and municipal units as regarding crucial activities in investment, construction, architecture and urban development;
- To participate in development and implementation of concepts, forecasts and targeted regional and federal programs;
- To prevent, identify and terminate violations of technical regulations (norms and rules), the Russian Federation legislation, other regulatory acts and design documentation in the process of building, reconstruction, major repairs of capital construction facilities by the developer, ordering party or building contractor of the developer or the ordering party.

Some institutions involved in the energy efficiency field

Arkhangelsk region

The Ministry of Fuel and Energy Complex and Housing and Communal Services is responsible for the regulation of energy efficiency.

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Another organization, which has been working in the field of energy efficiency in the Arkhangelsk region, is the Regional Center for Energy Efficiency. This state-owned Center was established in 2010 by the regional government with the main goals to contribute to the development and execution of regional energy efficiency related programs and activities.

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Murmansk region

The Minister of Construction and Territorial Development of the Murmansk Region is in charge for the development and execution of state (the Murmansk regional) policy in the field of construction and architecture.

Contact details:

*Head of the Ministry: Andrey Izotov
Perovskoi 2, 183016 Murmansk
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Another organization, which works especially in the field of energy efficiency, is the public autonomous institution *Energy Efficiency Agency of the Murmansk region*. The Government of the

Murmansk region established the agency in 2010 in order to implement programs in the field of energy conservation and energy efficiency. The agency carries out projects with non-profit partnership “Energy Efficient City”. The parties intend to cooperate to meet the challenges in the field of energy conservation and energy efficiency in the Murmansk region. They work together on the implementation of energy-efficient model of pilot projects tested in other regions of the Russian Federation within the conceptual framework developed by the Coordination Council of the Presidium of the General Council of the All-Russian political party “United Russia”.

The main functions of the agency are:

- Development, implementation and information support of the regional and municipal programs in the field of energy conservation and energy efficiency;
- Coordination of energy conservation and energy efficiency;
- Monitoring of the activities in budgetary institutions, state and municipal enterprises of the Murmansk region;
- Conducting training seminars and round tables with the participation of foreign companies in order to promote energy efficiency ideas.

The agency also carries out training in the field of energy auditing. One of the key projects in this field is called “Green Capacity”. The project “Green Capacity” is a large-scale campaign to promote energy efficiency. It was launched with a purpose to share best practices among Russian and Danish companies and government agencies, as well as to inform the public about energy efficiency and conservation in four sectors: housing, industry, district heating, and water supply and sanitation.

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4.3 Financing of Energy Efficiency Projects in the Russian Building Sector

It is important to focus on increasing the transparency of all kinds of governmental and public investments. This involves, on the one hand, public announcing and review of major investment projects and programs, and, on the other hand, launching the audit procedures for investment programs. Another important issue is to develop effective incentives and background to attract private investors into the industry.

The availability of financing for energy efficiency projects depends heavily on whether a project involves buildings in the private/commercial sector, the residential sector or the public sector (government agencies, schools, hospitals and others) as well as some other factors.

Financing for new construction and renovations of residential, commercial or any other private projects in building sector is available and taken from banks. In such cases, the financing of energy efficiency measures is part of the construction work. Private customers can also take mortgages to pay for apartments construction or modernizations. However, incorporating energy efficiency measures for new construction is relatively easy, while renovation of existing buildings, especially residential buildings, is a more complicated process. Still, most Russians live in big, multi-family apartment buildings where most apartments are privately owned, while homeowners associations (which unite apartment owners in one building) are not yet common in Russia and not so efficient. Thus, there is lack of management power or management force for larger-scale projects, which may cover the whole building to organize reconstruction of commonly-used and owned spaces in buildings, including the installment of energy efficient measures.

The municipal, regional or federal authorities run most social services and infrastructure. Current federal law pushes public buildings to reduce energy consumption by 15% by the end of 2014, with followed additional energy efficiency improvements by the year 2020. Hence, those managing public buildings feel a solid pressure for improving their energy efficiency. There are some federal and regional grants aimed at helping to finance energy efficiency projects in public sector, but they cover but a small part of the total demand for financing.

In practice, there are several main financial schemes and sources used for projects in the field of energy efficiency in Russian building and construction sector. They are:

1. Self-financing, such as projects financed by building owners themselves, without external financing.

2. State funding:

- Subsidies subjects of the Russian Federation on the implementation of energy efficiency programs, including implementation of measures aimed at improving the energy efficiency of buildings.
- Subsidies to regional and local budgets, building owners through targeted programs overhaul to implement energy-saving measures aimed at improving energy efficiency of buildings, including installation of meters.
- Targeted funding for implementation of regional energy efficiency programs and regional and local budgets aimed at improving energy efficiency of buildings.
- Establishing long-term cost of energy sources to include in their membership investment component for implementation of projects aiming to increase energy efficiency in buildings.
- Building energy efficiency programs in organizations that regulate tariffs.

- Provision of tax credits.
- Use of state (municipal) institutions of the savings resulting from energy efficiency measures.

3. Debt financing:

- Loans from Russian commercial banks and international financial organizations and reimbursement of interest costs on loans obtained for implementation of investment projects in energy efficiency of buildings.
- Implementation of energy service contracts in order to improve energy efficiency of buildings.
- Leasing for equipment purchased for projects to increase energy efficiency in buildings.
- Public-private partnerships to improve energy efficiency of buildings.

4. Raising finance:

- Grants under Russian and international programs with the stated goal of improving energy efficiency in buildings.
- Co-financing of projects by foreign foundations and international organizations and projects aimed at transferring the experience and knowledge on energy efficiency.

5. State/private co-financing:

- Performance contracting, where a performance contract is an agreement established between a municipality and a provider (energy service company/ESCO), and energy-cost savings are the inherent result of the project.

International Financial Institutions (IFS) offer quite a substantial portion of financing for energy efficiency projects in Russia, in cooperation with Russian banks. Among such IFSs we can mention the following organizations, the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the World Bank, the International Finance Corporation (IFC), Nordic Environment Finance Corporation (NEFCO), the Bank KfW (Support Program midsize and small businesses) and some others.

4.4 International Cooperation in the Field of Energy Efficiency

International and cross-border cooperation has a great potential and offers great possibilities for energy efficiency commercialization and competence enhancement in this field. Many international projects were implemented already in the time of the USSR, and are continuing since the. The projects are of all types (commercial, in the field of education and research and others) and are financed from international funding organizations. Being part of the North-West Federal region of Russia, the Arkhangelsk and Murmansk regions participate in the international cooperation in the area of energy efficiency.

European countries, including Norway, Sweden and Finland, have been contributing actively into the development of energy efficiency in the northern Russian regions through many joint projects and activities. It is outside our scope to detail all the international projects undertaken in the field of energy efficiency, but we can highlight one particular project. This is the UNDP/GEF Project “Building Energy Efficiency in the North West of Russia” which has been executed since 2011. The project will be finished in 2015 (for details, please go to <http://www.undp-eeb.ru/index.php?lang=ru>).

International cooperation in Energy Efficiency area is one of the priorities for the Arkhangelsk and Murmansk regions. In both regions, regional laws are created to regulate the development of the field of energy efficiency through tasks and programs, and to secure governmental investments.

Unfortunately, programs illuminating energy efficiency have been developing in both regions slowly. The main reason, as we mentioned already, a weak economic “pillow” for such projects. In this respect, financial contribution from international partners usually provides a good guarantee that the project will be executed and plays a driving role in the modernization of the Russian energy efficiency field.

One more important international framework must be mentioned, which is the framework that influences the Russian energy efficiency segment, including the building and construction sector. In February 2011, the European Commission and the Russian government established their mutual energy cooperation in a long-term perspective. The agreement specified a roadmap for the EU-Russia cooperation until 2050. The roadmap

“should concentrate on an analysis of different scenarios and their impact on EU-Russia energy relations, look into their consequences for the energy sectors, elaborate long-term opportunities and risks of the overall energy supply and demand situation and investigate the potential for long-term cooperation in the field of energy. After approval of this Roadmap by the Coordinators of the Dialogue, the EU and Russian sides should provide for using the respective potential for long-term cooperation as one of the priorities of their energy policies”.¹⁴

In this way, energy markets become global and interdependent. The European Union is one of the leading entities that initiates changes in the field of energy efficiency, and it attempts involving all close neighbor countries into the orbit of what it calls “energy efficient modernization”. Therefore, the objective of the international cooperation between EU and Russia is to develop and achieve mutually beneficial EU-Russia relations in the field of energy efficiency.

¹⁴ Common Understanding on the Preparation of the Roadmap of the EU-Russia Energy Cooperation until 2050, Brussels, 24 February 2011

V. Energy Efficient Technologies and Products market in the Russian Building Sector

5.1. Survey of Energy Efficiency Technologies and Products Market in Russia

Russia is one of the most energy intensive countries, where the building and construction industry is one of the largest energy consumers in the world. In addition, Russia's economy is growing, though not steadily during recent years. The country's working population has been growing as well, so the demand for modernization of residential privately owned buildings is stable. Energy efficiency is one of the first priorities, which creates a great market potential. Moreover, during recent years there has been sufficient legislative pressure to improve Russia's energy intensity. This has increased demand for energy efficient technologies, materials and services. Thus, we may assume that the Russian energy efficiency market is seeing as very promising for all stakeholders, from both environmental and commercial points of view.

However, the market potential does not necessarily lead to the fact that such potential is realized. The conversion of potential into outcomes requires hard work from all types of stakeholders – authorities, businesses, different state and non-state organizations, private owners and others. The contribution of each of them is a mosaic work, often on a long-term basis, that finally forms a solid background for development in certain areas, energy efficiency area in our case.

In the northern regions, such as Arkhangelsk and Murmansk regions, which are “occupied” by cold climate conditions, energy saving in buildings is one of the key areas with good commercial potential for business cooperation and for decreasing its environmental impact. However, these challenges cause a great constraint in the development of energy efficiency technologies and products, as it is much more expensive to be energy efficient in the north than in the south. As we mentioned before, state investments and transfers play important role in development of both regions (including energy efficient programs) and, in situations when federal transfers decrease, social and economic situations in Arkhangelsk and Murmansk regions can become more difficult. In fact, the volume of federal transfers has been steadily decreasing during last two years (30% lower in January-July 2013, in comparison to the same period in 2012 (Source: Independent Institute for Social Policy, <http://www.socpol.ru>). This may lead to financial challenges in upcoming years. This will in turn definitely influence the level of regional investments, since regional governments prioritize covering social obligations from regional budgets and other investments are always the second priority, if not third or fourth.

The Arkhangelsk and Murmansk regions have relatively similar environmental and climate conditions, social and economic performance, political situation, etc. However, there are some slightly different conditions in terms of natural resources, which differentiate the context of energy efficiency field between regions. For example, the rich forest resources in the Arkhangelsk region create a possibility to transfer of municipal power to renewable energy sources, including the transition to a bio-energy. The Murmansk region has a good, stable and relatively cheap supply of electricity, coming from Kola Nuclear Power Station, so the region may have lower incentives to use renewable energy sources (wind farms, tidal power stations, etc.) and even get extra profit selling more electricity to Norway and Finland.

There are also some factors and challenges regarding performance measures for energy use and energy efficiency of buildings in Russia. For instance, it is difficult to clearly distinct public and

residential building sectors in Russia, including the Arkhangelsk and Murmansk regions. Many analytical surveys present different data on this issue.

As described in Chapter 2, construction of buildings has grown in Russia in recent years. However, Russia has not paid much attention to modernization of buildings during past decades, nor to energy efficiency technologies for old buildings' renovation. One of the main reasons for this is weak financial conditions for innovative technologies, created in the country after the collapse of Soviet Union and a very "quick jump" into the market economy. Due to this, the today's housing stock which requires renovation is huge, about 100 bl. m² (Source: Federal Statistical Service of the Russian Federation, 2011) and the number is growing around 20-30 bl. m² per year. It can be concluded that energy use in building sector will still grow, due to the construction of new buildings, old buildings inefficiency and huge modernization processes.

Financial conditions and potentials are different from region to region. Some regions, such as Moscow and the Moscow region, St. Petersburg and the Leningrad region, are well developed and comparable to many European countries. At the same time, some other regions may have low economic growth and, therefore less available financial recourses to invest into new programs and projects. Unfortunately, the Arkhangelsk and Murmansk regions are among the Russian regions that have weak financial and economic potential. Some industries and business segments in these regions are better developed than others are. For instance, highly developed industries include military production in Arkhangelsk region, Murmansk Seaport in Murmansk region, oil & gas business in Nenets Autonomous okrug (what is a part of Arkhangelsk region) and some others. Another important fact that differentiates and influences EETPS markets in the Arkhangelsk and Murmansk regions lies in the building and construction industry itself. The building sector in the Arkhangelsk region is better developed than the one in Murmansk region. Thus, the business potential for EETPS in the Arkhangelsk region is seen as higher than in the Murmansk region (due to low level of building and construction activities since 1991, the local construction industry in Murmansk is now at a very low level of development).

According to the report developed by McKinsey & Company (2009), Russia is far behind other countries (including northern countries, such as Canada) in term of the energy-intensity of the GDP. Despite the cold climate, insufficient, outdated and energy-wasting equipment, buildings and technological processes are some of key reasons for this. Today, inefficient energy use is a huge burden on the shoulders of the Russian consumers. According to the report, Russia can save about €24 bln. each year until 2030 and free up about €190 bln., which could be invested in other sectors of the economy. In addition, implementing energy saving measures may lead to cuts in CO₂ emission of 7%!

In conclusion, we have to underline that the Russian government is systematically launching laws, rules, measures and incentives aimed at increasing energy efficiency, as well as in the building and construction sectors. This work elaborates the financial incentives aimed on helping to get rid of dilapidated houses, reconstruction of buildings, installment of energy efficient measures, etc. One of the main goals for the Russian Government is to increase demand for energy efficient products and technologies. Therefore, we may expect new initiatives in the energy efficiency area in the years to come.

5.2. Constraints for Russian Energy Efficiency Market Development

Despite the positive mood and commercial potential of the Russian energy efficiency market, there are limitations and barriers for the implementation of energy efficient technologies, products and services (EETPS) that also limit EETPS market development. Further, we summarize and present such key limitations and constraints, organized into several groups:

Regulatory and Management Issues:

- Most federal and municipal regulations and laws on energy efficiency in the building industry are not well developed and supported with available financial resources;
- The management system in housing, communal and construction segments is inefficient and complicated, especially when it comes to procedures for monitoring the use of energy efficient materials and technologies;
- Uneven implementation of commercial law, lack of transparency, high regulatory burden and weak interdepartmental coordination. Weak management and coordination in energy efficiency projects' development/execution (between state-to-state bodies involved; within state-to-private cooperation and even among private entities);
- Uncertainties created by technical regulations and certification, also due to establishment of the Common Customs Union (includes Russia, Kazakhstan and Belarus). This directly influences on the supply of different products to Russia.

Lack of Standardization for EETPS

- The introduction of mandatory energy efficiency standards for new and renovated buildings is one of the most cost-effective ways to provide energy savings in the residential sector. To be effective, the standards should be mandatory, regularly updated, and have a transparent mechanism for monitoring performance, take into account territorial and climatic features. The government must play a leading role to provide legal background for this, so directly, so via associations of EETPS producers/suppliers.

Low Energy Prices

- Cost and resource based Russian economy is still "supported" by relatively low prices for energy resources, resulting in a lack of interest for businesses and users in implementation of energy saving measures.

Challenges for Financing

- Lack of capital stock (income per capita is still low, limited availability of "long loans" and high interest rates). Difficulties for residential multi-apartment buildings' cooperatives to raise funds for substantial modernization;
- Public buildings and other entities financed through state budget may have poor credit ratings and transparency, hence limiting the ability to attract new funds.

"Indirect" and "hidden" barriers

- While families own apartments, the common areas and equipment of the building in general are managed by municipal or private companies, which often have little incentive to invest in energy efficiency, and often corrupt and not transparent;
- When it comes to public buildings, if the owner invests in energy efficiency this year, next year's budget for energy efficiency, in practice, can be reduced (because of the planned cost reduction). This, in its turn, reduces the owner's incentive to invest in energy efficiency.

Lack of knowledge and competence in connection to energy efficiency products and technologies

- Relatively few energy auditors can assist in controlling and help to assess value via implementing energy efficiency technologies.
- Few financial organizations, developers or managers are competent enough to understand the advantages and motivate for using investments for energy efficiency tools and technologies, also to boost profit and lower investment risk;
- There is a lack of information dissemination, awareness and capacity-enhancement in relation to energy efficiency technologies and products in Russia. The establishment of proper educational and skill enhancement programs in the field of energy efficiency is a priority area for improving market capacity. This will also influence the development of self-consistent and conscious behavior of end users, and can help to develop the energy efficiency market further. Unfortunately, end users in Russia, especially private users, have little understanding and low level of knowledge about energy efficiency products and technologies. There is a low level of awareness of financial, social and environmental possible benefits as well;
- Technological gap (lack of modern, up-to-date technologies and products being locally developed and available);
- Lack of qualified personnel is ready to serve and work with modern EETPS.

Russia's Vast Territory

- Russia's vast territory is a serious challenge. Outside of major cities, infrastructure, roads and transportation, are not very well developed. This creates substantial logistical barriers for accessing remote parts of Russia.

Harsh Climate Condition

- Harsh climate conditions in the northern territories in Russia make most measures for energy efficiency in buildings quite cost-effective.

The above-mentioned constraints overlap the whole energy efficiency market in the Russian building sector, including the Arkhangelsk and Murmansk regions. Moreover, in the Arkhangelsk and Murmansk regions, all these limitations are aggravated by weak economic conditions and the cold climate.

5.3 Types of energy efficiency technologies and products used in the Russian Building Sector

The building and construction sector uses several types of energy efficiency technologies products and services, including insulation materials; heating, ventilation and air conditioning systems (HVAC); building energy management systems (BEMS); collection and transformation of solar energy; lighting systems; types of household appliances; consumer electronics and office equipment used (energy class); automated scanning and meter systems and etc. Further, we have organized EETPS in Russia into eight main groups and examined the status and commercial potential each of the group.

1. *Insulation /building envelope*
2. *Heating, Ventilation and Air Conditioning Systems (HVAC)*
3. *Windows*
4. *Lighting, including motion sensors*
5. *Meters*
6. *Renewable energy sources (mostly solar panels)*
7. *Energy Service Companies Market in Russia (including integrated automated scanning and control systems for energy use)*
8. *Energy efficiency houses - “Green Buildings”*

INSULATION

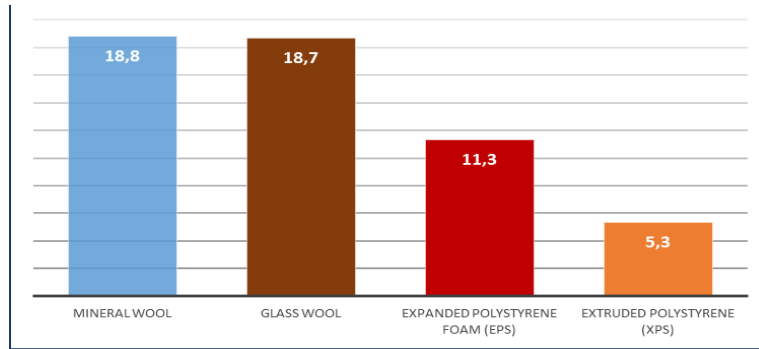
According to the PMR report (2010), most Russian buildings do not have proper insulation. As already mentioned, for many years building owners tried to reduce their expenses, which led to poor quality in buildings’ insulation and extremely inefficient use of energy. Nevertheless, thermal insulation is becoming an ordinary technology just widely used in Russia during the construction of new buildings as for modernization of old ones.

Figure 24: Production of insulated materials in Russia, 2012

Insulation Material	Main producer in Russia	Number of producers in Russia	Number of foreign brands	Produced, bl. m³
Mineral wool	Rockwool, Paroc, TechnoNikol, Izovol, Isoroc, Termosteps	25	5	18.8
Glass wool	Saint-Gobain ISOVER, Ursa, Knauf Insulation, Termostek	4	8	178.7
Expanded polystyrene foam (EPS)	Mosstroy-31, Primaplex, Penoplast, Styrofoam, Penoplex, Teplex	No less than 22	No less than 8	11.3
Extruded polystyrene (XPS)	Ursa, Penoplex, Teplex, Tekhnoplex, KNAUF Therm, Penoplas	15	5	5.3

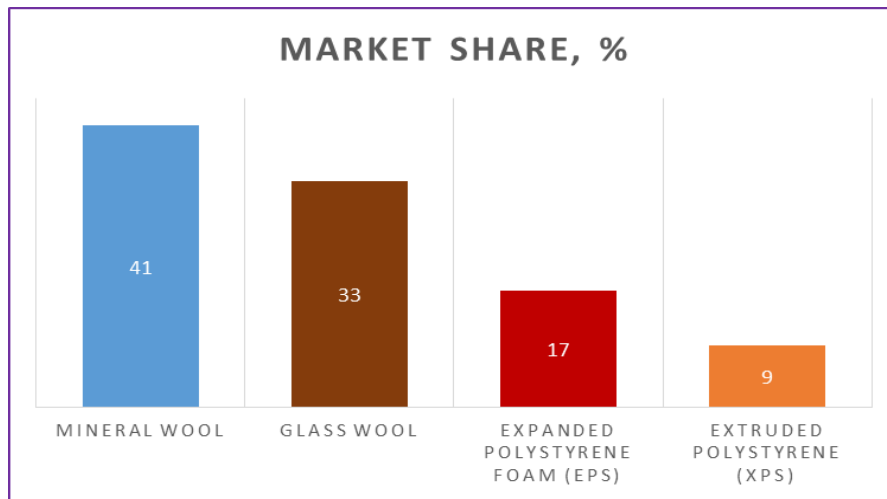
Source: Stroitel'naya informatsia (2012)

Figure 25: Volume of production of Insulated materials in Russia, m³, 2012



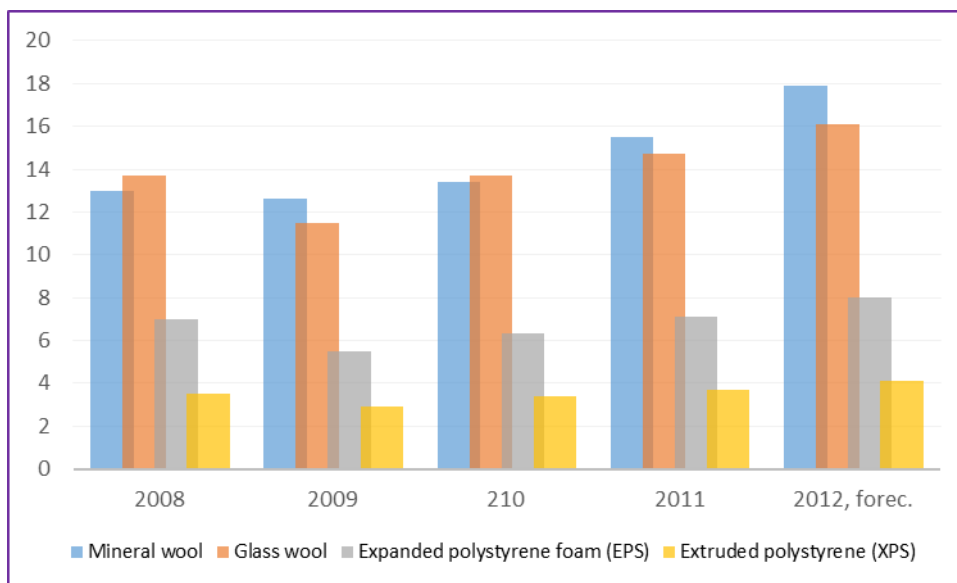
Source: *Stroitel'naya informatsia* (2012), www.bestresearch.ru

Figure 26: Sector trends of the Russian Thermal Insulation Market, 2012



Source: *Stroitel'naya informatsia* (2012), www.bestresearch.ru

Figure 27: Insulation foam production in Russia 2008 - 2012



Source: *Stroitel'naya informatsia* (2012), www.bestresearch.ru

Most insulation materials used are produced in Russia. Local Russian production of insulation materials almost doubled between 2004-2008 (PMI, 2010) and then stabilized, while still showing a slight growth between 2008-2012. Indeed, domestic manufacturing of insulation has increased rapidly. More than 120 production facilities now exist in Russia (PMR Report, 2010). All main producers of insulation materials have opened production facilities in Russia. The market is relatively concentrated, as the market share of the three main players combined makes up almost 50 percent (URSA, Saint-Gobain ISOVER and Tekhno-Nikol), and the market shares held by the three main players today are relatively equal. The forecast until 2015 is that insulation market will still grow, but only around 5-6% a year (*Stroitel'naya informatsia*, 2012). Some experts estimate, however, that utilization of insulation materials is still low in Russia and therefore the potential is still big, especially in the northern regions of Russia.

HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS

Heating, ventilation and air conditioning (HVAC) systems provide about 10% of savings potential in the building sector (McKinsey & Company report, 2009). The geographical location of Russia, and climate conditions, especially in the northern territories, such as the Arkhangelsk and Murmansk regions, presuppose a strong demand for heating systems. There is also a growing demand for air conditioning and ventilation. There are several factors contributing to that rise, but three of them are seen as the most crucial:

- a) Growing income and, therefore, demand for comfort from households and commercial end users;
- b) Newly issued Russian legislation that puts pressure and stimulus to use energy efficient technical solutions.
- c) Warmer summers during recent years (International Energy Agency Report, 2011)

The combination of these factors will likely lead to further growing demand for energy efficient HVAC systems. Out of this, about 78 percent is generated by district heating, a system of transmitting heat, usually in the form of hot water from a centralized boiler (Nekrasov et al., 2012). Cogeneration plants generate a little over half of their heat from district heating; 66,000 boiler houses generate the remainder (Nekrasov et al., 2012, McKinsey & Company, 2009). The share of boilers has been increasing over the past years. Gas is the primary fuel source in heat production (66 percent), but coal and coal products are significant as well (21 percent) (IEA, 2010).

The Russian Government acknowledges that about 70 percent of Russian district heating infrastructure needs to be replaced in the near future (IEA report, 2011, Ministry of Energy of the Russian Federation, 2010). Russia has the world's largest and oldest district heating infrastructure, but most facilities in it (that is 70 percent of water boilers and 66 percent of district heating networks) were installed before 1990 (The Russian Government, 2010).

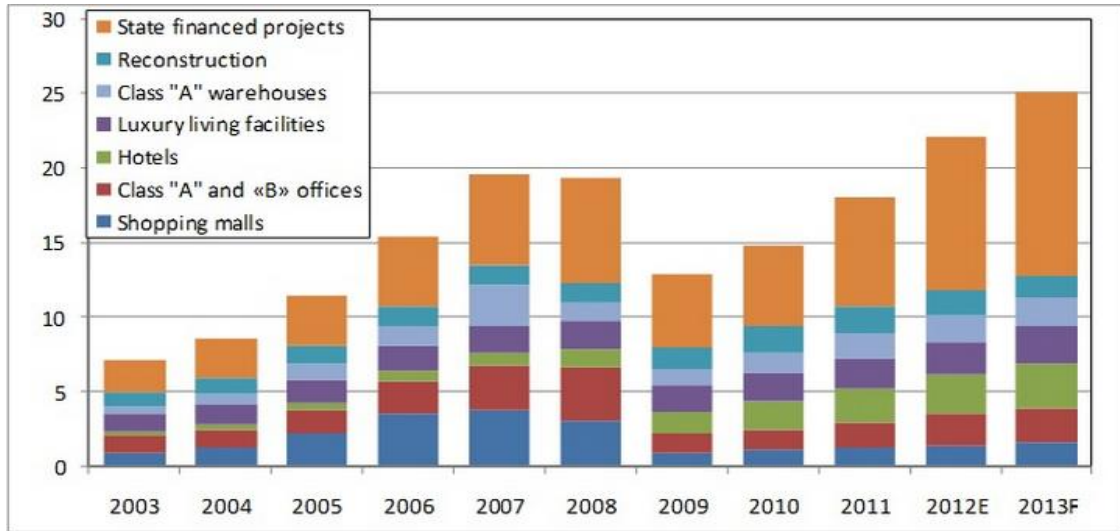
The inefficiency of district heating has provoked some consumers to switch from district heating to individual boilers. This is particularly the case for of industrial facilities, which often pay higher tariffs for heat due to cross-subsidizing policies aiming to protect private residents from high heat prices. Studies show that total consumption of heat decreased by 54 percent among the industrial consumers between 1993 and 2007 (Korppo and Korobova, 2012). Over the same period, combined consumption of residential, commercial and public consumers also fell by 33 percent (Korppo and Korobova, 2012).

The HVAC system developed will be further improved in Russia, having potential to save billions for government and consumers. The demand for energy efficient solutions for both district heating systems technologies and individual boilers is also expected to grow further.

Another element of the HVAC system is the central air conditioning and ventilation market. Although heating dominates in the Russian HVAC market, the demand for air conditioning and ventilation has been on the increase as well. The main contributor here is the growth of the commercial real estate market, where rapid development during last years, including the construction of shopping centers, caused growth in the central air conditioning and ventilation market in Russia. The financial crisis in 2008 has caused these numbers to fall, though after 2009, Russia got a sharp increase in commercial facilities constructed under state funding. In 2012, the state had 47% of the total number of commissioned facilities, in 2013 the share reached 50%. The driving force in this trend is generated by investments in an arrangement of Universiade in Kazan, the Shanghai Cooperation Organization (SCO) summit in Yekaterinburg, APEC summit in Vladivostok and facilities in Sochi for the Olympic Games in 2014. Forthcoming investments will be sent for construction of facilities for the Football World Cup in 2018. Such major projects stimulate the construction and renovation of different types of commercial facilities.

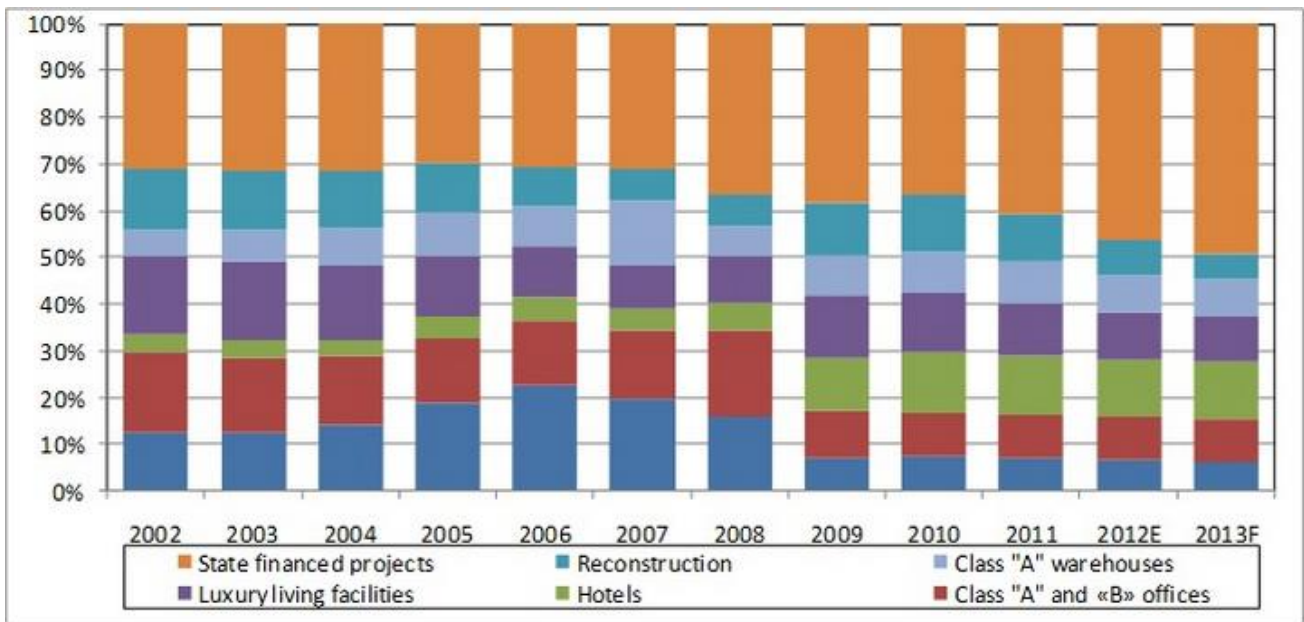
In addition, there are substantial state investments into construction of medical centers, hospitals, sports and recreational facilities, construction and reconstruction of the infrastructure facilities such as airports and train stations. In many Russian regions, up to 80% of construction or reconstruction of commercial infrastructure is financed by the state budget. Market players must constantly consider potential projects under state financing. This can be a good driving force for market entry (Figures 28 and 29).

Figure 28: Real estate, which requires the installation of HVAC systems, in millions of m²



Source: Litvinchuk Marketing, www.litvinchuk.ru

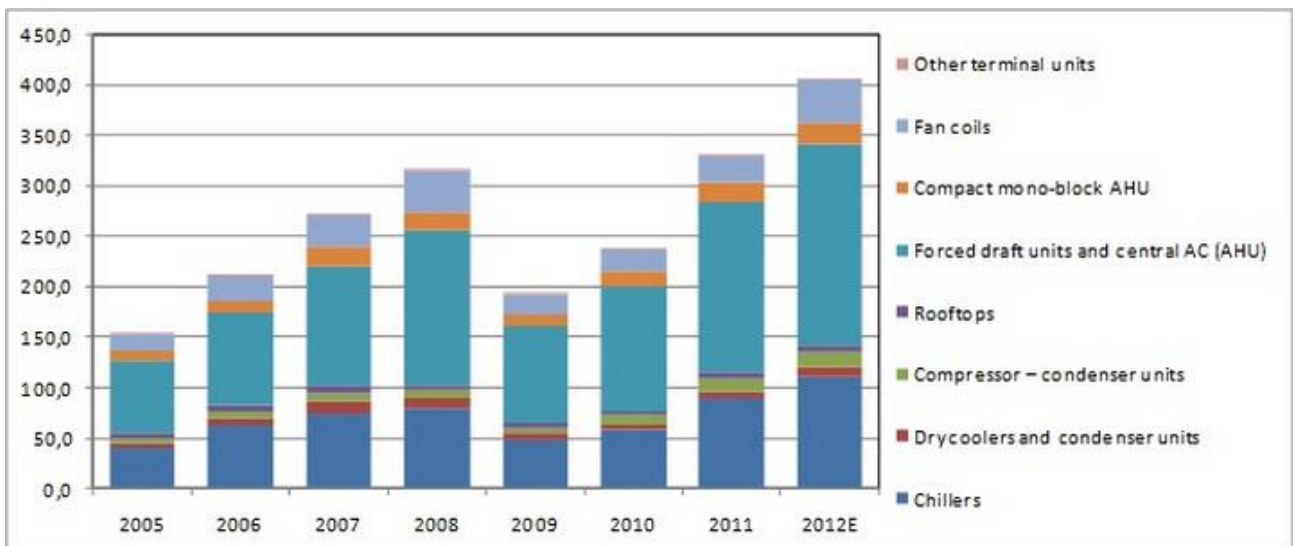
Figure 29: The structure of the real estate which requires the installation of HVAC systems, %



Source: Litvinchuk Marketing, www.litvinchuk.ru

Figure 30 presents the development of the market of central air conditioning systems in 2005-2012 and shows that in 2009, the market experienced 40% fall in sales. The market returned to pre-crisis levels in 2011, though profitability fell substantially towards profitability level the market experiences in 2005-2006.

Figure 30: Development of HVAC systems in Russia



Source: Litvinchuk Marketing, www.litvinchuk.ru

Another tendency is moving towards purchase of more complex systems. The share of complex systems with functions for recovery, moisture, etc., has been increasing. While in 2009 the market had a sharp increase in the share of Russian manufacturers of air handling units, in 2011, when many Russian producers reached the peak of productivity, foreign producers challenged their position. Today, the market leaders in the segment are: VTS, VEZA and Tekhnogrup (brands NED and Korf), followed by A-Clima and VKT. Four out of the five top brands are Russian companies. The fifth one, York (USA), is the only foreign manufacturer which has production facilities in Russia.

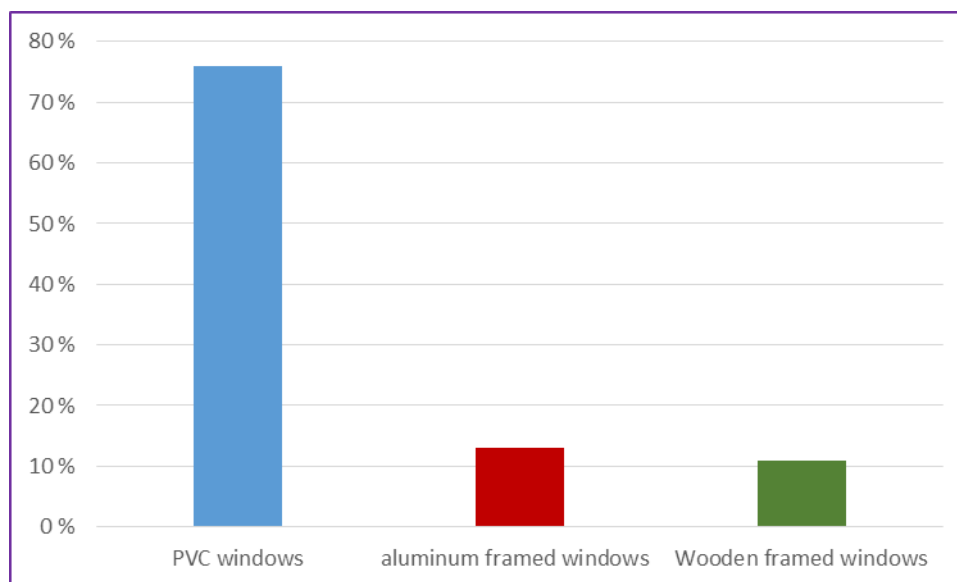
According to the report from APIC (2013), the Russian market of HVAC systems in 2013 increased by 8%, and sales of the fan coils grew 20-25%. However, negative tendencies may occur if the construction and renovation expenses funded from federal and regional budgets decrease. In this case, market players should be ready for downfall of sales as early as 2014 or 2015.

WINDOWS

The Russian market for windows is divided into three segments: plastic (PVC), wooden and aluminum (Figure 31). As of September 2009, PVC windows accounted for 76% of the total market, aluminum framed windows accounted for 13% and wooden framed windows accounted for 11%. Since 2003, the PVC segment has been growing at average of 30 percent per year with tight competition.

Double-glass pane windows have been increasingly popular, and their purchases significantly increased between 2005 and 2008. As incomes grew, Russians have been installing double-panes in new construction as well as in older buildings (Grishakova 2010).

Figure 31. Russian windows market segmentation, 2009



Source: Data adapted from U.S. Commercial Service 2009.

Numerous foreign manufacturers are active in the Russian market. The main foreign competitors include German companies such as: Rehau, KBE, Aluplast, Komerling, Geolan, Artec, Salamander, Veko, Tissen, and Trocal. Some Austrian companies are also active in the market - Shuko, Actual, as well as Turkish producers - Pak Pen, Pima Pen, Visesen, Winhaus, and Windoline. Ukraine is represented by Ekoplast, OpenTec, ALMplast brands and Belgium - by Decuning and Kniping. It is also important to underline that there are many local Russian producers in all regions, as well as companies (mostly SMEs) which distribute and install windows.

The windows market in Russia is very competitive, where Russian producers occupy 70% of market share, though mostly use imported technologies (www.vira.ru). Pressure on market prices is extremely high.

One of the biggest windows segments in Russia is PVC windows. The volume of production of PVC windows grew 4.5% in 2012 (in comparison with 2011) and came to saturation in 2012, when 46%

of all buildings had been equipped with new windows (Research.Techart, 2013). The average price for PVC frames is about Euro 30 per m².

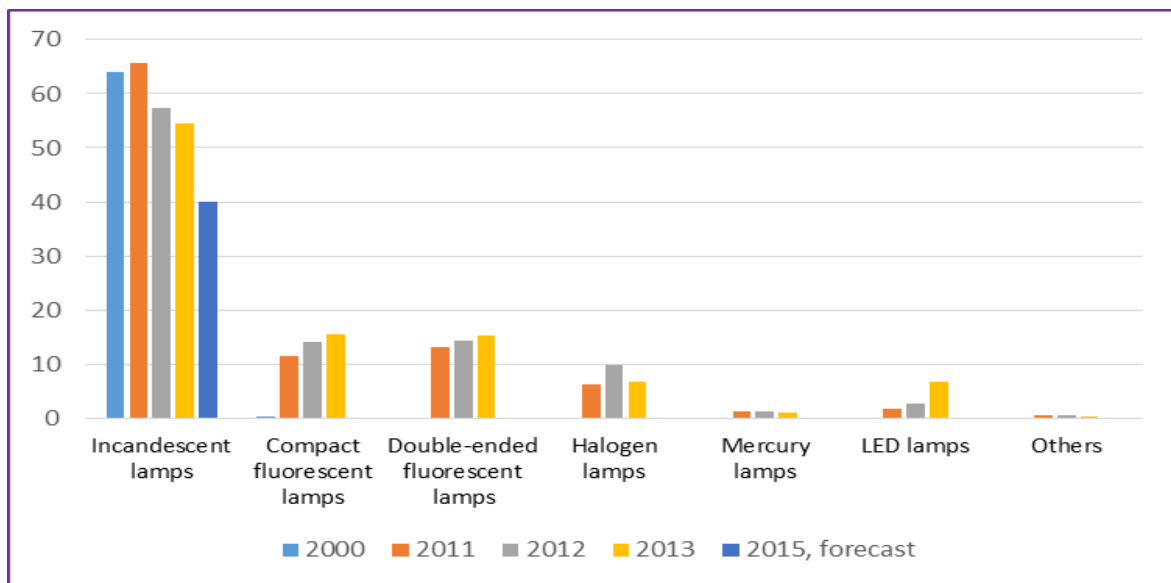
PVC windows still dominate the Russian market, but wooden framed windows become more and more popular. Current volume of the Russian market of wooden framed windows estimated as 2.5 bl. m² and expected growth of the market until 2015 at about 6% (Research.Techart, 2013). Competition in this segment is high and Russian producers adominate here as well.

The Russian Energy Efficient Windows Manufacturers Association (www.aprok.ru) has run a series of trade shows and events to promote energy efficient window sales in Russia. The association also issues quality labels for certified windows. The labeling system is voluntary and based on random factory checks and selection by a committee. As the Russian building energy codes have strengthened in the past 15 years, the demand for more efficient windows and insulation has also grown. The current code (with different 24 requirements by climate zone) is the Construction Norm and Regulation 23-02-2003 (Ministry of Regional Development of Russian Federation 2002).

LIGHTING

According to thematic portal www.solex-un.ru/energo, Russia uses up to 13% of its electricity for lighting. The share of energy efficiency lamps in Russia in 2013 occupiies about 40%, while in 2011 the share was 30%. The rest of the market belongs to incandescent lamps (Figure 32).

Figure 32: Russian lamp market segmentation



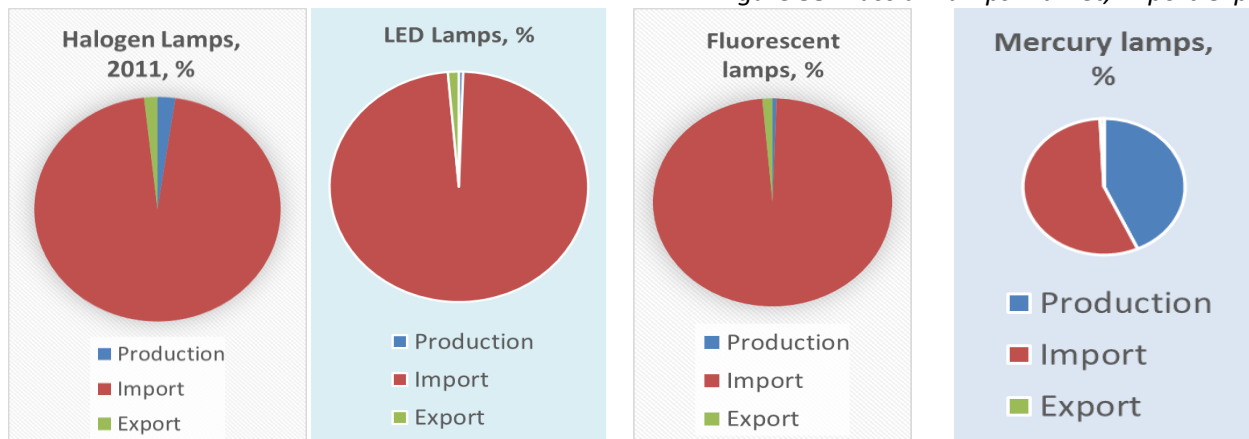
Source: Adopted from www.solex-un.ru, Lighting Business Consulting, 2013

In monetary terms, compact fluorescent lamps prevail in the market, but the volume is decreasing due to price decrease for fluorescent lamps. The most noticeable jump in taking market share is shown by LED lamps. Many market experts expect this segment to continue to grow.

Another important perspective to look at different segments of lamp market is the ratio between locally produced lamps and imported ones (Figure 33). According to *Lighting Business Consulting Agency*, the only segment where Russian producers dominate is that of incandescent lamps, where Russian companies occupy almost 60% of the market in 2013, while imports hold about 40%

(growing about 7% from the previous year). The reason for the growth of import is decreasing of production facilities in Russia for such types of lamps.

Figure 33: Russian lamps market, import-export



Sources: Adopted from www.solex-un.ru, Lighting Business Consulting, 2013.

The market for energy efficient lamps (fluorescent, halogen, mercury and LED lamps) has been growing for several years and is completely dependent on import. Segment of fluorescent lamps grew for 40% during last three years. Segment of mercury lamps grew for 24.9% in the period 2011-2013. The best results have been shown by LED lamp segment, which grew 440% from 2011 to 2013.

The structure of the lamp market has been evolving towards use of more energy efficient lamps. This tendency has already influenced the decrease of electricity consumption, which was 9.8 bln KWt in 2012 and 199 bln. KWt in 2013 (*Lighting Business Consulting, 2013*). According to Russian law, it is prohibited to use incandescent lamps higher then 100 W since 2011, and incandescent lamps higher 75w since 2013. Due to such restrictions and other limitations, the demand for energy efficiency lamps in Russia is growing.

Some organizations in Russia have been working towards supporting local producers of energy efficient lamps. Rosnano State Corporation is one of the active promoters (www.rosnano.ru). So far, however, the country has no substantial production facilities for energy efficient lamps. This fact opens room for foreign suppliers, through export to Russia or starting up production facilities in Russia.

Another market segment with good potential connected to the lamp market is the market for *Lighting Control Systems*, including motion sensors. Lighting control systems are common practice in developed markets, but almost absent in the Russian market. It is especially noticeable in relation to residential buildings. The potential savings that may come out of utilization of lighting control systems in Russia is high, and this market segment should be kept in mind as an energy efficiency related business opportunity.

METERS

The interest in and demand for heating meters and controls in Russia has been growing steadily during the last several years, caused mainly by new laws and regulations. According to Russian laws, all houses and households must be equipped with meters by 2015. Therefore, the market is

growing substantially today and will continue to grow. The main share of all types of meter production (electric, gas and water) is held by Russian producers, though imports occupy 15-20% of gas and water meter production. The main exporters are China, Germany and Denmark. According to www.dp.ru, less than 50% of residential buildings in Russia in 2013 are equipped with meters. Surely, some regions are better equipped with installed meters and some are less equipped. The market potential is still huge. According to experts from the Russian meters producing company "Meter" (www.meter.ru), this market will be growing 20-30% per year until 2015 and probably even after 2015, until the process is finished.

The market structure is also changing towards more sophisticated electronic meters, integrated into intranet systems. About 30 percent of all types of buildings now have heating meters, including all new buildings. However, there are some challenges for installing different types of meters and control systems in Russia, due to types of building stock. The difficulties are especially crucial in older buildings, which are not designed to have meters and controls due to their vertical-stand pipe systems.

Nevertheless, due to the volume of renovation work needed in the residential sector, stable increase of construction work, legislative incentives and the fact that lighting systems are non-expensive but efficient solutions, the meter segment indeed looks very promising.

ENERGY SERVICE COMPANIES MARKET IN RUSSIA

Energy Service Companies (ESCOs) are an innovative concept in Russia. ESCOs offer energy efficiency improvement services linked to the projects' performance. It means that ESCOs have full responsibility for developing and installing energy supply and utilization systems and benefit from the efficiency level of such systems.

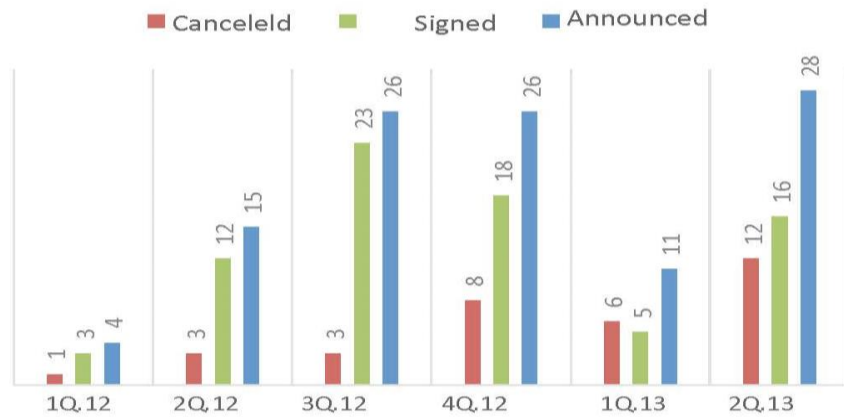
In the Russian context, the ESCO concept is very much connected to the "Energy Performance Contracting" scheme (where a performance contract is established between a service buyer and the service provider (energy service company/ESCO). Unfortunately, the Russian ESCO market is still in the formation phase and does not yet have a good mix of components to create a business attractive ESCO market. The real start of the ESCO market just happened in Russia in 2009 when the Federal Law - FZ-261 came into effect. The law established basic mechanisms for EPC development and influenced the ESCO market. However, there are other mechanisms (legal, economic, infrastructural) influencing and regulating the ESCO market. One of them is the state procurement system that is described more in chapter VII.

Discussion about the Energy Performance Contracts (EPC) scheme functionality as well as ESCO potential is worth detailed examination. There are some reports already describing this trend. See, e.g., the "Energy Efficiency Investments in Public Facilities, Developing a Pilot Mechanism for Energy Performance Contracts/EPC in Russia"¹⁵. Some key moments can be summarized further.

The efficiency and rate of the EPCO market development depends on many factors and there are some objective reasons for positive growth expectations. Until 2015 Russia plans to spend about 750 bln euros in order to speed up the development of energy efficiency related projects (P3 Infra Group, www.p3infra.ru). The conditions for market growth are therefore good for energy service companies (Figure 34).

¹⁵ http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-21173.pdf

Figure 34: A number of EPC in Russia



Source: adopted from P3 Infra Group, www.p3infra.ru

Russian energy service companies vary in terms of scope of services, quantity of personnel and financial resources. Most ESCO schemes in Russia are small or medium enterprises with a number of employees in between 10 and 60. The main services are energy audit and engineering with cost about USD 10000-200000. Energy efficient equipment producers, energy providers and transmitters, including locally established branches of foreign companies, occupy another solid segment of ESCOs. This segment has a higher level of competence and capacities (personnel, finances, etc.), as well as lobbying power (at local and federal authorities) and better contacts with domestic and foreign financial institutions.

Still, one of the main obstacles for development of the Russian ESCO market is the lack of long-term financial resources and lack of competence at market players. Not all local financial institutions are familiar with the EPC/ESCO model. In addition, federal and local authorities don't pay enough attention to the ESCO model, also due to the same two key reasons mentioned above. The European Bank of Reconstruction and Development has provided project funding of USD 10mln in 2011, aimed at assistance in improving the quality of regional energy efficiency projects and at development of regulations that may improve legal mechanisms of energy efficiency market. The European Bank of Reconstruction and Development has also given loans to several local companies for development of projects based on the EPC model. Such financing is a good support and a milestone for the ESCO market in Russia, but not enough for strong development. Russian authorities must work harder to create better conditions and incentives for the ESCO market further on.

Nevertheless, Russian experts say that the ESCO market in Russia will be developing in the future. Russian ESCOs will include wider scope of services and raise quality of EPC contracts. This will make the ESCO model more popular and efficient. If market consolidation happens, then big companies will take over the regional and federal markets positions, and this will help both local and federal authorities. There is also the tendency that financial institutions are working to elaborate financial scheme and standards for financing of energy service companies, which will fit best for the EPC activities. In addition, the key federal authorities for the energy efficiency market – the Department for State Governance of Tariffs, Infrastructural Reforms and Efficient Energy Use at Ministry of Economic of Development of the Russian Federation; Russian Energy Agency and Presidential commission for modernization and technical development of the Russia Economy – are concerned and deeply involved in the process of monitoring of the ESCO market and development of better regulations.

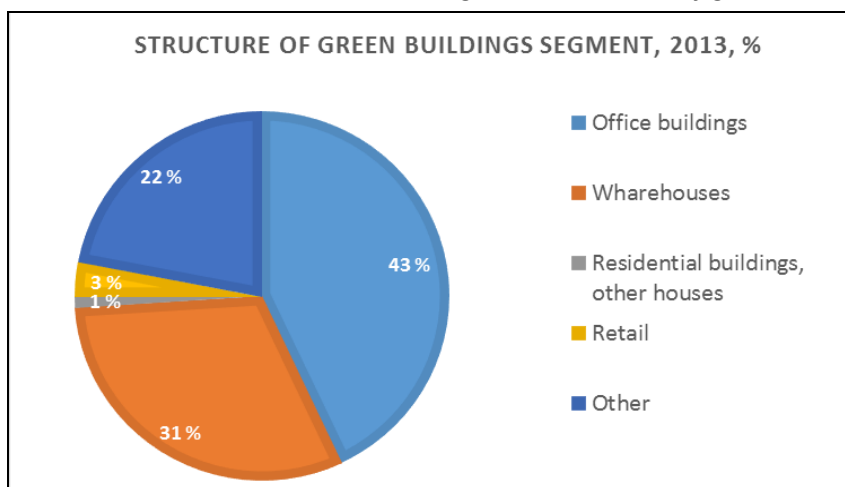
ENERGY EFFICIENCY HOUSES, “GREEN BUILDINGS”

The modern green building trend has just begun to take root in Russia. In theory, Russia has for a long time required buildings to be designed and constructed in accordance with strict energy efficiency and environmental protection codes and regulations. The practice, however, is quite different. Decades of state support for energy prices, the abundance of natural resources and raw materials, combined with a lack of unified promotion of building codes and low public awareness have resulted in overall low interest to energy efficiency. This included a low demand for and interest in green buildings. Current economic and political dynamics suggest that the energy efficiency market becomes more favorable for green buildings as well.

Russia is catching up quite quickly in the green building market. The number of buildings certified to LEED¹⁶ and BREEAM¹⁷ is growing weekly. The National Green Building Standards have been developed and are coming into effect. There are also Russian voluntary standards such as GOST R 54964–2012 (Environmental requirements for real estate). They suggest a conformity assessment method of environmental requirements to a property. The standards were approved in 2012 based on the Russian building regulations (GOST and SNiP) and with a strong influence from BREEAM and LEED tools.

Today’s economic situation makes it urgent for building owners and developers to look for effective ways to cut costs and improve quality in order to be competitive. According to Jones Lang LaSalle, there are 24 buildings in Russia that have been certified in tune with BREEAM and LEED ecological standards. The total area of green buildings is now about 500,000 m² (Jones Land LaSalle, October 2013) (Figure 35).

Figure 35: Structure of green buildings segment, 2013



Source: Jones Lang LaSalle, 2013

It is expected that over the next years, the volume of green buildings will grow further and the total stock of certified property in Russia may reach 1.2 mln m² by the end of 2015. The top position has 1.7 million m² in sports and infrastructure schemes, where the key driving projects are the Winter Olympic Games in Sochi in 2014 and the FIFA World Cup in 2018. The majority of buildings will be certified in accordance with LEED and BREEAM standards. Experts from IBCentre (www.ibcentre.org) assume that the demand for green buildings in Russia will grow 30% in comparison to the year 2013 with investments around \$1 bln.

¹⁶ LEED - Leadership in Energy & Environmental Design, www.usgbc.org/leed

¹⁷ BREEAM - Environmental Assessment Method, www.breeam.org

As for geographical location, the majority of green building projects are concentrated around Moscow, the Moscow region, Saint Petersburg and the Leningrad region. There are green building projects in other Russian regions, but they are mostly launched as pilot activities. Figure 35 also demonstrates that the leading green building segment is office property, while residential buildings and other types of living houses occupy just 1% of the segment.

There are several obstacles for green building technologies development in Russia, including:

- Construction companies are not so keen to invest a lot in green buildings, due to uncertainty with potential commercial utilization;
- Low awareness about benefits of green buildings use both among end users and among other market players (construction companies, realtors, etc.)
- Extra costs and efforts to hold green certificate for building through its time life.

However, according to North-West Magazine¹⁸, many Russian market experts believe that interest and awareness of the market will grow and availability of energy efficient and environmentally friendly building materials will increase. Legislative and institutional incentives for green building technologies will stimulate the demand for energy efficient buildings, and green buildings segment will growth as well. This positive tendency is forecasted mostly for commercial property, which will be the most promising market to invest in and use green building technologies. The positive forecast concerns the segment of residential buildings to a lesser degree.

¹⁸ <http://www.expertnw.ru/news/2014-04-30/ekspert-severo-zapad--provel-krugly-stol-na-temu-zelenogo-stroitelstva-v-peterburge#ad-image-0> (in Russian)

VII Business Opportunities & Recommendations

Russia is in the process of developing business and legal environment in connection to energy efficiency field. Changes in regulations and other factors might influence the energy efficient products and technologies market significantly. These factors can include the ratio of import and export, custom rules, technical regulations, etc. Changes in this market are happening very quickly. Therefore, it is strongly recommended to constantly update information and knowledge about EEPT market, especially before making decisions about market entry. We believe that such strategies should be designed in strong connection to the certain product or technology to be supplied/exported to Russia.

Some general suggestions and conclusions are provided throughout this report. Further, the important factors for the Russian market of energy efficient technologies are underlined. The overall conclusion is that these segments are most promising in the field of energy efficiency.

FUND FOR CAPITAL REPAIRS OF APARTMENT BUILDINGS

The Fund for Capital Repairs of Apartment Buildings (FCRAB) is a new institutional element in Russia which is aimed at solving a huge problem connected to old house stock renovation. There are still challenges and difficulties in relation to this type of fund creation, utilization, etc. Such funds have, however, already been established in almost each Russian region.

From our point of view, such funds create a good financial platform for both local and international EETPS suppliers, due to the fact that the capital renovation and modernization of residential buildings in Russia is an urgent problem for Russia. The estimated annual cost of such capital repairs in Russia through 2035 ranges from RUB 220 billion to RUB 1 trillion (International Finance Corporation, European Bank for Reconstruction and Development, 2012). The major part of those expenses will be coming via FCARB. Construction companies and suppliers of construction services and related products (including EETPS suppliers) will need these investments.

The capacity to fulfill construction and renovation work in some Russian regions is limited, thus creating another business opportunity for motivating local and foreign businesses. For instance, construction industry with the related supply industry in the Murmansk region is under- developed due to a serious drop-off of construction activities during last decades.

The Arkhangelsk and Murmansk regions have already established FCARBs. We do not expect that such funds will start investments in practice in the nearest future. Although we recommend that motivated foreign companies look at this new opportunity closely, and search for relevant partners among local businesses and contacts among regional fund operators. Such a proactive approach will help to distribute information, enhance expertise and prepare for future benefits.

ENERGY SERVICE COMPANIES MARKET IN RUSSIA

The Energy Service Companies (ESCO) market is one of the most interesting business opportunities, despite probably being one of the most complicated segments of Russian the energy efficiency market. As we know, the ESCO concept typically includes the development and design of energy efficiency projects, including installation and maintenance of energy efficient equipment, measurement, monitoring and verification of data. Such a concept requires well-organized and developed public and legal policies, which are still underdeveloped in Russia. The ESCO market therefore has a very good potential which can be utilized through:

- Execution of the “pure” ESCO concept - *development of modern energy efficient engineering infrastructure for enterprises and buildings*;
- Supply of *energy efficient automation power and software systems* (including equipment related to this) that allows counting, exchange and control energy related data and information (SCADA software systems).

The main Russian meter producers now mostly deal with the second process. Russian SMEs are also very active in this segment. They often rely on meter producers and work closely with them. There are also no formal limitations for foreign companies, including SMEs, to take the opportunity offered by the Russian ESCO market.

ENERGY EFFICIENT PRODUCTS

The market of energy efficient products in Russia is very competitive, including those segments where import products prevail. Chapter VI discussed in detail all of the main segments of the EEPT. We have also mentioned that Russian companies dominate in many segments.

Nevertheless, there is still a potential at certain niches for small and medium sized enterprises. These areas include for example, wooden windows, energy efficient houses (cottages), designed especially for the harsh climate, energy efficient pumps. Here we can also underline the potential for green buildings segment. Despite not so promising perspectives for green building projects in the Arkhangelsk and Murmansk regions, there are more financially stable regions, which can offer markets for certified green building projects.

EDUCATION, RESEARCH AND DISSEMINATION OF INFORMATION

There are still very good opportunities for cooperation in the field of education and research in the sphere of energy efficiency. Such cooperation may include:

- Establishment of international associations and Energy Efficiency Clubs with the goal to promote energy efficiency related issues (measures, technologies, knowledge, competence, products etc.);
- Organization of education and research programs at regional universities and study of practice cases related to best practices for energy efficiency improvement and the most advanced equipment and technologies in the field of energy conservation;
- Dissemination of information about the energy saving measures and potential in the building and residential sectors;
- Other proved actions such as exhibitions, etc.

It is important to mention that the suggested activities are closely interrelated with business opportunities and market potential. Experience shows that countries and companies that directly or indirectly promote activities through education and research benefit most of all. Therefore, we think that businesses should be involved in these activities in order to maximize the positive synergy from different joint and international projects. Through such cooperation, businesses will form a platform and loyalty to certain technologies and products.

Good examples of the cooperation among “business-non-business entities” are demonstrated by Russia’s collaborations including the northern regions, Finland, Denmark and Germany.

Capacity and expertise building in the field of energy efficiency and energy conservation have become key priority areas for the Russian authorities. This can lead to the easier establishment of energy efficiency related programs and projects in Russia.

REGIONAL MARKETS IN RUSSIA

This report was focusing mostly on two Russian regions, the Arkhangelsk oblast and the Murmansk oblast. Both regions have great business potential. Many energy efficiency related aspects of market were analyzed in this report.

Nevertheless, we have found out that business potential can be very limited if businesses only focus on the Arkhangelsk and Murmansk regions. We strongly recommend considering a wider geographical potential and keeping in mind other regions or the whole Russia as potential market. There are several Russian regions where the economy is more stable than in the Arkhangelsk and Murmansk regions, and energy efficiency institutional environment is better developed. The development includes regional regulations and renovation programs, local incentives and stimulus, etc. This has happened not only in Moscow and the Moscow region, Saint Petersburg and the Leningrad region, but also in the Tatarstan Republic, the Kaluga region, Yugra (Khanty Mansyisk) and Ekaterinburg.

In addition, it is important to remember that Russia, Kazakhstan and Belarus form the Customs Union, where many rules, regulations and especially technical regulations are unified. Therefore, entering one of these countries opens possibilities for the supply products and services to other member countries. Thinking strategically about entering the market in Russia or other countries in the Customs Union should bring additional diversified risks but also increase possible benefits.

THE RUSSIAN STATE PROCUREMENT SYSTEM

The Russian State Procurement System (RSPS) is very important mechanism in the Russian economy as it regulates the purchases made by ministries and authorities, and by organizations financed via public funding. The state procurement in the Russian Federation is regulated by the Federal Law № 44, which is in force since January 1st, 2014. Before then, this sphere was regulated by the FZ-94 “On Procurement of Goods, Works and Services for State and Municipal Needs”. Statements, related to procurement system in Russia, in current report are based on the experience of implementation of the FZ-94 (see more about the Russian State Procurement System in Attachment 3). Tenders in energy efficiency areas, including potential use of regional funds *for capital repairs of apartment buildings*, are also regulated by the Federal Law № 94-FZ. The total amount of the state procurement contracts per year accounts for about 30% of the annual budget.

It should be especially highlighted that the RSPS mechanism will regulate expenditures of funds for capital repairs of apartment buildings in the future. Foreign companies are allowed to participate in procurement. However, in practice, many obstacles for foreign companies to directly participate in tenders may occur. For instance, tenders are usually only published in the Russian language; the applications have to be submitted in a complex format and in Russian as well. All such practical problems make it difficult for foreign companies with no subsidiary or partner in Russia to apply. Furthermore, the fulfillment of the contract and the related administrative documentation will require even a more profound experience of doing business in Russia. Therefore, foreign businesses usually have to register a subsidiary in Russia, or to act via a Russian

agent/partner/subsidiary or specialized agency or service provider. They need help to prepare the application form and to participate in procurement. Such approaches may lead to an increase in costs, but in case of success, the benefits may overlap extra overhead.

RUSSIAN MARKET ENTRY MODES

It is neither the task of this report, nor possible at all to suggest a detailed market strategy to enter Russian regional markets of energy efficient technologies and products. However, we can suggest some basic starting points for modes of entry into the Russian market. There are always many different ways to enter a new market. Russian market is not different, though it has certain circumstances. The four of them perhaps are the most meaningful. They are *rules and regulations, bureaucracy, cultural differences and language barriers*.

It doesn't mean that the Russian market (including the energy efficiency field) is a "jungle". No, it is not. We just would like to warn newcomers to be attentive while thinking about market entry steps. Russian authorities (federal and regional) systematically announce preferences and incentives for companies who register entities in Russia in order to set up facilities there. Such preferences and incentives can be performed in many forms. Some of the most popular are lower taxation rates (different taxes), special technology parks development, special economic zones formation (SEZ) and assistance in developing basic infrastructure for factories, etc. Many regions are quite successful in attracting investors. The Tatarstan Republic is one of the best examples.

Nevertheless, our experience shows that the Russian market is still one of the most dynamic emerging market and difficult for foreign businesses to enter. It may be especially risky for small and medium sized enterprises, which have limited resources to handle risks on new markets. Hence, it is highly recommend all potential newcomers checking market conditions and update knowledge about the Russian EETPS market before decision making about entry moods. One of most secured ways to get into the Russian market (energy efficiency market is not special and is a part of the overall Russian business environment) is to "...develop sustainable long-term trust based relationships with few nodes in the market with which they can interact, exchange and receive information from regarding market conditions and opportunities" (June Borge Doornich, 2014)

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26. www.gks.ru (The Russian Federal Statistic Service)
27. www.socpol.ru (Independent Institute for Social Policy)
28. тариф29.рф (Arkhangelsk Regional Agency on Tariffs and Prices)
29. www.aeemo.ru (Energy Efficiency Agency of the Murmansk Region)
30. www.aoresc.ru (Energy Efficiency Agency of the Arkhangelsk Region)
31. www.raexpert.ru (Russian Agency Expert)
32. www.litvinchuk.ru (Litvinchuk Marketing Agency)
33. www.aprok.ru (The Russian Energy Efficient Windows Manufacturers Association)
34. www.solex-un.ru/energo (Energy Efficiency Portal)
35. www.vira.ru (Group of Companies Vira)
36. www.rosnano.ru (RUSNANO, Fund for Infrastructure and Educational Programs)
37. www.dp.ru/ (Newspaper "Delovoiy Petersburg")
38. www.meter.ru (Meter Company)
39. www.p3infra.ru (P3 Infra Group)
40. www.bestresearch.ru (Stroitelnaya informatsia)
41. <http://murmanskstat.gks.ru> (Murmansk Regional Statistic Service)
42. <http://arhangelskstat.gks.ru/> (Arkhangelsk Regional Statistic Service)
43. www.ens.ru (Engineering Centre "Energoservice", Arkhangelsk)
44. www.expert.ru (Expert Magazine)
45. www.epertnw.ru (Expert North-West magazine)
46. <http://www.jll.ru/russia/ru-ru> (Jones Lang LaSalle)
47. www.ibcentre.org (IBCentre)
47. www.minenergo.gov.ru (Ministry of Regional Development of Russia)
48. www.dvinaland.ru (Arkhangelsk Regional Government)

Legislative Acts of the Russian Federation on energy conservation and energy efficiency, and the system of regulations in the field of energy saving

Federal Law № 261-FZ “On energy saving and energy efficiency”, other Federal laws: the changes to the Housing Code, the Town Planning Code, the Tax Code, BC, Federal Law № 94, № 41, № 35, № 210, № 131, № 185, № 66, № 194, № 184 - on technical regulation, the development plan by-laws (Decree of the Government of the Russian Federation 01.09.2009 № 1830-p), 49 bylaws.

1. The decisions and orders of the Government of the Russian Federation, laws and other normative acts of the subjects of the Russian Federation, adopted within the authority:

- 1.1. Housing legislation;
- 1.2. Legislation urban development;
- 1.3. Legislation on the state (municipal) procurement.

2. Normative acts of ministries and departments, local law adopted within the authority:

- 2.1. The law on state regulation of prices;
- 2.2. Budget legislation;
- 2.3. Other branches of law.

Direct claims:

- turnover and labeling of goods;
- new construction and maintenance of buildings in use;
- maintenance of the housing stock;
- accounting management of energy resources;
- mandatory energy efficiency measures;
- the implementation of regional and municipal programs;
- public procurement;
- organizations and state and local participation;
- regulated entities;
- the system of public information systems.

Discretionary rule:

- terms of energy service agreements;
- recommends measures for regional and municipal programs;
- opportunities and forms of government support;
- the right to include in the educational programs of energy efficiency.

Tools:

- A system of subsidies;
- tax benefits;
- % refund loans;
- regulated prices (tariffs);
- Energy Service Agreement;
- voluntary agreements;
- regional and municipal programs.

Responsibility:

- new types of administrative violations;
- Increased accountability measures.

International Documents:

- European Directive 2002/91/EC (EPBD)
- Federal document
- Presidential Decree of 04.06.2008 № 889 “On some measures to improve the energy and environmental efficiency of the Russian economy”;
- Federal Law of 23.11.2009 № 261-FZ “On energy saving and energy efficiency improvements and on amendments to certain legislative acts of the Russian Federation”;
- Federal Law of 29.12.2004 № 188-FZ “Housing Code of the Russian Federation”;
- The Federal Law of 29.12.2004 № 190-FZ “Town Planning Code of the Russian Federation”;
- Federal Law of 27.12.2002 № 184-FZ “On Technical Regulation”;
- Federal Law of 27.07.2010 № 190-FZ “On Heat Supply”;
- The Federal Law of 26.03.2003 № 35-FZ “On Electric Power Industry”;
- Federal Law of 21.07.2007 № 185-FZ “About Fund of assistance to reforming housing and communal services”;
- Federal Law of 06.10.2003 № 131-FZ “On General Principles of Local Self-Government in the Russian Federation”;
- Federal Law of 07.02.1992 № 2300-1 “On Protection of Consumers' Rights”;
- Tax Code of the Russian Federation;
- Federal regulations PPA
- Government Decree of 23.08.2010 № 646 “On the principles of formation of the executive authorities of the Russian Federation a list of energy conservation and energy efficiency in respect of the common property of the owners of premises in an apartment building”;
- Government Decree of 31.12.2009 № 1225 “On the requirements for regional and municipal programs in the field of energy saving and energy efficiency”;
- Order of the Government of the Russian Federation of 01.12.2009 № 1830-p “On approval of the plan of energy conservation and energy efficiency in the Russian Federation”;
- Order of the Ministry of Economic Development of the Russian Federation from 17.02.2010 № 61 “On approval of the indicative list of activities in the field of energy conservation and energy efficiency, which can be used in the development of regional and municipal programs in the field of energy saving and energy efficiency”;
- Order of the Ministry of Energy of the Russian Federation of 19.04.2010 № 182 “On approval of the requirements for the energy passport, based on the results of mandatory energy audits and energy passport drawn up on the basis of project documentation, and sending a copy of the rules of energy certificates drawn up by the results of mandatory energy audits”;
- Order of the Ministry of Regional Development of the Russian Federation of 02.09.2010 № 394 “On approval of the approximate form of a list of measures for the multi-family home (groups of apartment buildings) in respect of the common property of the owners of premises in an apartment building, and in respect of the premises in an apartment building, holding that is more conducive to energy conservation and more efficient use of energy resources. “

Technical federal PPA:

- SNIP 3.05.03-85 thermal network;
- SNIP 3.05.04-85 * External networks and facilities of water supply and sanitation;

- SNIP 3.05.06-85 Electrical devices;
- SNIP 3.05.07-85 automation systems;
- SNIP 3.03.01-87 Support and the building envelope;
- SNIP 2.09.04-87 * Administrative and domestic buildings;
- SNIP II-35-76 Boilers;
- SNIP II-58-75 thermal power plants;
- GOST 51541-99 Energy efficiency. The composition of the indicators;
- SP 23-101 “Design of thermal protection of buildings”;
- GOST 30494 “parameters of the microclimate in residential and public buildings”;
- GOST 31166-2003 structures enclosing buildings. Colorimetric method of determining the coefficient of heat transfer;
- GOST 31167-2003 Buildings. Methods for determination of air permeability of the building envelope in natural conditions;
- GOST 31168-2003 “residential buildings. Method for the determination of the specific heat consumption for heating”;
- GOST 26254-84 Buildings. Methods for determination of the thermal resistance of building envelopes;
- GOST 51387-99 Energy. Regulatory and methodological support.

Monitoring of the Federal Law N261-FZ:

Fundamentals

- a ban on the circulation of goods energy intensity, including the introduction of
- a set of measures of technical regulation;
- the introduction of energy efficiency classes of goods;
- requirements and responsibilities of the account of all types of
- energy resources;
- energy efficiency requirements for buildings and structures;
- Measures to improve energy efficiency in the housing stock;
- development of the institute of energy audits and energy services (SRO Energy Auditors, Energy Performance, energy service contract);
- measures to improve energy efficiency in the public sector (public procurement, energy service contracts);
- regional and municipal programs for energy conservation and energy efficiency;
- tariff regulation as a tool to improve energy efficiency;
- Measures to improve energy efficiency in the business environment.

Article 11 of the Federal Law regarding energy efficiency of buildings and structures:

- Indicators of the specific value of energy flow.
- Requirements for influencing the energy efficiency of architectural, functional, technological, design and engineering solutions.
- The requirements for individual elements, structures of buildings, structures and their properties, devices, and technologies.
- The requirements of energy efficiency of buildings and structures shall be reviewed at least once every five years
- Does not commissioning of buildings, structures, constructed, reconstructed after a major overhaul, and do not comply with the energy efficiency requirements of equipment and metering devices used their energy resources.

- Developers are required to ensure that buildings, structures and facilities energy efficiency requirements for not less than five years from the date of commissioning.
- Owners of buildings, structures, premises owners of apartment buildings are required to ensure compliance with the requirements of energy efficiency for the duration of their service.

The distribution of powers and regulatory support in the implementation of the Federal Law N261-FZ

Legal basis of the state authorities of the Russian Federation with regard to the implementation of 261-FZ

1. State policy.
2. Federal programs.
3. Control of public institutions.
4. Rules for determining the energy efficiency class of apartment buildings.
5. The requirements of energy efficiency of buildings.
6. The principles of determining the list of mandatory measures in the apartment building.
7. Energy efficiency requirements of the goods, works and services for state and municipal needs.
8. State control over observance of the law.
9. 9. Establishing the rules of creation of the state information system in the field of energy conservation and energy efficiency, and ensure its functioning.
10. 10. Requirements to regional and municipal programs in the field of energy conservation and energy efficiency.
11. 11. Program requirements of organizations carrying out regulated activities.
12. 12. Determination of forms and methods of state support in the field of energy conservation and energy efficiency and its implementation.
13. 13. Implementation of federal control over compliance with legislation on energy saving.

Ministry of Regional Development:

- The development of public policy and legal regulation in the sphere of energy efficiency in buildings, structures and facilities, as well as in improving energy efficiency of the economy and the subjects of the Russian Federation Ministry of Defense
- Requirements for the energy efficiency of buildings and structures
- How to determine the energy efficiency class of apartment buildings, as well as the requirements for energy efficiency index class apartment building
- Monitoring and analysis of the implementation of public policies and the effectiveness of legal regulation.
- Development and implementation of measures of state support and incentives for energy conservation
- Laws and regulations in the field of energy conservation and energy efficiency for energy audits, information security measures for energy conservation and energy efficiency, taking into account energy resources used.
- Create a public information system in the field of energy conservation and energy efficiency, and the conditions for its operation.

The Ministry of Economic Development:

- Laws and regulations in the field of energy efficiency in public procurement for state or municipal needs, ensuring energy efficiency of budgetary institutions and organizations engaged in regulated activities.
- Set the model terms of an energy service agreement (contract) that could be included in the contract of sale, supply, transfer of energy resources.
- How to determine the volume reduction of consumed resources in the budget institution comparable conditions.

The Ministry of Energy of the Russian Federation:

- Establishes requirements for the energy passport, based on the results of mandatory energy audits or on the basis of project documentation, its form and content, the rules in the direction of the Ministry of Energy copies of passports.
- Set the order of detention and material terms of the agreement governing the conditions of installation, replacement, and (or) operation of meters.
- Approximate shape proposals for metered.
- How to carry out inspections of SROs in the energy audit.
- Maintain a public register of SROs in the energy audit.
- The collection, processing, classification, analysis and use of data energy certificates.

The Federal Service for Supervision of Consumer Rights Protection and Human Welfare:

- Exercise state control over compliance with the inclusion of information about the energy efficiency class of goods in the technical documentation, labeling, on his label.

The Federal Antimonopoly Service:

- Exercise state control over compliance with the inclusion of information about the energy efficiency class of goods in the technical documentation, labeling, on his label.

The Federal Tariff Service:

- Establishes requirements for the program in the field of energy conservation and energy efficiency in relation to the regulated activities.
- Carries out the state control over compliance with the requirement of acceptance of the program.

The Federal Service for Ecological, Technological and Nuclear Supervision monitors:

- The observance within its competence in the design, construction, reconstruction, major repairs of buildings, structures and facilities energy efficiency requirements, the requirements of their metered use of energy resources.
- The observance within its jurisdiction the owners of non-residential buildings and structures during their operation requirements on energy efficiency requirements for such buildings, structures and requirements of their metered use of energy resources. Compliance with legal entities, in which the share of the authorized capital of the Russian Federation (the subject, Mo.) is more than 50 percent, the requirement to adopt programs in the field of energy saving.
- The mandatory energy audit on time.

The powers of state power of subjects of the Russian Federation:

- Development and implementation of regional programs.
- Establish requirements for programs of organizations carrying out regulated activities.
- Establish a list of mandatory measures in an apartment house providing information on the entity of the Russian Federation mandatory measures for energy conservation and energy efficiency.
- Coordination and supervision of activities of public institutions, the PMU.
- Regional control legislation.

The powers of local self-government:

- Development and implementation of municipal programs.
- Establish requirements for programs of municipal utilities.
- Information support mandatory measures for energy conservation and energy efficiency.
- Coordination and control measures of municipal institutions.

REGIONAL OPERATORS OF CAPITAL REPAIR FUNDS IN RUSSIA¹⁹

No	REGION	CONTACT PERSON	PHONE NUMBER, WEBADDRESS
Central Federal District			
1	Belgorod Region	Lenid Belokovalenko - Director Olesja Bulgakova – Managing Director	Phone: +74722323346 www.fondgkh31.ru
2	Bryans Region	Sergey Smirnov – General Director	Fax: +74832643893 Phone: +74832642318 www.fkr32.ru
3	Vladimir Region	Anton Kuleshov – General Director	Phone: +74922422003 www.fondkr33.ru
4	Voronezh Region	Andrey Slesarev – General Director	Phone: +74732801245 Email: fond@fkr36.ru www.fkr36.ru
5	Kaluga Region	Rashid Davletshin - Director	Email: fkrmkdco@gmail.com
6	Kostroma Region	Vladimir Rassadin – General Director	Phone: +74942450103 E-mail: kapremont44@yandex.ru www.kapremont44.ru
7	Kursk Region	Viktor Bobryshev - General Director	Phone: +74712514094; Phone: +7471251-29-78 Email: fcr46@mail.ru http://фондкр46.рф
8	Lipetsk Region	Alexander Kozin - Director	Phone: +74742555717
9	Moscow Region	Andrey Chernyshin - Director Sergey Petrilin – First Deputy Director	Email: chernyshin@yandex.ru Email: petrilin@gmail.com Phone: +74959175930 www.fkr-mosreg.ru/
10	Orlov Region	Olga Pavlova – Director	Phone: +74862542757 Email: orelkapremont@mail.ru www.orelkapremont.ru
11	Ryazan Region	Igor Kvashnin – General Director	Phone: +74912465185 Email: mail@fondkr62.ru www.fondkr62.ru
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¹⁹ Data finalized in June 2014.

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14	Tver Region	Evgeny Rychkov - Director	Phone: +74822638001, ext. 100 Email: remamre@gmail.ru www.kapremont-tver.ru
15	Tula Region	Nikolai Akatiev – General Director	Phone: +74872470933
16	Yaroslavl Region	Dmitry Shubin – General Director	Phone: +7(4852)587383 yarfond76@mail.ru www.yarmkd76.ru
North-West Federal District			
17	Arkhangelsk Region	Dmitry Maksimov – General Director	Phone: +7(8182)654060 Email: info@fond29.ru www.gkh.dvinaland.ru/fond29
18	Nenets Autonomous Okrug (Arkhangelsk Region)	Pavel Masjukov – General Director	Phone: +7(81853)21652 Email: info@fkr-nao.ru www.fkr-nao.ru
19	Vologda Region	Igor Mikhelson - Director	Phone: +7(8171)787258, ext. 101 fondkapremvo@gmail.com www.fondkapremontvologda.ru
20	Kaliningrad Region	Vladimir Fomin - Director	Phone: +7(4012)570607; +7(4012)570303541 Email: fominvladimir@list.ru www.fondgkh39.ru
21	Murmansk Region	Nikolai Berezhnoi	Phone/fax: +7(8152)250658 E-mail: mail@fkrmo.ru www.fkrmo.ru
22	Novgorod Region	Alexander Utkin – General Director	Phone: +78162782001 Email: info@kapremont53.ru www.kapremont53.ru
23	Leningrad Region	Sergey Veber - General Director	Phone: +7(812)3330614 Email: reg.operator@lokaprem.ru www.kapremlo47.ru
24	Saint-Petersburg	Sergey Liktaev – General Director	Phone/fax: +7(812) 4149750 E-mail: kapremont.fond@gmail.com www.fkr-spb.ru
25	Komi Republik	Anna Vorobjeva – General Director	Phone/fax: +7(8212)391691 Email: fondmkd11@mail.ru www.regoperatorkomi.ru
South Federal District			

26	The Republic of Kalmykia	Vladimir Ochirov – General Director	Phone: +7(84722)24655 Email: regoperator08@mail.ru www.regoperator08.ru
27	Astrakhan Region	Rustam Khalilov - Director	Phone: +7(8512512398
28	Rostov Region	Vladislav Krjukov - Director	Phone: +7(863)2517756, +7(863)2691017
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29	Dagestan Republic	Magomed Aliev - Director Magomedkhan Dalgatov – Vice Director	Email: fondgkh-rd@mail.ru Email: info@dagfkr.ru www.dagfkr.ru
30	The Republic of the North Osetiya-Alaniya	Vadim Tsarakov – General Director	Phone: +7(867)2512300, +7(867)2513039 Email: vadim.tsarakov@mail.ru
31	Kabardino-Balkaria Republic	Albert Kilchukov - Director	Email: regoperator.07@mail.ru
32	Tchechen Republic	Shamil Vahaev - Director	Email: shava49@list.ru
33	Stavropolsky Krai	Evgenyi Brazhnikov - General Director Oleg Ananikov – Fisrt Deputy Director	Phone: +78652296927 Email: Fkr26@yandex.ru www.fkr26.ru
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34	Bashkortostan Republic	Boris GErasimov – General Director	Phone: +7(347)216-32-65 Email: regoper@mail.ru www.kapremont02.ru
35	Mari El Republic	Iriada Ponomarenko – Managing Director	Phone: +7(8362)412282 Email: fkr12@mail.ru
36	Mordovia Republic	Aleksey Matrenin - Director	Phone: +7(8342)471311 Email: rfkr-rm@yandex.ru www.kaprm.ru
37	Tatarstan Republic	Marat Aizattulin – General Director	Phone: +7(843)2648000
38	Chuvash Republic	Olimpiada Epifanova – General Director	Phone: +78352555600 Fax: +78352570498 Email: remfond21@cap.ru www.remfond21.cap.ru
39	Orenburg Region	Alexander Sazonov – General Director Konstantin Zolotarev – Vice Director	Email: mail@orbfond.ru www.orbfond.ru
40	Penza Region	Julia Kuznetsova - Director	Phone: +7(8412)210700 Email: info@fkrmd58.ru

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41	Самарская область	Чибисов Андрей Сергеевич - генеральный директор НО «Фонда капитального ремонта Самарской области» 8 (846) 212-01-05; makarovaag@fkrso.ru	http://fcrso.ru/ http://капремонт-самара.рф
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Ural Federal District			
43	Kurgan Region	Dmitry Dokin – General Director	Phone: +7(3522)431373 Email: regfondgkh@mail.ru www.fkr45.ru/
44	Sverdlovsk Region	Svetlana Baranova – General Director	Phone: +7(343)2296011; +7(343)2296092 Email: spbaranova@bk.ru
45	Khanty-Mansiysk Autonomous Okrug	Sergey Makarov – General Director	Phone/fax: +7(3467)363137 +7(3467)363138 Email: info@kapremontugra.ru www.kapremontugra.ru
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49	Krasnoyarskiy Krai	Nina Avdeeva - Director	Email: tereshenko2010@gmail.com
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51	Kemerov Region	Aleksey Golyashov - Derector	Phone: +7(3842) 90-09-42 Email: fkr42@mail.ru www.fkr42.ru
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<i>Far East Federal District</i>			
55	Sakha Republik (Yakutia)	Lubov Kuzmina – General Director	Phone: +7(4112)422030 Email: kuzmina@fondkr.ru www.fondkr.ru
56	Kamtchatskiy Krai	Sergey Techko – General Director	Email: skr.kamchatka@mail.ru
57	Khabarovskiy Krai	Eugeny Kuptsov - Director	Email: fond-operator@bk.ru
58	Amur Region	Natalia Mizinina – General Director	Phone: +7(4162)776502 Email: mizinic@rambler.ru
59	Sakhalin Region	Oleg Gusev – General Director	Phone: +7(4242)672401 Email: o.gusev@admsakhalin.ru www.fkr65.ru
60	Evreiskaya Autonomous Region	Anton Voitenko - Director	Phone: +7(42622)21407 www.fkr-eao.ru
61	Magadan Region	Anton Semenov – General Director	Phone: +7(41322)606055 Email: Fondkapitalremont49@mail.ru www.krm49.ru

The Russian State Procurement System (brief overview)

State procurement in the Russian Federation is regulated by the Federal Law №. 94-FZ “On procurement of Goods, Works and Services for State and Municipal Needs”. The law contains mechanisms making public procurement more efficient, including open call for applications via the internet and press; prohibition of contacts and negotiations between purchasers and prospective contractors; public disclosure of applicant’s offers, transparent process of decision making, availability of the minutes; protocols and audio records led by purchasers; public access to the winners’ offers; availability of drafts of procurement contracts; use of open sources, etc.

Federal, regional and municipal authorities and related organizations funded by public money announce procurement projects for their needs through one of the authorized websites or the official paper (which is also published on the internet). The projects are published in form of tenders, auctions or open requests for quotations. The contracts of all online procurement projects must be concluded in electronic form and registered in the online federal register of state and municipal contracts.

The Law sets out the following main forms of procurement: *tenders; auctions and open requests for quotations*.

Tenders

In tenders, the quotation contains the best conditions for the supply of goods, works or services wins. Participation is usually free of charge. State purchasers place tender documentation on one of the official websites or the official paper at least 30 days prior to the deadline. The following data is published in the documentation: the form of the tender, contact details, financial source, type, volumes, characteristics and additional features of the demanded goods, works or services, delivery terms, initial price, place and deadlines, evaluation criteria, place and date of the examination of applications and the value of the security deposits. Additionally, a draft contract is submitted for consideration.

Contractors’ applications are anonymous and must contain the following information: data on the applicant (name place of residence, address, excerpt from the trade register, qualifications), functional description and price for goods/works/services, proof of the required financial deposit and additional useful information. All documents should be in Russian or include a Russian translation and an apostil if required.

Auctions

The auction is held as a descending price auction in order to find the optimal market price for goods/works/services. The auction is used when goods/works/services can be compared only by via price. The contractor, offered the lowest price, wins. Every auction has to be announced on one of the official websites and held online, if possible. The auction documentation contains information similar to that intended for the tenders as well as such additional information as the data about the auction itself, required IP rights etc. Participants in online auctions have to register their electronic signature at specially designed regional centers. The purchaser using the system of reducing bids holds the auction.

Open requests for quotations

State purchasers can make an open request for quotations in case if the demanded goods value is less than 500,000 rubles (about 16100 CHF), if they are traded widely and the average market price

can be easily determined or if the announced auction with the initial price less than 500 000 rubles was not successful. Purchasers place the information on one of the official websites and may also send direct requests to potential contractors. The commission makes a decision after they have compared all the offers. The applicant who offers the lowest sum and fulfills all the requested criteria, wins.

Useful addresses:

Official public procurement portals:

- <http://gz.dvinaland.ru/Tender/Default.aspx> (Tenders of the Arkhangelsk region)
- <http://torgi.gov.ru/index.html> (Tenders in Russia)
- www.zakupki.gov.ru (Official site of the Russian Federation concerning public procurement)
- www.tender.mos.ru (Tenders of the city of Moscow)
- www.gz-mo.ru (Tenders of the Moscow Region)
- www.gz-spb.ru (Tenders of the city of Saint Petersburg)
- www.sberbank-ast.ru (Auctions)
- www.rts-tender.ru (Auctions)
- <http://www.etp-micex.ru> (Auctions)
- <http://etp.zakazrf.ru> (Auctions)
- www.roseltorg.ru (Auctions of the city of Moscow)
- www.tattis.ru (Auctions of the Republic of Tatarstan)

Other useful websites:

- www.b2b-center.ru (Electronic procurement website for big companies)
- www.aetp.ru (Association of the electronic trade websites)
- www.iecp.ru (Information portal on electronic signature)
- <http://goszakaz.ru> (Service provider)
- <http://goszakazhelp.ru/home> (Service provider)
- <http://multitender.ru/about-system> (Service provider)
- <http://www.goszakaz.inconnect.ru> (Forum Goszakaz)

Important authorities and persons:

- Federal Antimonopoly Service (FAS)
Sadovaya Kudrinskaya, 11, Moscow, D-242, GSP-5, 123995
Phone (Int. Office): + 7 499 252 24 79, + 7 495 254 56 43
Fax: +7 495 254 75 21, E-mail: international@fas.gov.ru

Mr. Igor Artemiev
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