

## PROBLEMS OF ENERGY SERVICES MARKET DEVELOPMENT IN THE REGIONAL ECONOMY OF THE RUSSIAN FEDERATION

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**Abstract:** *Improvement of the energy efficiency of a national economy greatly enhances energy security of the state, improves the environment and the quality of life of the population and contributes to the social and economic development of any country. Energy efficiency is often the least expensive means of meeting new energy demand. Governments of countries that contribute to increased investment in activities aimed at improving energy efficiency and implementing a set of government support measures that determine reduction in the energy intensity of GDP of the countries, significantly save budgetary funds, reduce dependence on energy imports and reduce environmental pollution. All that in combination leads to an improvement in the indicators of sustainable development not only of individual territories, but also of the national economy as a whole. Nevertheless, measures to improve energy efficiency still do not have the desired effect on a global scale, despite proven numerous advantages and potentials to be the largest resource to meet the growing demand for energy around the world. Energy service contracts are the actual energy saving instruments which have proved their success in many economically developed countries of the world. In Russia, the market for energy services is in the process of formation and is significantly inhibited by the negative impact from a number of groups of factors.*

**Keywords:** energy efficiency, energy service contracts, efficiency indicators, market of energy services, regional market structure.

### Introduction

Improving the energy efficiency of the economy is an important task, the solution of which strengthens energy security, improves the environment conditions and the quality of life of the population, and contributes to the social and economic development of the territory. It is reasonable to study foreign experience of analyzing energy-saving technologies in the field of energy supply to the national economy.

The global market for energy efficiency measures is estimated at more than 310 billion US dollars. At the same time, the amount of subsidies for fossil fuels fell in 2015 from almost US \$ 500 billion to US \$ 325 billion compared to 2014, reflecting a decline in prices for fossil fuels, as well as the process of reforming the subsidy system into energy efficiency, which is gaining momentum in the world.<sup>5</sup>

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<sup>5</sup>Energy efficiency Market. Report 2016 / International Energy Agency, 2016.

It is in energy efficiency that the best opportunities for a more complete use of technologies for fuel and energy resources, supporting economic growth and reducing energy costs, are concluded. Significant reserves of energy efficiency are available in all countries of the world, but attempts to increase it often fail because of imperfect national policies or weak application of relevant laws. Success is not promoted, in particular, by the policy of artificial tariff understatement, which encourages energy overexpenditures; subsidies to producers and consumers, distorting market signals; inefficient exploitation of housing stock; and barriers that block access to the market for a new participant.

Improving energy efficiency still faces many challenges and difficulties, despite the many-sided benefits associated with this, processes in the world economy and the dynamics of energy saving technologies markets.

As a first step towards overcoming existing policies and developing on the ground, such a potential allows to save viable energy efficiency investment projects; to restructure its strategy and organizational structures in a way that makes it an investment in energy efficiency, and create conditions for attracting funds from financial institutions and commercial enterprises to energy efficiency projects.

One of the most promising mechanisms for attracting financing and qualified specialists in the implementation of energy-saving measures is the energy service based on the principle of paying for energy-saving measures implemented by specialized energy service companies at the expense of savings saved from energy conservation. Despite the fact that the first energy service contracts were concluded in the late 30's of XX century in France, the dynamic development of the market of energy services began in the 70's of XX century in USA.<sup>6</sup> The volume of the world market of energy services in 2015 is more than 24 billion dollars, 55.4% of which falls on China (13.3 billion US dollars), 26.3% on the US (6.3 billion dollars) and 11% to the countries of the European Union (\$ 2.7 billion). According to the study of the Joint Research Center of the European Commission, the leader in the number of energy service companies is China (2,339 companies), most of which are small and medium-sized businesses. The market of energy service services in the Russian Federation is at the stage of formation. Study of its current state, factors of formation and main barriers to the development of energy

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<sup>6</sup>The Benefits of Energy Efficiency/ European PPP expertise centre. EPEC, 2012. – URL: <http://www.eib.org/epec/ee/documents/factsheets-energy-efficiency-en.pdf>.

conservation in the regions of the Russian Federation is of particular interest for the paper.<sup>7</sup>

## Methods

An analysis of existing approaches to the research of the energy services market showed the inadequacy of the tools used to fully assess the scale and structure of the market and to develop promising measures to support its development. There are several approaches to the selection of indicators for assessing the efficiency of the market for energy service contracts. In our opinion, the state of the market for energy service services reflects the most fully the approach of assessing the state of the energy services market, using two blocks of indicators: indicators characterizing the scale of the market and indicators reflecting its institutional characteristics.<sup>8</sup>

At the same time, it is necessary to take into account the largest number of aspects of market development and its effectiveness, which is largely embedded in a balanced scorecard. The balanced system of indicators takes into account 4 main areas of analysis: the indicators of the "Finance" block (market volumes, investment activity, financial savings figures, etc.), the "Process" block (indicators reflecting the number of contracts, terms of their action, etc), the "Personnel" block (indicators characterizing the level of personnel qualification, work experience in the market, etc.) and the "Clients" block (indicators reflecting possible options for efficient implementation of energy efficient contracts for the client, showers energy intensity, etc.).

Most often, the indicators of the first three blocks are used in the analysis, while indicators reflecting the indicators of the customer relationship, such as customer satisfaction, market share in the target segment, distinctive features of goods and services (the "Clients" block), unfortunately, is practically not involved in the analysis.

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<sup>7</sup>Panev S., Labanca N., Bertoldi P. et al. ESCO Market report for Non-European countries 2013 / European Commission Joint Research Centre. Luxembourg: Publications Office of the European Union, 2014.

<sup>8</sup>Burchakova A.A. Energy services in Russia: analysis methods issues and development factors // Internet magazine «NAUKOVEDENIE» V. 8, №2 (2016) <http://naukovedenie.ru/PDF/30EVN216.pdf>.

Table 1. Indicators of the energy service company activity in the country's market in a balanced system of indicators.

Indicator Block	Indicators of market scale	Institutional market indicators
Process	number of concluded energy service contracts	availability of specialized legislation regulating energy service activities
	number of energy service contracts sold	presence in the government policy of a specific measurable quantitative goal for the development of energy service activities
	ratio of concluded and sold energy service contracts	availability, number and dynamics of precedents of court decisions on energy service contracts
	average life of energy service contracts	presence of development institutions
Finance	Investment size	availability of bank financing for borrowing for energy service contracts
	energy service market potential	
Staff	number of specialized associations of energy service companies	
	number of energy service companies in the association of the total number of energy service companies	
	number of energy service companies with experience in concluding and implementing energy service contracts	
	number of energy service companies in the association, having experience in concluding and implementing energy service contracts	
Client	total savings in value and in kind, achieved in the framework of the implementation of energy service contracts	

The need to use two types of indicators characterizing the market of energy services is due to the fact that players in this market are not only energy service companies, but also energy auditing companies, banks, suppliers of equipment and energy efficiency solutions, development institutions from state and private companies that carry out consulting services, training and promotion of energy services.<sup>9</sup>

<sup>9</sup>Burchakova A.A. Energy services in Russia: current state and main development factors // *Ekonomika i predprinimatel'stvo*. 2015. № 12, P. 3. Pp. 150–158.

The economic efficiency of energy saving measures can be assessed using the system of indicators used to evaluate most investment projects, including: net present value (NPV), profitability index (PI), internal rate of return (IRR), the payback period of the project (payback period - PBP), etc.

Difficulties in choosing approaches to assessing the situation in the market of energy services are due to the lack of a unified approach to market participants, the complexity of collecting statistical data, which makes comparison and comparison difficult.

## **Results**

The formation and development of the energy services market, as a tool of the implementation of energy efficiency and energy saving policy, began in 2009 with the adoption of the Federal Law № 261-FZ "The Energy Saving and Increasing Energy and Efficiency". Despite the significant positive dynamics and growth of the main indicators, characterizing the number of companies and contracts, today the market of energy services in Russia remains on the initial stage of its development. At the same time, a deep, correct analysis of the market is complicated by the absence of common official statistics of the activity of energy service companies in Russia. The situation is complicated by the fact that some companies which consider themselves energy service companies in reality do not have such services in the way the Russian federal law of energy service contracts sets and describes them. In this regard, the estimates of the activity of energy service companies of the market are seriously different in different sources.

Thus, in 2017 in the Russian Federation there are 76 energy service companies registered in the State Information System of Energy Saving and Energy Efficiency, half of which are located in Moscow (22 companies, 29% of the total number), St. Petersburg (7 companies, 9%) and Tula region (4 companies, 5%).

But, according to the Russian Association of Energy Service Companies (RAESCO), created in 2014 with the support of the Russian Ministry of Energy and Ministry of Economic Development of Russia, there are 96 companies operating in the Russian energy services market, registered in the 36 regions of the country. Most of them provide energy services as an additional activity. 702 contracts were signed by Russian energy service companies, 276 of them are registered by the leader of market: the company "Active Sozenergoservic Ltd" (Moscow) signed

contracts in the following subjects of Russian Federation as Belgorod, Vladimir, Ivanovo, Moscow, Novosibirsk, Orel, Tver and Yaroslavl regions and the Republic of Chuvashia. The total volume of the energy services market was 7.4 billion rubles (after subtraction of 12 largest and least large energy service contracts - 5 billion rubles). The expected saving for the entire duration of contracts signed in 2016 in value terms was 8.4 billion rubles.<sup>10</sup>

The regional structure of the market affects 49 subjects, where the contracts were signed in 2016. 12% of investments are in Belgorod region, where the executor of all 154 contracts is the company "Active Sotsenergoservis Ltd." (Moscow). According to the Association of Energy Service Companies, 88% of all contracts relate to municipal institutions and local governments (city and district administrations, preparatory schools, general education institutions, and institutions specialized in the management of housing and communal services). 28% of customers in the regions of Russia are the educational institutions, 22% are street lights, and 21% are the electric grid facilities.

At the same time it should be noted that the data from the Russian Association of energy service companies, apart from specialized companies, include market participants of energy services, as well as companies that do not have experience in negotiating energy service contracts. That is why the data are significantly different from the data of other analytical experts.

So, according to A.A. Burchakova, in 2016 in Russia there were 39 energy service companies in 33 regions of the country. More than half of them are concentrated in the following 6 regions: 26.6% in Moscow area, 8% - Leningrad region, 6.5% - Novosibirsk region and Sakha (Yakutia), and 4.3% - in the Sverdlovsk region.

In this case, a consumer of energy service contracts and energy service companies receives significant advantages: it does not need furthermore to divert human and financial resources to face issues that are not central to the business; a consumer has access to the most current knowledge and technology in the field of energy efficiency; there are significant savings on energy consumption and heating; There is no increase in the burden on the existing cash flows of consumers. But in spite of this fact, the potential of the energy services market has been realized insignificantly.

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<sup>10</sup>Official site of the Russian Association of Energy Service Companies [Digital source]. URL: <http://www.naesco.org/members-escos>.

## **Discussion**

The analysis of the key player activity characteristics in the energy service market in Russia made it possible to identify several groups of factors that hinder the active development of the market.

First of all, this is extremely low awareness, lack of necessary information and a steady skepticism from potential clients. At the stage of concluding an energy service contract, as well as in the course of its implementation, the parties face difficulties related to ensuring control over the achieved energy efficiency, a lack of understanding of what is a guarantee of the "work" of the energy service contract, i.e. return on investment and ensuring profitability.<sup>11</sup> The absence of normative and methodological documents regulating this area gives rise to the lack of a mechanism for identifying and proving savings in cash after projects are implemented.

It significantly hinders the development of the energy services market and a limited understanding of energy efficiency and the principles of the operation of energy service contracts on the part of financial institutions. Russian financial institutions behave absolutely detached in relation to the energy service business, consider it extremely risky and refuse to small and medium-sized energy service companies in lending to energy service contracts without 100% coverage of risks. The small size of projects and high transaction costs scare off financial institutions from investing in the ESCO business. There is no a system for energy services projects financing. Russian banks do not yet understand the specifics of the work in this branch of the energy industry and do not have credit products for its implementation. Banks are repelled from high payback periods (more than 2 years). Obviously, without a special state policy, the development of energy services in our country will remain in place.<sup>12</sup>

In addition, the current legislative and regulatory framework is most often not compatible with investments in energy efficiency, for example, restrictions on the timing of loans. Serious obstacles and administrative barriers, such as complex delivery procedures, high transaction costs, divided incentives and reluctance to admit and include

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<sup>11</sup> Cakunov S.V./ Energy Service Market: Deadlock or Growth Difficulties?//Energoeffektivnost' i ehnergoberezhenie, №3-4, 2013 P. 24-30.

<sup>12</sup>Ganzha, V.L. Basics of effective use of energy resources: theory and practice of energy saving / V.L. Ganzha. – Minsk: Belorusskaya nauka, 2007.

third parties in solving the energy management tasks of the enterprise. There is no motivation for the implementation of energy-efficient technologies and for potential customers due to the fact that energy costs are only a small part of the total costs. Under the provisions of the Law No. 261-FZ, there are no significant material incentives for business leaders and organizations to develop energy service contracts as a mechanism for attracting extra-budgetary resources. Significantly more incentives are present in the announced state energy saving programs, for which huge budgetary funds are allocated. In fairness, we note that within the framework of this program, 180 billion rubles, is expected to be drawn from extrabudgetary sources. However, huge amounts can only be provided to large state-owned banks. And only a very small part of the financing will be for energy service contracts with private companies.<sup>13</sup>

## Conclusion

Thus, the energy service contract is a contract for the introduction of energy-saving technologies, which implies the implementation by a specialized energy service company of a full range of works on the introduction of energy-saving technologies at a customer's enterprise at the expense of borrowed funds from the ESCO. Energy service contracts are a real energy saving tool that has been tested in many countries.

Energy service companies are powerful mechanisms that promote the efficient use of energy by increasing energy efficiency and using renewable energy sources. Energy service contracts help to overcome financial constraints on investment and repay initial costs by saving energy costs caused by reduced energy consumption. They provide the customer with real benefits by reducing energy costs and concomitant profit-making.

At the same time, the development of the energy services market in Russia is hampered by institutional, technical and financial factors<sup>14</sup>, and therefore it has not received the necessary development.

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<sup>13</sup>Energy Efficiency Policy Recommendations [Digital source] / International Energy Agency. – P., 2008. – URL: [https://www.iea.org/publications/freepublications/publication/25recom\\_2011.pdf](https://www.iea.org/publications/freepublications/publication/25recom_2011.pdf).

<sup>14</sup>Rubtzov, V.A., Gabdrakhmanov, N.K., Mustafin, M.R., & Pratchenko, O.V. Methodological issues of monetary valuation of natural resources // International Business Management, 10(21), 2016 - pp.5089-5092. Rubtzov, V.A., Gabdrakhmanov



The solution of the task of supporting energy service activities in Russia could be the allocation of state budget guarantees for the first 1-2 years for energy service contracts implementation on direct government subsidies to cover a part of the interests and lengthen the terms of lending to energy service contracts. Instead of directly allocating budget funds for contract work, the state can use more flexible and indirect levers to support the energy service business. To save energy costs is undated, and not only within the framework of a program or campaign. To do this, there must be mechanisms aimed at global restructuring and transformation of the entire economy into the energy-efficient and resource-saving one.

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