



**REPORT
SMART HOMES
BUSINESS DEVELOPMENT
RUSSIA
St.Petersburg House Property Owners Association**

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2. INTRODUCTION: MARKET TRENDS IN CONSUMER CLEANTECH: DRIVERS AND BARRIERS

The term “cleantech” unites groups of technologies in the following subject areas: saving of energy resources, energy efficiency, smart city / smart grid, green building / ecohomes, waste management, city transport, IT for cleantech, clean industrial processes in urban environment, biofuel, solar & wind energy.

Cleantech infrastructure in Russia.

Alternative energy and renewable.

Comparing to the EU the proportion of renewables used for energy generation in Russia is much lower. The main reasons are high availability of traditional fossil fuels and little attention to environmental problems paid by the government, business and households. One of the main obstructions to building large power plants working on renewables is the lack of regulations on the feed-in tariff, according to which the government would purchase electrical power produced from renewables.

Wind Energy

<https://rawi.ru/>

Today in Russia there are 190 wind farms. Technical potential of the country is 1,000 GW.

Photovoltaics

On the photovoltaics market Russia plays a role of raw materials and products exporter. In 2013, the state program to promote the use of renewable energy sources, designed until 2024, was launched. It was aimed at attracting private investors to the industry. Following the results of the competitions, investors pledged to build 1.76 GW of solar energy, 3.35 GW - wind energy.

Biofuel

In Russia isn't produces due to the lack of government support. Producers are not sponsored, there are no standards for biofuel, gasoline and diesel compounds or any consumption targets.

At the end of 2018, the State Duma of Russian Federation adopted a law regulating the production and turnover of bioethanol.

Biomass

Thanks to large timber reserves wood pellets industry is well developed. The major trade areas for Russian exporters are European countries, where pellets are used for power generation.

Other renewables



Russia has a great potential in the field of tidal power. Projects in the sphere of solar power and wave power are still disparate.

In spite of vast theoretical background hydrogen power isn't still commercialized either.

Energy management

In 2008 the government announced the program of raising energy efficiency of the Russian economy. One of the main objectives was to reduce power consumption of the economy by 40% by 2020. Nowadays the basic methods of power consumption reduction include installation of power supply meters at industrial facilities and in private sector as well as replacing of traditional lighting systems by energy saving ones: luminous tube lamps and LED lamps. Today many regions of Russia have confirmed programs in this sphere.

Government support becomes a stimulus for development of production of LEDs and lamps based on them. One of the projects presupposes establishment of LED production based on technology developed by the Ioffe Institute.

In the oil and gas sector separate attention is given to the problem of associated petroleum gas disposal.

Projects in the field of electrical power management and transmission are still not of immediate interest in Russia and are referred mainly to the regional level, whereby there is no legal basis for implementing smart grids into the current structure of electric power transmission.

Ecofriendly Transport

The largest Russian automotive manufacturing plant OAO AvtoVaz has been working on electromobiles since 1974. For more than five years it had developed several prototypes, which unfortunately haven't been put to serial production because of the absence of infrastructure.

The probability of producing electromobiles at Russian plants in the nearest two years is very low because of the lack of domestic demand, climate and non-competitiveness of Russian automobiles on foreign markets.

Waste management, emissions, air and water treatment

The annual volume of domestic waste production in Russia exceeds 40 mln ton, 35% of which are appropriate for recycling.

The absence of separate collection of waste is a serious problem in the field of domestic waste in Russia. That is why among the basic methods of waste management are household waste combustion, distribution into special sites, and expensive sorting on specialized lines of waste processing plants and waste sorting plants.

Wastepaper (40%) and glass waste (35%) have the highest converting rates among all types of household waste. Stock utilization of worn-out tyres and plastic waste amount to 8% and 5% respectively.

Separate recyclable materials' markets in Russia have the following characteristics: paper waste – \$260 mln (40% stock utilization); plastic waste – \$110 mln (5% stock utilization),



glass waste – \$26 mln (35% stock utilization), worn-out tyres – \$19 mln (8% stock utilization).

Programs in the field of water resources management in Russia belong to initiatives of regional and municipal authorities and also industrial enterprises for reduction, cleaning and reuse of sewage.

3. ANALYSIS OF MARKET OPPORTUNITIES FOR STARTUPS AND SMEs

Russian clean technology industry is still at the early stage of commercialization of the accumulated scientific potential. Thanks to the government support, which is connected to nanotechnology and energy efficiency programs Russian and foreign initiators get significant opportunities for realizing their projects. The low level of personal income and the lack of steady development tradition is a serious deterrent both in business and in households. The former condition leads to low potential of domestic market, which Russian initiators orientate on.

Cleantech in Russia 2010

http://www.nanonewsnet.ru/files/cleandex_cleantech_in_russia_2010.pdf

Investment possibilities into green development will create demand from the Russian enterprises and will promote growth of a transfer of green technologies from abroad and increase in technological equipment of the companies.

Major objective factors:

- economic (export of goods, finance attraction in internal projects, including the projects directed to protection, restoration of land ecosystems and their rational use, rational management of the forests, unique water massifs of the country). Cooperation on the uniform regulatory regime in the world, whether it be introduction of a payment for carbon or other similar measures, allows to create certain incentives for development of modern technologies. The countries which are not included or integrated in this system of united regulation, lose the competitiveness of economy and goods inevitably, that is, in fact, lost opportunity to export them. Besides, green projects expand the horizons of attraction of direct foreign investments into the Russian economy,
- social (the growing demand of present generation for the surrounding environment, clean, healthy and favorable for life, providing a biological life rhythm in unity and fight of contradictions against economic interests in use of natural resources).

GREEN FINANCE: THE AGENDA FOR RUSSIA

Diagnostic note. (3. PREREQUISITES of CREATION of the MARKET of GREEN FINANCE IN RUSSIA. P. 13.)

https://m.minfin.ru/common/upload/20181102_Green_finance.pdf

3.1. SIZE OF THE MARKET – SMART HOMES



The market analysis of smart homes systems made by Discovery Research Group in Russia showed that 47% of house buyers show interest in this technology, and 32% are already ready to pay for it.

Experts from J'son & Partners Consulting estimate the current market at 7-10 billion rubles, and according to forecasts, within the next five years the number of the households using this technology in Russia will grow to 2.8 million.

For the last ten years the price of smart homes technologies reduced three times, and there are reasons to consider that the trend will remain in the next years. There is no doubt that the technology will continue to win the market, becoming available to all segments of buyers. In many respects it will depend on development of the Internet of things. For now it is presented in Russia rather fragmentary.

3.2. KEY CUSTOMERS AND PLAYERS

According to data of Yandex search, "smart home" inquiry in January, 2018 interested inhabitants of the Russian Federation 95 635 times. Taking into account the index of regional popularity, the most part of these inquiries were done in Moscow and the Moscow region – 26,624 (or 132%) inquiries, out of them Moscow - 20,882 or 140%. The second place in this rating is taken by St. Petersburg - 7,859 or 142%.

3.3. BUSINESS MODELS AND SOLUTIONS

On the "demand and supply" side of green projects it's possible to distinguish two groups of main players: the public and private sector institutions and organizations. Each of them through their mandates could stimulate development of the green finance market, as well as promote more responsible investing for environmental protection and resource efficiency in sectors which have not been able to pick up the "green investment" paradigm due to various constraints. Public institutions include: Ministry of Finance, Ministry of Economic Development, Central Bank, sectoral ministries (Ministry of Energy, etc.), state development banks, etc. On the private sector side, the banking sector (investment banks, commercial banks) leads and involves institutional investors, corporations, and SMEs. Green investments or projects are originated by the government, corporations or individuals. Resources to fund those green projects can be provided by the public sector, financial institutions, institutional investors and multilateral organizations as well as corporations using their own equity and revenues.

RUSSIA GREEN FINANCE: unlocking opportunities for green investments, policy note.

<http://documents.vsemirnybank.org/curated/ru/699051540925687477/pdf/131516-RUSSIAN-PN-P168296-P164837-PUBLIC-Green-finance-Note.pdf>

Public sector role in facilitating green finance market development

Reducing barriers that prevent industries from actively investing in greening must be incorporated in future green finance strategies of Russia. Targets include: the predominance of resource-based industries and industries with high amounts of waste; low level of



awareness on the part of business and government about the benefits and opportunities offered by a company's eco-oriented policy; and inadequate regulation and the lack of an adequate regulatory framework and vested interests. Measures for augmenting the attractiveness of green projects could complement the green finance instruments discussed in the following sections and enhance the effectiveness of public sector policies in steering up the markets.

Green finance markets need adequate regulatory incentives to promote more green projects. Businesses are often misaligned with the social objective of sustainable development, exacerbating social exclusion and environmental degradation. Greater attention to promoting environmental and socially responsible production in resourcebased industries could change behaviors. There are examples of companies willing to work towards sustainable development, but they lack good interfaces to work with the public sector. Around the world, a variety of tax and subsidy corrections are used to provide incentives for businesses in line with social costs and benefits. Examples include tax credits for investments in new (risky) technologies, feed-in tariffs for renewable energy, carbon pricing, tobacco taxes, and investment and export guarantees or insurance. Countries with supportive regulatory and tax environments attract more green investors and tend to offer more financing options. Government policies should promote and finance programs for low-impact development projects and green infrastructure, including free technical assistance for green project development.

To leverage the effect of fiscal measures on green finance, Russian authorities could promote green public procurement. Green public procurement requires that environmental performance considerations be embedded into the government's procurement decision-making process in the same manner as price, performance, quality and availability. Public authorities are major consumers in Russia: they spend trillions of rubbles annually, representing around one third of Russia's GDP. By using their purchasing power to choose goods and services with lower environmental impacts, they can make an important contribution to sustainable consumption and production.

Public sector measures targeting the environmental impacts of small and medium-sized enterprises (SMEs) are among the key factors in greening the economy. Although the individual environmental footprint of small and medium-sized enterprises (SMEs) may be low, they contribute around 20% to Russia's GDP, and their aggregate impact could be considerable. Improving the environmental performance is also a significant business opportunity for SMEs themselves as suppliers of goods and services along the production chain.



Given the vast investment needed to green the economy, Russia's financial system could finance large amounts of bankable green projects if enabling public policies were to be put in place. Together, institutional investors such as pension funds and insurance companies manage about RUB8 trillion (including nearly RUB 4 trillion managed by private pension funds)²⁶ with continued growth in funds under management occurring in Russia over recent years. Investments in corporate debt dominate asset allocation in pension funds, followed by government securities. Retail

deposits reached nearly RUB25 trillion and there is an upward tendency in the increase of individual investment accounts, where private individuals have already invested in assets worth over RUB 50 billion.²⁷ Gradually improving macro-economic and financial sector conditions provide a favorable environment for developing green finance and channeling institutional and retail investor funds into green assets.

Russia Green Finance : Unlocking Opportunities for Green Investments. Cmp.29-32

<http://documents.vsemirnyibank.org/curated/ru/103531540924946297/pdf/131516-PN-P168296-P164837-PUBLIC-Green-finance-Note.pdf>

For formation and development of the market of green finance in Russia the following action plan written in "Road map" is offered to realization: ideology development and development of consolidated position of regulators concerning the market of green finance at the national level; a list of actions for creation of a united national brand in the sphere of green finance (the methodological center); list of actions for creation and approval of the principles, standards and taxonomy; list of actions for formation of a system of verification of green financial instruments; package of measures for creation and development of infrastructure of the market of green finance; lobbying of preparation and introduction of a system of state support measures for green financial instruments (bonds) in Russia; list of actions for the international interaction.

Role of public sector in assistance to development of the market of "green" financing

GREEN FINANCE: THE AGENDA FOR RUSSIA

Diagnostic note. (ROAD MAP . P. 28.)

https://m.minfin.ru/common/upload/20181102_Green_finance.pdf

4. TWO PERSPECTIVES – KEY RESULTS OF MARKET STUDIES

4.1. SMARTUPS AND SMEs

Lack of financial support was described as the biggest barriers for business activity in Russia by 4 out of 5 SMEs and weak institutional support by 3 out of 5. In addition, one SME specified that institutional support is weak in helping deafblind people to be socially active. 2



SMEs noted as well complex legislative rules, one added lack of previous experience in new technology introduction and the other poor governance.

On the question "Have any elements of support system and/or other companies helped you to reach to and/or win customers? Which exactly?" 3 out of 5 answered yes in knowledge exchange and partnership.

3 SMEs estimated their market share as 0%, one as less than 1% and one as less than 5%. 2 out of 5 SMEs cooperate with foreign companies.

All interviewed companies answered that their companies compete with others based on the quality of their product/services and technology. 4 also compete based on price.

All SMEs have different strategies for the next 2-3 years. Among them are: Sell more than 100 devices for deafblind people, receive lots of successful cases, end up with the development of 3 more products for blind and deafblind people; To end up with the development of a system, its testing and start sales; Realize 10 projects successfully in-home country, collect and formalize successful cases and start to work abroad; To end up with clinical trials and the development of a device and to start sales; Achieve 4 mln EUR of revenue, end up with the development of 3 more products.

No SMEs use any outer services.

All SMEs noted myself (customers) and support institutions as supporting in building own business network.

4 out of 5 companies noted business incubator as one they most cooperate with. One added Innovation Promotion Fund and the last one noted consulting providers. Main reasons for that are: necessity in financial support, promotion and documentation preparation, help and increasing ideas in different spheres (like marketing, finance, sales, networking), low fees, networking.

All companies participate in entrepreneurial events like seminars, presentations, forums. Only one company participated in acceleration program with results of finding people who shared their ideas about business model. Company setting up and connections with potential partners in foreign countries. Other 4 are concentrated on their own goals.

The main expectations from SmartUp Accelerator are find of investors and potential clients. 3 out of 5 companies prefer both physical and virtual model and 2 physical presence in a chosen country for a given period of time as a offering services from SmartUp Accelerator.

4.2. EXPERTS IN THE FIELD

Experts in the field confirm that the business incubator in Russia is the most effective the support institute having the most effective tools for support of SMARTUPS and SMEs for today.



In confirmation of the words experts give the examples presented on the MAP of an innovative ecosystem of Russia <http://innovation-ecosystem.org/> and in the Report for first half-year 2018

Association of Accelerators and Business incubators

<https://drive.google.com/file/d/11merJloDb92Yyte6OK7Qn6Ege8iMlk3D/view>

Total number of Business incubators was 260:

- Regional business incubators make 58% (151 incubators) - the incubators created according to the support program of small and medium business of the Ministry of Economic Development, incubators which opening was financed by the region);
- Incubators on the basis of higher education institution - 35% (91 incubators) - the incubators created and functioning in higher educational institutions, financing - at the expense of higher education institution;
- Infrastructure business incubators - 6% (13 business incubator) - incubators in clusters, technoparks

The following on number are Accelerators. Total number of them in Russia was 103, including:

- Private accelerators make 25% (26 accelerators). These are commercial accelerators with paid acceleration programs, accelerators at venture funds, the organizations specializing in acceleration activity;
- Corporate accelerators - 21% (22 accelerators) - corporate acceleration programs (external and internal);
- University accelerators - 19% (19 accelerators) - accelerators and acceleration programs implemented in higher educational institutions.

Also, all experts note importance for SMARTUPS and SMEs of subsidizing research and development and financial support of creation, development and advance of networks.

Today in Russia public financing business of incubators is carried out by the Ministry of Economic Development of the Russian Federation for 42% and the Ministry of Education and Science of the Russian Federation of 28%.

Accelerators and Business incubators of Russia.

<http://www.oneup.ru/analytics/innomap>

Experts agree with opinion of SMARTUPS that the help in establishment of contacts is necessary for support SMEs in its global development and in interaction with potential partners / clients.

Experts note that participation of cleantech companies in implementation of cluster projects considerably expands their opportunities for search of potential partners / clients. Cleantech SMEs which undertook a role of leaders of cluster projects achieved good results in development of the business.

Example. SME – the resident business-incubator acted as the initiator of the cluster project "Effective Light", integrated SME, vendors of the energy saving equipment and together with



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the St. Petersburg cluster of clean technologies equipped in four years 5.5 thousand apartment houses in St. Petersburg with the energy saving equipment for lighting of common areas. Today it is 20% of all of houses of the city.

Example. SME - the resident business-incubator acted as the initiator of the cluster project ECOLEND, integrated SME and made the complex proposal on creation of resource-saving inhabited settlements and industrial parks.

	E1	E2	S1	S2	S3	S4	S5
Support in reaching the market/consumers is important	x	x	x	x	x	x	x
One of the biggest barriers to growth is finding the right people to employ	x		x		x	x	x
The physical presence of a SmartUp Accelerator would be preferable	X	x	x	x	x	x	x