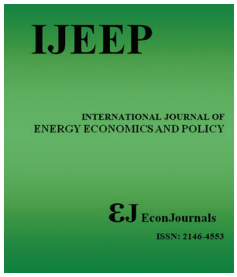


International Journal of Energy Economics and Policy

ISSN: 2146-4553

available at http: www.econjournals.com

International Journal of Energy Economics and Policy, 2020, 10(2), 504-511.

Improvement of Informational and Analytical Base of Development of Russia's Fuel and Energy Companies in the Sphere of Energy Saving and Energy Efficiency

Tatiana Kreydenko, Maxim Chernyaev*, Elena Grigorieva, Anna Korenevskaya

People's Friendship University of Russia, Moscow, Russia. *Email: m.chernyaev@mail.ru

Received: 14 September 2019 **Accepted:** 05 January 2020 **DOI:** https://doi.org/10.32479/ijeep.9083

ABSTRACT

The article is devoted to the analysis of the questions of the development of the mechanism of forming of Russia's fuel and energy companies' policy in the sphere of energy saving and energy efficiency increase based on improving the informational and analytical base of a company's activity efficiency level assessment. The events' implementation effectiveness of the corporate policy in the sphere of energy efficiency depends, first of all, on the optimal combination of the tools applied. The fundamental processes of high-quality enterprise management in these conditions could be developing and improving the key indicators of the reached energy efficiency level of a company and its monitoring that should cover all the aspects of stable development. In the article, there are suggested and tested the authorial methodology of the energy efficiency level assessment of fuel-and-energy companies with the example of the leading oil and gas companies using the financial and non-financial statements reports (in accordance with the international report composing standards).

Keywords: Energy Efficiency, Fuel and Energy Complex, Oil and Gas Industry, Energy Efficiency Indicators, Energy Efficiency Increasing Tools
JEL Classifications: Q40, Q43, Q48

1. INTRODUCTION

The questions of energy saving and increasing the Russian economy's energy efficiency have remained key issues during the last 10-15 years not only in the government energy regarding policy but on the whole in the socioeconomic development area. During the last decade of intensive work in this direction, it has been managed to create the legislative framework and infrastructure in the sphere of energy efficiency that corresponds to international practice. In the results published in the RISE report of the World Bank ("Regulatory indicators for sustainable energy: A global scorecard for policymakers") at the beginning of the year 2017, Russia took the 17th place in the governmental regulation in the sphere of an energy efficiency rating. But in the next report (published in 2018 and reflecting the general nature of changes in the sphere of energy efficiency of the countries' economies staring from 2010) Russia was relocated to the 46th place leaving the leading group. The most vulnerable issues of Russia in the sphere of energy efficiency are the questions of energy efficiency of buildings and structures, standardization of the lowest value of the indicators and also the energy efficiency of the biggest energy-consuming activities (Table 1).

The fuel and energy complex enterprises of the Russian Federation are not just producers but also large consumers of energy. Thus, the key indicators of the energy efficiency of the fuel-and-energy companies with public involvement in Russia are significantly lower, than in similar foreign companies (Linnik et al., 2017). So in the sphere of power transmission the energy efficiency indicators make up 30-50%, in the efficiency factor part of the condensational gas power stations – 20-30%. The proportion of energy loss in the nets of the Russian Federation is 11.6%, in the OECD countries – 6-7%,

Table 1: Some countries' value of the key indicators of the governmental regulation in the sphere of energy efficiency rating

	Canada	Kazakhstan	Norway	Russian Federation
Global average	90	70	83	73
National energy efficiency planning	100	60	93	100
Energy efficiency entities	75	75	93	75
Information provided to consumers about electricity usage	75	35	90	48
EE incentives from electricity rate structures	74	78	89	89
Incentives and mandates: large consumers	88	17	79	42
Incentives and mandates: public sector	100	0	100	75
Incentives and mandates: utilities	71	50	75	75
Financing mechanisms for energy efficiency	100	47	90	67
Minimum energy efficiency performance standards	97	45	72	30
Energy labelling systems	100	38	75	56
Building energy codes	100	17	67	0
Carbon pricing	100	100	0	50

Source: Formulated on the bases of the World Bank report "Regulatory indicators for sustainable energy: a global scorecard for policymakers" (The World Bank, 2017)

among them in Finland – 4%, Spain – <2% of the amount of the transmitted energy, in France and Italy the average proportion of losses makes up 3%. The efficiency coefficient of the coal stations in the Russian Federation makes up 33.2%, and in France – 41.1%. To this day in Russia, the average coefficient of oil extraction from the traditional fields remains at a very low level – about 37%, whereas in the developed countries it is 1.4-2 times higher. In the petroleum refining industry at the considerably low average definition of the complexity of petroleum refinery index value (the Nelson index is 4.8), the unit power consumption reaches 96.3 kg of conditional fuel per 1 ton of refined oil. At the same time in Canada and Great Britain at the higher value of the given index (6.9-9.5) unit power consumption makes up 68.9 and 50.8 kg of conditional fuel per 1 ton of the refined oil (Tretyakova, 2015).

The potential of increasing energy efficiency of the fuel-and-energy companies is connected, firstly, with the optimal choice of tools that can increase energy efficiency and its applicability by the branches of the company. The choice of the tools to increase the energy efficiency of the companies' activity is accompanied with certain conditions of the readiness of the company, of individual consumers to implement the measures aimed at the energy-saving development which are the reasons affecting unit energy consumption and the combination of indicators that cause their economic use (Golovanova and Moskovtseva, 2014).

2. MATERIALS AND METHODS

The fuel-and-energy companies' methodology of the research of the effectiveness of choosing and applying tools to increase energy efficiency is based on the implementation of the authorial system of the energy efficiency assessment of the company and the mechanism of the future choice of tools to increase the energy efficiency of the fuel-and-energy company (Kreydenko et al., 2018a). The team of authors developed the methodology to improve the support tools which is based on the introduction of the adaptive system of regulation of the improvement of energy efficiency of the fuel-and-energy companies in the conditions of non-steady-state economy that takes into consideration the nature of the influence to the energy efficiency dynamics of the external and internal factors, external and internal strategic factors, anticipated (controllable and uncontrollable) and circumstantial factors of the effect of the tools of the governmental support of the fuel-and-energy of the district. The methodology is aimed at improving both the support tools themselves and the mechanism of choosing the most efficient of them from the point of view of the targets set and consists of the sequential implementation of 6 stages (Kreydenko et al., 2018b). The key stage of evaluation is the detection of the level of the energy efficiency of the company from the point of view of its stable development and the competitiveness increase. The detection should be done from several positions that characterize economic, technological, social, ecological distinctive features of energy consumption while producing.

The baseline assessment of the conditions of the energy efficiency increase is connected with the analysis of the dynamics of the indicators that can be found in the energetic passport of the enterprise and the energy balance. The authors suggest doing this kind of assessment calculating and analyzing the Index of the technological competitiveness of energy efficiency.

$$ITCE=CEE*CEBS*(\Sigma Er_n/\Sigma Ef_n)*CEL*CEP$$

CEE – Coefficient of the energy efficiency of the equipment, calculated as the cost of the equipment of the efficiency class of A and B, divided by the cost of all the equipment on the company's balance;

CEBS – Coefficient of the energy efficiency of buildings and structures (the buildings' and structures' with a B+ or higher class of energy efficiency area divided by the total area of buildings and structures on the company's balance);

Ef – The de facto consumption of energy and fuel (in every unit of the company);

Er – Rationed consumption of energy and fuel (in every unit of the company);

CEL – Corrective coefficient of the losses of energy and fuel per 1 ton of raw materials (energy and fuel losses in conditional units divided by the whole amount of the extracted resource);

CEP – Corrective coefficient that shows the proportion of reusable energy sources used for the company's needs.

The value of the Index of the technological competitiveness of the energy efficiency changes from 0 to 1:

ITCE = 0.9-1 – very high technological competitiveness
ITCE = 0.8-0.9 – high technological competitiveness
ITCE = 0.7-0.8 – average technological competitiveness
ITCE = 0.6-0.7 – lower than average technological competitiveness
ITCE <0.6 – very low technological competitiveness.

In detecting the state of the energy efficiency of the fuel-and-energy company there are indicators of great importance that characterize the state of stable development of both separate units (companies, subsidiaries) and the energy companies on the whole. During the research process, there has been developed a system of integrated indexes, built upon statistic indicators included in financial and non-financial statements (stable development report) of the company. These indexes consider both the energy efficiency parameters and the context of the effectiveness of the energetic stability of mining companies (Chernyaev and Kreydenko, 2018).

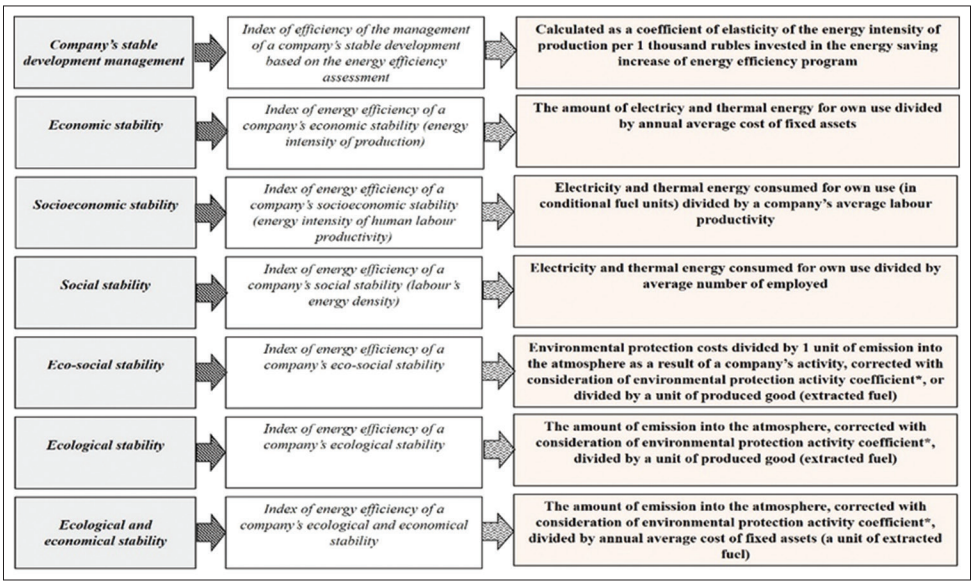
During the research process, there were suggested to use the following indicators that would show all the aspects of stable development: economic, social, ecological, socio-economical, eco-social, ecological-economical and also the effectiveness of the company's policy management in the sphere of energy saving and energy efficiency increase (Figure 1).

Informational base of the index calculations are the indicators of the financial and non-financial corporate statements (in accordance with international standards of statements' composition) and the indicators collected during the companies' energy survey and indicators included in the enterprise's energy passport (in accordance with the order of Russia's Ministry of Energy n. 400 on the 30th of June, 2014) (Afanasyeva, 2015). The index values are determined by the features of a company's business processes and are set in the corporate programs of energy efficiency increase and energy saving.

The index value dynamics should be studied in the context of the influence of all the groups of factors that affect a company's energy saving and energy efficiency (Figure 2).

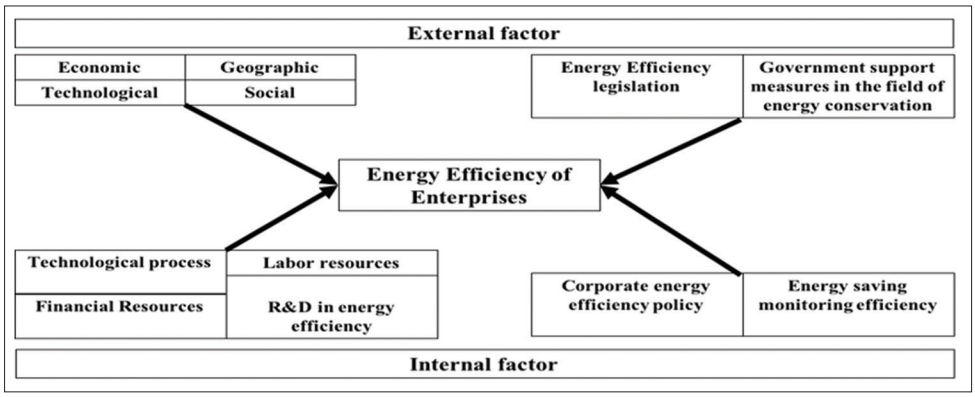
The effect of all the factors mentioned above determines the combination and nature of the application of the tools that support

Figure 1: The developed system of indicators of the informational and analytical base of assessment of the fuel-and-energy company's policy in the sphere of energy saving and energy efficiency



Source: Made by the authors. *Environmental protection activity coefficient is the amount of recycled waste during the year divided by once again produced waste

Figure 2: Factors that determine the nature of the corporate policy in the sphere of energy saving and energy efficiency



Source: Made by the authors

the development of energy-saving technologies and energy efficiency increase. The choice of the most effective tools allows us to significantly optimize the energy-saving process.

Based on the analysis and systematization of foreign and local experience of implementation of the tools to increase energy efficiency at the corporate level there has been created an authorial classification of the tools of governmental support of energy saving and energy efficiency increase events based on the organizational and economic feature by dividing them into general and specific (Kreydenko et al., 2018b). In each of the groups, it is possible to use both direct and indirect methods of support. This kind of approach allows us to draw attention to the most significant mechanisms and organizational forms of fuel-and-energy companies' development support while energy efficiency increase in the condition of the non-steady-state economy. Then there have been determined the key indicators of specific energy efficiency increasing tools implementation (Table 2).

Organizational and economic tools of fuel-and-energy companies' stable development being complicated and significant are being implemented in the multi-level management mechanism: at the company level, separate enterprises or parts, company's structural units (Nesterenko and Khubulova, 2016). At each of these levels it is possible to apply both general tools and the specifications for these particular level ones. The overall effectiveness of implementing the policy in the sphere of energy efficiency increase depends on how rational it is being used on every level. Thus, if at some level the measure implementation effectiveness is low it can cause the failure in achieving anticipated indicators of the whole company's energy efficiency.

Every one of the analyzed specific tools possesses its own element that determines success in achieved the set aim, power-low nature of influence to an object and also a way, direction, and nature of affecting and a possibility of adjusting to changing conditions.

Table 2: The relationship between key indicators of a fuel-and-energy company's level of energy efficiency and support tools of the events on the energy efficiency of fuel-and-energy companies' activity in organizational and economic feature

Energy efficiency index	Financial and economical	Institutional	Administrative and legislative
Index of technological competitiveness of energy efficiency	**General:** Investment tax loan Accelerated depreciation Special tax benefits Subsidization of a loan interest rate Specific: Leasing of energy equipment	**Specific:** Energy service contacts Power auditing Generation and consumption of reusable energy standards	**General:** Increase of the amount of stimulating kind of contacts' use Specific: Implementation of technologies based on reusable energy sources Power auditing
Index of efficiency of a company's stable development management based on the energy efficiency assessment		**Specific:** Energy service contacts Power auditing	**Specific:** Power auditing
Index of energy efficiency of a company's economic stability (production energy density)	**General:** Investment tax loan Special tax benefits Subsidization of a loan interest rate Guarantees		**General:** Increase of the amount of stimulating kind of contacts' use
Index of energy efficiency of a company's socioeconomic stability (energy density of human labour productivity)			**Specific:** Implementation of labour energy efficiency standards on fuel-and-energy enterprises
Index of energy efficiency of a company's social stability (energy density of human labour)			**Specific:** Implementation of labour energy efficiency standards on fuel-and-energy enterprises
Index of energy efficiency of a company's socio-ecological stability	**Specific:** A quota of harmful wastes	**Specific:** Power auditing Generation and consumption of reusable energy standards	**Specific:** Implementation of technologies based on reusable energy sources Power auditing
Index of energy efficiency of a company's ecological stability	**Specific:** A quota of harmful wastes	**Specific:** Power auditing Generation and consumption of reusable energy standards	**Specific:** Implementation of technologies based on reusable energy sources Power auditing
Index of energy efficiency of a company's ecological and economic stability	**Specific:** A quota of harmful wastes	**Specific:** Power auditing Generation and consumption of reusable energy standards	**Specific:** Implementation of technologies based on reusable energy sources Power auditing

Source: Made by the authors

While developing events as part of the energy efficiency increase policy it is important to consider the nature and time of the effect of each of the tools applied (Goryainov, 2015).

Quick return measures – events that can be developed and implemented with a gradual effect at reasonable costs in less than a year.

Basic measures – bases of energy efficiency policy implementation and the ones that lead to quicker implementation of financially justified investments in energy saving.

High-cost and highly effective measures – eliminate the main reasons for low energy efficiency and the ones that lead to the companies' financial potential increase to the economic level.

As the research objects, there have been chosen two biggest fuel-and-energy companies: PJSC "Gasprom" and PJSC "Oil company Lukoil" who according to the 2018 results joined top-50 of the world's biggest companies in the amount revenue of Fortune Global 500 rating (they took the 42nd and 50th places). These companies mine a great proportion of oil (Lukoil – 16.3%) and gas (Gasprom – 72%). According to the Forbes magazine for the capitalization indicator they make top-100 of the greatest public companies of the world По версии журнала Forbes по показателю капитализации они входят в 100: according to the 2018 date Gazprom is on the 43rd in the overall rating and the second among the world's oil and gas companies, while Lukoil is on the 98th and the 13th places. Considering the key indicators of the effectiveness of the activity of the biggest oil and gas companies of the world they made the top 10 in 2017 (Kreydenko et al., 2018b).

3. RESULTS AND DISCUSSION

The analysis of Russian and foreign experience has determined the key conditions of successful implementation of the corporate policy events aimed at energy efficiency increase: economic, legislative, social, technological and scientific, and geographical that can influence both from internal and external positions (Marchenko and Belova, 2015).

To the external economic factors of the fuel-and-energy companies' energy efficiency increase can be referred:

1. A low level of market mechanism development, which are connected both with a low investment attractiveness and lack of experience of financing of the projects in the energy efficiency sphere from the side of the investment funds and banks. As a rule, investors require the projects on energy efficiency increase to be with payback and the costs to below more than from other types of projects.
2. A low level of economic motivation. Energy selling companies are first of all interested in the profit increase. And, as a consequence, their interest in energy saving is presumably low. Also, the lack of motivation in the development of energy efficiency is caused by the opportunity to move the cost increase to the consumer. A complicated system of pricing of electricity, non-transparency of tariffs, the energy selling by the contract price, discussed with the consumer and not by the price (tariff) set by regulatory authorities, price increase in the supply chain (from the producing company to the consumer) stay barriers on the way to energy efficiency. The recipient of energy saving is not defined and not formed on the institutional level.
3. Agency relations risks. In accordance with the Federal Law № 261 of the 23rd of November 2009 "On energy saving and energy efficiency increase," companies are responsible for not following the standards of allowed impact on the environment with the aim of saving energy and using eco-friendly technologies stimulation. Thus, the costs of the events that increase production energy efficiency should be wholly covered by the company. This is what provokes opportunistic behavior of the business towards the following of the mentioned above requirements, and the bureaucracy of the governmental structures makes a corruptive contribution into the process of documental coherency (for example to confirm energy passport). Moreover, the monopoly of energy companies and the lack of competition also increases the corruption level in the economic sector.

To the internal economic factors that either stimulate or delay the energy efficiency increase of the companies we can refer the possibility and readiness of the senior staff to invest in the projects of energy saving of their own company possessions, the level and nature of priorities on the energy efficiency matter at the company level, the type of relations between industry companies and energy selling companies.

The effect of the external legislative factors is connected with the quality of the legislative base in the sphere of energy efficiency, legitimacy and practice of implementation of various tools aimed and energy-saving development. Absence or lack of use of the systematic approach because of the comparably brief experience of wide implementation of energy-saving technologies into the economy (the starting point could be the approval of the Federal Law of 23.11.2009 № 261-FL "On energy saving and energy efficiency increase" complicates the increase of the effectiveness of the implementation of the measures in the energy-saving sphere. Thus, irrespective of the effort put the energy auditing, composing the energy passport do not guarantee the enterprise will implement effective energy-saving events. The introduction of energy management in accordance with the international ISO 50001 standard in Russia is only gaining momentum. However, there is not enough experience and culture of implementing marketing research, business planning, management of projects related to energy saving. The issue of energy efficiency can be considered by the management of the company in isolation, in isolation from other processes and sometimes is not reflected in the aims of the organization (Greene, 2009).

The effect of internal regulatory and legal factors is related to the company's energy efficiency policy: the fact of the development and adoption of the company's program in energy saving and energy efficiency sphere, the regularity of monitoring the key energy efficiency indicators state, the optimization of the use of energy efficiency tools.

Scientific and technological factors are associated not only with the existing level of energy-saving technologies development but also with the level of education of people who make decisions on the introduction of energy-saving technologies. Some difficulties are associated with the lack of common criteria and an integrated approach to assessing the companies' energy efficiency.

The geographical group of factors related to the energy efficiency of the Russian economy is determined primarily by the geographical features of the company's production activities. Characteristic features of the location and structure of the fuel and energy complex of Russia are: low density of energy consumption and energy infrastructure in most of the territory (on average in Russia – 7 times less than in the United States) and high focal concentration of production of basic fuels; which arose in the second half of the twentieth century. and the growing disproportion in the placement of the country's demand for energy resources and the possibilities of their mining (production), which greatly increases the cost of energy saving of the economic complex; the special severity of natural and climatic conditions in most of the country and their significant diversity. This generates a high differentiation of energy space and, most importantly, causes (in combination with the additional energy consumption for transport caused by previous features) increased energy consumption per unit of output and per capita.

The depth and correctness of the analysis of the impact of each of the groups of factors determining the effectiveness of the implementation of energy-saving and energy efficiency policies should be based on consistent and systematic monitoring of indicators characterizing the complexity of the energy efficiency

Table 3: Information base for the calculation of analytical indicators of energy efficiency of companies of the fuel and energy complex of the Russian Federation

Statistics taken into account in the calculation of the indexes	Informational bases
Air emissions, thousands of tons	The report of the stable development of the company (the international standard for sustainability reporting)
Average number of employees, people	
Ratio of waste disposed of during the year to newly generated waste (correction factor)	
The environmental protection costs	
Fixed assests	Consolidated financial statements of IFRS
Labor productivity - specific revenue, million rubles/person	
Hydrocarbon production (in the oil equivalent)	Company's annual report
Thermal energy consumed for own needs	
Electricity consumed for own needs	
Cost of energy efficiency equipment with A and B class	Company's energy passport
Area of buildings and structures with energy efficiency with a B+ and higher class	
Rationing energy and heat consumption in each division of the company (enterprise)	
Energy and fuel losses	
Proportion of the reneweable energy sources for own needs use	

Source: Made by the authors

Table 4: Dynamics of energy efficiency indexes of PJSC "Oil company Lukoil" enterprises (2015-2018)

Reporting indicators/integrated indexes	2015	2016	2017	2018
Energy efficiency index of a company's economic stability (energy intensity of production activity)	33.1	34.84	34.34	36.84
Energy efficiency index of a company's social and economic stability (energy intensity of human labor productivity)	2.10	2.39	2.09	1.75
Energy efficiency index of a company's social sustainability (energy intensity of labor)	1.05	1.12	1.15	1.33
Energy efficiency index of a company's environmental and social sustainability	82.94	90.79	80.94	84.51
Energy efficiency index of a company's environmental sustainability	0.65	0.70	0.63	0.49
Energy efficiency index of ecological and economic stability of the company	0.18	0.17	0.15	0.11

Source: Made by the authors on the basis of PJSC NK "Lukoil" corporate reports data (Lukoil, 2018)

Table 5: Dynamics of energy efficiency indexes of PJSC "Gasprom" (2015-2018)

Reporting indicators/integrated indexes	2015	2016	2017	2018
Energy efficiency index of a company's economic stability (energy intensity of production activity)	7.3	7.2	8.4	8.9
Energy efficiency index of a company's social and economic stability (energy intensity of human labor productivity)	0.65	0.77	0.86	0.75
Energy efficiency index of a company's social sustainability (energy intensity of labor)	0.1	0.11	0.13	0.14
Energy efficiency index of a company's environmental and social sustainability	0.01	0.03	0.01	0.01
Energy efficiency index of a company's environmental sustainability	2.88	0.57	1.71	1.28
Energy efficiency index of ecological and economic stability of the company	1.35	0.25	0.77	0.60

Source: Made by the authors on the basis of PJSC "Gasprom" corporate reports data (Gazprom, 2018)

program of the company. The collection of key statistical indicators of energy saving and energy efficiency policy assessment is regulated by international corporate reporting standards and Russian regulations related to the requirements for the organization and conduct of energy audits at the enterprise. The main task of the company is a responsible attitude to compliance with the requirements of these documents (Table 3).

4. CONCLUSION

In the study, two leading multinational companies in the fuel and energy complex both in Russia and in the world were selected: PJSC "Lukoil" (2% of world oil production) and PJSC "Gasprom" (12% of world gas production), which for the last 10 years have occupied leading positions in Russian and international ratings in the field of sustainable development, social responsibility, transparency, energy efficiency and ecology. These companies have been conducting annual reporting on sustainable development based on international standards since the early 2000s. "Lukoil" has been successfully implementing targeted energy-saving programs aimed at improving energy efficiency in the use of energy and fuel since 1997, which is reflected in the positive dynamics of the coefficients proposed for calculation (Table 4).

The public joint-stock company "Gasprom" first adopted the concept of energy conservation in 2001. In 2010, the Concept of energy saving and increase of energy efficiency of PJSC "Gasprom" for 2011-2020 was adopted, which outlined the main objectives of maximizing the potential of energy saving in all types of activities on state support of energy-saving policy of PJSC "Gasprom" improving energy-saving management; increase of energy effectiveness of the subsidiaries of PJSC "Gazprom" on the use of innovative technologies and equipment; ensuring the decrease of technogenic impact on the environment. Overall coordination of activities in the field of energy conservation is being implemented by the Coordination Committee on the questions of environmental protection and energy efficiency. The company implementation of the energy-saving concept is successful with has been acknowledged also on the global level. According to the international CDP rating, PJSC "Gasprom" has the lowest amount of carbon among the world's largest oil and gas companies (Table 5).

The dynamics of the values proposed for the assessment of corporate policies in the field of energy efficiency and their contribution to the sustainable development of the company itself demonstrate a high level of corporate responsibility. These trends are based on both global trends (increasing role of climate risk management, rational resource use, increased energy efficiency of production, etc.) and widespread introduction of corporate standards of social responsibility (Abzalilova, 2018; Kondaurova, 2015).

At the same time, the research made has identified also the reserves of energy efficiency increase. In the company of PJSC "Gasprom" the basic directions of increase of efficiency associated with the optimization of measures aimed at saving fuel and energy resources (by 2020 the figure is expected to reach 28.2 million tons of conditional fuel, for 2011-2017 period reached by 67%), the greenhouse gas emissions reduction (actual reduction achieved for the period 2011-2017 58.6% of the planned target in 2020). Gasprom consistently increases the efficiency of energy resources use, including the widespread use of advanced technologies and equipment. This allows us to reduce costs to decrease the impact on the environment.

It should be noted that the closeness and incompatibility of a number of indicators did not allow us to calculate and fully analyze the situation with the Index of technological competitiveness of energy efficiency and the Index of efficiency of sustainable development management of the company's enterprises on the basis of energy efficiency assessment.

Improving the energy efficiency of production activities is one of the key factors not only to reduce the cost of production but also to the sustainable development of the fuel and energy complex on the whole. Activities of the company's programs related to energy saving and energy efficiency allow limiting energy consumption by reducing dependence on the use of environmentally unsafe energy sources, increasing productivity, reducing environmental pollution, as well as the creation of new markets for environmental products and services, jobs.

Particularly important here is to start making a selection of the most appropriate mechanisms and tools for increasing the efficiency of enterprises. The complexity of this choice is associated with the need to consider the variability of factors of implementation of these tools in modern conditions of non-stationary development of the Russian economy (Biryukova, 2015).

While doing the research there has been identified the nature of the relationship of the possibility to choose different groups of tools, that have been classified by the authors by the organizational and economic features, and the suggested indexes of the assessment of various aspects of the implementation of the companies' energy saving and energy efficiency policy. The key mechanism of optimization of these relationships is the increase of the requirements to the process of collecting and analyzing the fundamental indicators based on the application of the corporate financial and non-financial statements. Based on the analysis done there have been identified statistical indicators that comply with the following requirements: all the indicators are measurable and definite in their interpretation, they have collected by the company based on the requirements of the international standards and regulatory acts of the Russian Federation in the sphere of energy saving, they adequately reflect the essence of each of indexes added up to the calculations.

At the same time comparing the results of the analysis made of two biggest fuel-and-energy companies' indicators' value have identified some complications connected with different approaches of measuring them. Because of there is a need to unify not only the corporate statements indicators but also their units. One of the possible events in this direction could be escalating activity on the development of the plan for fuel-and-energy companies to transit to the 2nd version of International standard ISO 50001:2018 "Systems

of energy management – Requirements and use recommendations" (published in August of 2018), complying with all the new requirements including the ones connected with availability and consistency of the updating of the documented information on the matters of implementing a company's energy policy, determination of the basic values of the energy characteristics, and planning to collect energy information. The information should include significant variables for every division with high energy consumption including the producing ones, characteristics as well as the date that will be later used for alternating a company's energy policy.

5. ACKNOWLEDGMENT

This paper was financially supported by the Ministry of Education and Science of the Russian Federation, which ensures the Peoples' Friendship University (RUDN University) the provision of budget funds for financial support for the implementation of project "Support Tools for Fuel and Energy Complex as a Condition for Achieving Energy Efficiency and Energy Independence of the Region" (Task No. 26.4089.2017/4.6) in 2017-2019.

REFERENCES

Abzalilova, L.R. (2018), Ustoychivost Khimicheskogo i Neftekhimicheskogo Kompleksa Regiona: Soderzhaniye, Sostoyaniye i Perspektivy: Na Primere Respubliki Tatarstan [The Stability of the Chemical and Petrochemical Complex of the Region: Content, State and Prospects: By the Example of the Republic of Tatarstan]. Doctoral Dissertation. Kazan: Kazan State Technological University. Available from: https://www.dissercat.com/content/ustoichivost-khimicheskogo-i-neftekhimicheskogo-kompleksa-regiona-soderzhanie-sostoyanie-i-p. [Last accessed on 2019].

Afanasyeva, M.V. (2015), Otsenka Effektivnosti i Ustoychivosti Razvitiya Korporativnogo Sektora Mirovogo Energeticheskogo Kompleksa [Assessment of the Effectiveness and Sustainability of the Development of the Corporate Sector of the Global Energy Complex]. Doctoral Dissertation. Moscow: Gubkin Russian State University of Oil and Gas. Available from: http://www.dslib.net/economika-mira/ocenka-jeffektivnosti-i-ustojchivosti-razvitija-korporativnogo-sektora-mirovogo.html. [Last accessed on 2019].

Biryukova, V.V. (2015), Ustoychivost razvitiya neftyanykh kompaniy Rossii [Sustainability of the development of oil companies in Russia]. Vestnik SibADI, 3(43), 92-98.

Chernyaev, M.V., Kreydenko, T.F. (2018), Enhancing the efficiency of oil and gas complex as a basis for ensuring energy safety. European Research Studies Journal, 21(3), 516-529.

Gazprom. (2018), Reports on the Sustainable Development. Available from: https://www.gazprom.ru/f/posts/01/851439/sustainability-report-rus-2018.pdf. [Last accessed on 2019].

Golovanova, L.A., Moskovtseva, A.A. (2014), Factors and conditions of energy efficiency in the industry. Vestnik TOGU, 3(34), 137-146.

Goryainov, M.V. (2015), Tools to increase a country's energy efficiency. Herald of International Institute of Economics and Law, 4(21), 48-53.

Greene, D.L. (2009), Measuring energy sustainability. In: Graedel, T.E., Van der Voet, E., editors. Linkages of Sustainability. Ch. 20. Cambridge, MA: The MIT Press.

Kondaurova, D.S. (2015), Development of Recommendations for The Development of The Mechanism of Management of Sustainable Development of Industrial Enterprises. Samara: Samara State University of Economics.

Kreydenko, T., Chernyaev, M., Grigorieva, E., Korenevskaya, A. (2018b), Enhancing the energy efficiency of oil and gas companies as a factor of their sustainable development. AD ALTA: Journal of Interdisciplinary Research, 8(1S4), 176-182.

Kreydenko, T.F., Chernyaev, M.V., Grigorieva, E.M. (2018a), Issues of developing the tool for diagnosis of energy efficiency level of Russian regions' economy. International Journal of Energy Economics and Policy, 8(4), 187-198.

Linnik, Y.N., Zhabin, A.B., Linnik, V.Y., Tretyakova, M.V. (2017), The opportunities of the Russia's fuel-and-energy in the energy saving and increasing of the energy efficiency spheres. Izvestia TulGU. Sciences about Earth, 3, 231-240.

Lukoil Oil Company. (2018), Synergy of Achievements and Responsibility. Lukoil Group Sustainability Report. Available from: http://www.lukoil.com/InvestorAndShareholderCenter/ReportsAndPresentations/SustainabilityReport. [Last accessed on 2019].

Marchenko, E.M., Belova, T.D. (2015), Analysis of the factors affecting the energy efficiency of the region: Managerial aspect. Management Issues, 4(16), 105-112.

Nesterenko, S.A., Khubulova, V.V. (2016), Implementation of the organization and economical tools of fuel-and-energy stable development. Midrussian Herald of Social Sciences, 2, 128-132.

The World Bank. (2017), Regulatory Indicators for Sustainable Energy: A Global Scorecard for Policy Makers. Available from: http://www.documents.worldbank.org/curated/en/538181487106403375/Regulatory-indicators-for-sustainable-energy-a-global-scorecard-for-policy-makers. [Last accessed on 2019].

Tretyakova, M.V. (2015), The analysis of the regulation of the energy efficiency in the fuel-and-energy organizations of Russia and the main consumers of the fuel-and-energyre sources. Information Resources of Russia, 6(148), 12-15.