



## Specifics of the Fuel and Energy Complex Regulation: Seeking New Opportunities for Russian and International Aspects

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### ABSTRACT

The goal of this article is to define the main trends and possible ways of further development of the fuel and energy complex (FEC) in the Russian economy. The following tasks were solved to achieve this goal: To determine the place of the Russian FEC in the world economy, to assess the results achieved in implementing the energy strategy, and to identify promising directions for regulating the Russian FEC. The results of the study allow to conclude that certain positive indicators were achieved in the field of improving energy security, reducing energy intensity and increasing the budgetary efficiency of the FEC as part of the ES-2030 implementation. At the moment, the regulatory and legal framework has been formed and is being further developed, measures for import substitution in the FEC sectors are being taken, tax, customs and tariff policies are being improved, measures have been developed and implemented to increase the availability of energy infrastructure, etc. Further measures of state regulation of the FEC sectors should be aimed at the development of renewable energy economy, measures to encourage investments in the FEC, and the improvement of the system of tariff setting for electricity transmission services.

**Keywords:** Energy Security, Energy Conservation, Renewable Energy Sources

**JEL Classifications:** L70, P20, P28

### 1. INTRODUCTION

It is difficult to overestimate the role of the fuel and energy complex (FEC) in the Russian economy, although its indicators have been declining since 2012–2013 due to the crisis and the falling prices for hydrocarbons. Nevertheless, it secured more than 30% of the country's gross domestic product (GDP) and consolidated budget, 56% of foreign export proceeds and almost a quarter of all investments in the national economy in 2016.

The FEC has been the key driver of Russia's economic growth and can continue this trend in the current decade, but its contribution to GDP will be reduced by about half in the long term through to 2040 – from 31% in 2015 to 13–17% (depending on the scenario). As such, even with expanded absolute volumes of production, the

energy sector will no longer be able to play the role of the key driver of economic growth.

Figures describing the role of the sector in the economy clearly show a new position in the country's fuel and energy system:

- Contribution to GDP in production will decrease 1.8–2.4 times by 2040 compared to 2015;
- Almost a twofold reduction in the share of energy resources in total revenue from exports by 2040 and even more than twofold reduction in the share of energy exports in GDP are expected; and
- Reduction in the share of investments in GDP in the energy sector by 10–26% and reduction in the share in the total volume of investments in the country 1.7–2.2 times are prognosticated.

Today, with the export orientation of the energy sector (half of the output is exported), the investment burden of the FEC in the economy is several times higher than the world average: Investments in the energy sector make up 5% of GDP compared to 1–1.5% for the world. The recession in 2014–2016 secured some breaks in the investment process due to the domestic demand stagnation.

Drastic changes in foreign markets, along with numerous problems that have accumulated within the Russian economy in general and within the FEC in particular, have set severe conditions for the Russian energy sector. Even in case of a favorable scenario, it is hard to expect a successful and prompt solution to the problems of increasing the energy efficiency of the economy, diversifying energy supplies and improving accessibility for consumers, reducing the costs of the sector and its projects, promoting environmental management, and protecting the environment.

Given the current situation, an important role is assigned to the creation of an efficient system of state regulation of this segment in the Russian economy.

The study of the international practice of introducing laws and regulations that promote energy efficiency and the transition to sustainable development of the FEC becomes especially urgent.

## 2. LITERATURE REVIEW

The topic of the place and role of the FEC in the Russian economy is covered in numerous academic studies and publications of foreign and Russian specialists.

An important role of the fuel and energy sector in the development of modern integration processes is covered in the papers of Guliyev and Mekhdiev (2017), Georgiou (2016), Shadikhodjaev (2016), Kulagin et al. (2016), etc. According to forecasts, the role of the energy sector will radically change in the forthcoming period, and it becomes more obvious and inevitable now (Makarov et al., 2016).

Political and economic changes in some countries have significant impact on Russia's domestic and foreign economic policies. The methods of state regulation are changing and intensifying (Yekimova et al. 2016). There are projects of the successful resolution of the current problems, and Russia's position in the international arena is getting stronger. However, the instability of the Russian economy, commodity orientation, market relations and dependence on world oil and energy prices, as well as the gap between elite groups of the population slow down the transition to a real and efficient society restructuring (Arkotov, 2013).

Proskuryakova (2017), Simoniya and Torkunov (2015), Muslimov (2014), Gabdrakhmanov et al. (2017) and others consider the most promising areas for the development of science and technology in Russia that ensure the implementation of the country's competitive advantages from the standpoint of energy security.

Pyatkova and Rabchuk (2017) presented methodological and model developments on the study of the energy security problems.

The authors describe the specifics and new challenges in the study of energy security at the present time and justify the need to develop modern methods, models and instruments.

As a result of the applied research of Smirnova and Senderov (2017), the regions of Russia with an unsatisfactory state of energy security have been identified, and the changes in the state of energy security in all regions of Russia in the period from 2011 to 2016 have been presented.

The paper of Proskuryakova (2017) is of particular interest for researchers and decision-makers in the field of the FEC development, as it proposes a new complex conceptualization of foresight for energy technologies in emerging market countries, including development trajectories, key methodological instruments and elements, main problems and drawbacks.

Research that reflects the specifics of the FEC administrative powers and regulation implementation deserves special attention.

Shulginov et al. (2015) note the current active process of establishment of a new system of normative and technical regulation in the Russian electric power industry, which reflects the fundamental changes that have occurred in the industry in recent years.

Shevchenko and Ivanova (2016) claim that the regulatory framework in the energy sector should be modernized on the basis of the established general economic and legal concept for the development of energy legislation, and should be based on the accumulated legislative practice of Russia and foreign countries and take the successful international practice in this field into account.

Grabchak (2016) notes that the regulatory and legal regulation of technological activities of the Russian FEC entities is an indispensable condition for the normal operation of the energy system and the efficient operation of the industry.

Trubaev et al. (2014) propose a methodology for implementing the energy management systems in Russia. These authors believe that its features include the compliance of the proposed documentation with the regulatory and administrative acts of Russia and orientation on the energy consumption analysis.

The study of Khasaev and Tsybatov (2017) is of theoretical significance, as it presents the method of formation of multiple regional fuel and energy balance. The presented methodological development allows to forecast the energy intensity and energy consumption of the economy, including the GRP energy consumption, assess the energy security and energy efficiency of the economy, and identify bottlenecks and threats in the FEC development.

The literature review and systematization allow to better describe the current state and identify a number of features of the Russian FEC, compare different points of view and determine methodological approaches to studying the specifics of the FEC regulation in Russia.

### 3. METHODS

The goal of the paper is to develop practical provisions aimed at improving the mechanisms of state regulation of the FEC in Russia.

The authors have solved the following set of problems in the framework of the research:

- Russia’s positions in the world fuel and energy market have been analyzed;
- Efficiency of state regulation of the FEC in Russia has been assessed; and
- Opportunities for the FEC development in the field of state regulation have been revealed.

The methods applied represent an overview of text and graphic documents, as well as general scientific empirical research methods. The dynamics and comparative analysis of quantitative development indicators of Russian FEC in 2012–2016 as a whole and by sectors (volume of extraction, processing, consumption of various types of fuel and electricity, exports of energy, fuel and electricity) has been conducted.

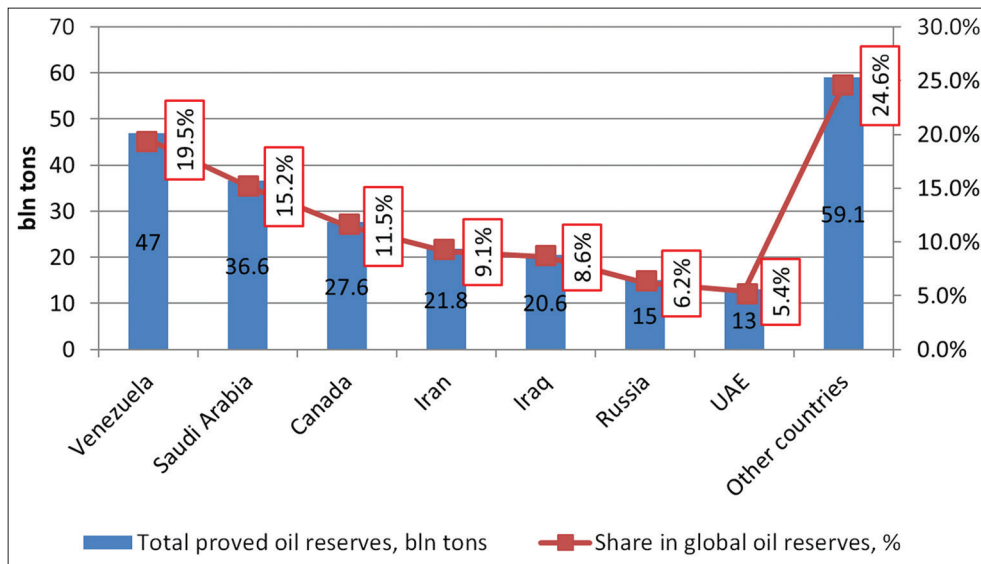
The information base of the research includes statistical and analytical data of the Federal State Statistics Service, the Ministry of Economic Development of the Russian Federation, the Ministry of Energy of the Russian Federation, the Federal Customs Service, the Central Bank of Russia, and the single interdepartmental information and statistical system.

### 4. CURRENT POSITION OF THE RUSSIAN FEDERATION IN THE WORLD FEC

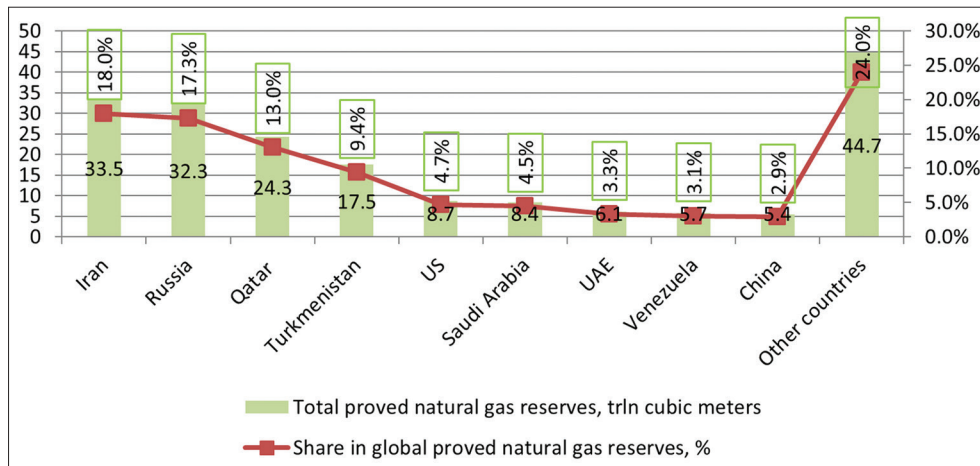
Russia has huge reserves of natural resources and is the largest player in the world fuel and energy market. For example, Russia currently ranks sixth in the world in terms of the proved oil reserves (Figure 1).

Russia ranks second in the world after Iran by the proved volumes of natural gas (Figure 2). According to statistical data, the total volume of the proved natural gas reserves in Russia has increased by 1.1 bln cubic meters or by 3.5% since 2006.

**Figure 1:** Place of the Russian Federation in the world oil reserve in 2016 (BP Statistical Review of World Energy, June 2017)



**Figure 2:** Place of Russia in the world natural gas reserves



The second largest volume of world coal reserves is concentrated in the Russian Federation. The proved coal reserves are estimated at 160.4 bln tons, which is 14.1% of the total volume. Besides, Russia has significant resources for the development of nuclear energy and renewable energy sources (RES): The uranium reserves in Russia are estimated at 1 mln tons, the water resources – at 0.335 TW (IAEA, 2017).

The Russian Federation is one of the largest producers of energy resources and energy consumers in the world (after China, the USA and India). Russia accounts for 12.2% of the world production and 5.1% of world energy consumption (Table 1).

Gas remains major Russian fuel, accounting for 52% of primary energy consumption, followed by oil (22%) and coal (13%). Despite the electricity consumption falling by 1.4% (–7.7 mln TOE) in Russia in 2016, Russia remains the fourth largest electricity consumer in the world (after China, the USA and India). Despite the still weak economy, growth of oil consumption (+2.1%) resumed in Russia in 2016. Coal consumption decreased by 0.5%, mainly due to increased consumption of water-power resources (+9.5%).

The electricity consumption increased in Russia in 2016 due to the gradual recovery of industrial production. Russia produced 1,087.1 bln kWh in 2016, which was 10% of the world's electricity production.

Russia secures 12.7% of the world oil production, 16.2% of the world gas production, and 5.2% of the world coal production (Table 2).

It must be noted that oil, gas and coal production in Russia has shown a continuous increase of an average annual 1.5% over the past decade. Oil and gas condensate production in Russia increased by 15.5 mln tons (+2.9%) in 2016 compared to the previous year, which was the highest figure since 2004, when oil and gas condensate production in the country increased by 38 mln tons (+9.0%).

**Table 1: Share of the Russian Federation in world fuel consumption and oil production in 2016**

Fuel consumption, mln TOE			Oil production, thous. barrels per day		
China	3,053	23.0%	USA	12,354	13.4%
USA	2,272.7	17.1%	Saudi Arabia	12,349	13.4%
India	723.9	5.5%	Russia	11,227	12.2%
Russia	673.9	5.1%	Iran	4,600	5.0%
Japan	445.3	3.4%	Iraq	4,465	4.8%
World	13,276.3	100.0%	World	92,150	100.0%

**Table 2: Share of Russia in world oil, gas and coal production in 2016**

Oil production, mln tons			Natural gas: Production in bln cubic meters			Coal production, mln TOE		
Saudi Arabia	585.7	13.4%	USA	749.2	21.1%	China	1685.7	46.1%
Russia	554.3	12.6%	Russia	579.4	16.3%	USA	364.8	10.0%
USA	543.0	12.4%	Iran	202.4	5.7%	Australia	299.3	8.2%
Iraq	218.9	5.0%	Qatar	181.2	5.1%	India	288.5	7.9%
Iran	216.4	4.9%	Canada	152	4.3%	Russia	192.8	5.3%
World	4,382.4	100.0%	World	3,551.6	100.0%	World	3,656.4	100.0%

The share of Russia in the world's oil refining capacities has stabilized at the level of 6.6% over the recent years (Figure 3).

Russia consistently ranks first in the world by gas exports, second by oil exports (after Saudi Arabia), and third by coal exports after Australia and Indonesia (Table 3).

Gas exports from Russia increased by 6.6% in 2016 compared to 2015 and reached 214 bln m<sup>3</sup> (including LNG), which was the highest figure for the post-Soviet period. The main growth of export supplies was provided by the largest consumers of Russian gas in Western Europe (Germany, Great Britain). Against the backdrop of decline in world coal production and trade, the coal production and exports in Russia increased. According to customs statistics, the volume of coal exports from Russia in 2016 increased by 9.8%, although in the value terms it fell back to \$8.9 bln (–5.6%) (Russia's Energy Strategy for the period through to 2030).

## 5. ASSESSMENT OF THE EFFICIENCY OF THE FEC STATE REGULATION IN THE RUSSIAN FEDERATION

The measures of state regulation of the FEC are aimed at strengthening the security of energy supply in Russia, expanding its role as a global energy supplier and ensuring affordable, competitive and sustainable energy supply and consumption in Russia.

The energy policy of the Russian Federation is contained in the Energy Strategy for the period through to 2030. The government outlined a number of fundamental problems and priorities for the development of the FEC in the Energy Strategy through to 2030 and in subsequent medium-term political programs (Federal Customs Service of the Russian Federation, n.d.), including improving the energy efficiency, reducing the impact on the environment, sustainable development, developing energy and technology projects, as well as increasing the efficiency and competitiveness. It was planned to implement Strategy 2030 in three stages. The first stage of the Strategy was completed in 2015. It must be noted that most target indicators were not achieved following the results of the first stage. In particular, three out of four quantitative parameters of energy security were not achieved (Table 4).

As more efficient reserves deplete, the share of difficult FERs increases, and the quality of the resources involved in turnover deteriorates. A high level of physical wear and tear of energy objects is observed, given low rates of their renewal. It must be

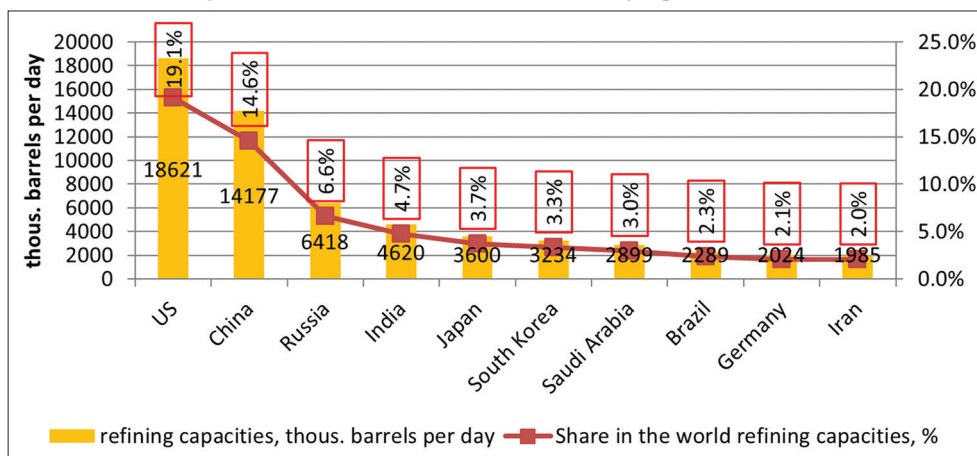
**Table 3: Position of the Russian Federation in the world oil and gas exports in 2016**

Crude oil exports (Bln cubic meters)			Pipeline gas exports (Bln cubic meters)		
Saudi Arabia	375.3	17.7%	Russia	190.8	25.9%
Russia	274	12.9%	Norway	109.8	14.9%
West Africa	216.5	10.2%	Canada	82.4	11.2%
Other Middle East countries	203.2	9.6%	Other CIS member states		0.0%
Iraq	177.5	8.4%	USA	60.3	8.2%
World	2,117.8	100.0%	World	737.5	100.0%

**Table 4: Assessment of achieving the strategy 2030 target indicators for ensuring energy security**

Indicator	2005	2015	Growth/decline, %		Assessment
			Actual	Target	
Energy consumption per capita, TOE per capita	4.54	4.93	8.6%	10%	Not achieved
Electricity consumption per capita, MWh per capita	5.77	6.59	14.2%	13%	Achieved
Motor fuel consumption per capita, kg per capita	401	466.6	16.4%	23%	Not achieved
Degree of fixed assets depreciation in the extractive industry, %	54.8	56.3	2.7%	10%	Not achieved

**Figure 3: Share of Russia in the world refining capacities in 2016**



noted that about 90% of the existing power plants’ capacities, 83% of buildings, 70% of boiler houses, 70% of technological equipment of the electric networks and 66% of heat networks were built long before 1990 (Pilipenko and Sivakov 2013).

At the same time, it must be noted that the Russian authorities are taking measures to increase the affordability of energy infrastructure. According to the results of the World Bank’s official report on the results of 2016, Russia was among top 30 countries in terms of the affordability of energy infrastructure in the Doing Business 2017 rating. Such achievements have become possible due to measures on the regulatory framework improvement. In particular, the changes allowed to facilitate the conditions for meeting the requirements for the timing of technological connection for electric grid companies.

Federal Law No. 261-FZ (2009) establishes the legal, economic and organizational basis for promoting energy conservation and improving energy security. Legislation related to energy conservation has undergone many changes. The federal law has been amended more than 15 times since its adoption.

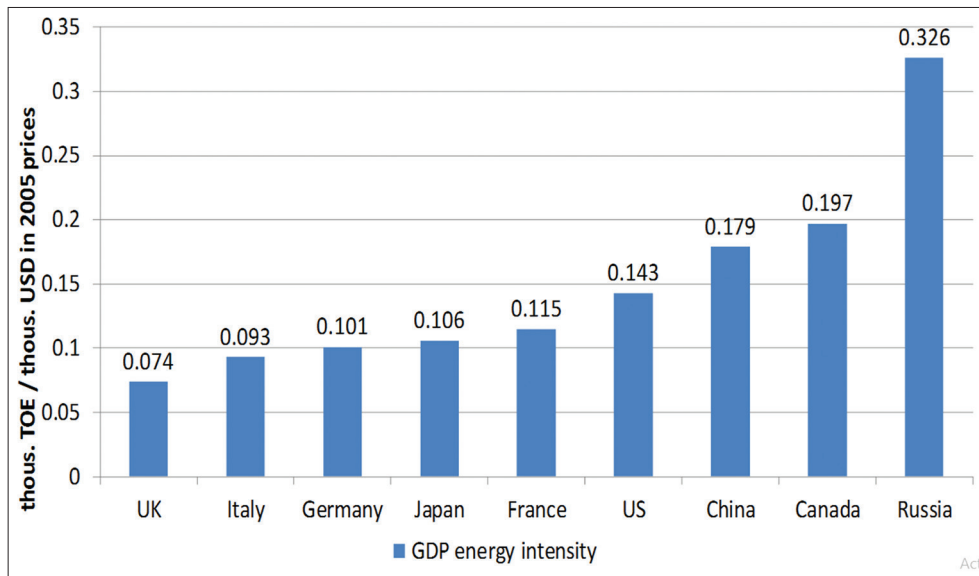
The state program of energy efficiency and energy development for 2013–2020 gave a new impetus to the development of Russian FEC, with a key goal of reducing energy intensity of

Russia’s GDP by 13.5% compared to 2007. The structure of the target management system in the field of energy conservation and increase in energy efficiency had been largely created in the period of 2012–2017. 5 out of 13 branch governmental programs of the Russian Federation contained energy efficiency indicators.

The energy intensity of the Russian economy declined from 0.337 thous. TOE/thous. USD in 2005 prices to 0.326 thous. TOE/thous. USD (2005), i.e. by 3.3% from 2007 to 2016 (Global Energy Statistical Yearbook, 2017). At the same time, the level of energy intensity of Russia’s GDP remains one of the highest in the world and outruns the indicators of developed countries 1.7–4.4 times (Figure 4).

Factors of structural shift in the economy have significant impact on the reduction of energy intensity of GDP. According to the Federal State Statistics Service, the share of energy-intensive sectors of the economy in Russia’s GDP fell by 1.9% in the period from 2007 to 2016. Since the potential for structural shifts in relation to reducing energy intensity is almost exhausted and technological savings are still significantly behind the targets, it is unlikely that the targets stated in the ES-2030 will be achieved.

At the same time, the low energy efficiency of the industry leads to its low competitiveness. Strengthening global competition requires

**Figure 4:** Energy intensity of gross domestic product of Russia and countries with developed economies in 2016, thous. TOE / thous. USD (2005)

a drastic increase in the efficiency of resource use, despite limiting factors, such as relatively low energy prices and the harsh climatic conditions of the country.

The volume of investments in the extraction of fuel and energy minerals increased 2.6 times from 838.4 bln rubles to 2,173.1 bln rubles in the period of 2007–2015. Investments for the reproduction of fixed assets for production, transmission and distribution of electricity, gas, steam and hot water almost doubled from 465.7 bln rubles in 2007 to 917.9 bln rubles in 2015. The FEC share in the total volume of investments in fixed assets in a full range of organizations increased from 19.4% to 22.2%.

The target indicator of the first stage of ES-2030 of the FEC contribution to the federal budget tax revenues amounted to 30%. However, the actual indicator of oil and gas revenues and other taxes paid by FEC enterprises amounted to almost 42.9% of federal budget revenues, following the results of 2015. As such, the dependence of the Russian economy on oil and gas revenues remains significant.

Besides, the slowdown in economic dynamics in the second half of 2017 against the backdrop of growing world prices on commodity markets once again led to the increased dependence of the Russian economy on hydrocarbon exports. The increase in “commodity dependency” can be primarily traced in the ratio of total exports of goods and exports of hydrocarbons to GDP. The ratio of exports of goods to GDP was 21.9%, and the ratio of hydrocarbon exports to GDP was 12% in 2016, while in 2017 they were 22.6% and 12.5%, respectively (Titov, 2018).

#### 4. DISCUSSION

Significant results have been achieved in the field of the FEC state regulation in recent years:

- Exchange trade in oil and petroleum products has been developed.

The exchange trade in petroleum products started in Russia in 2008 almost simultaneously at three marketplaces: The St. Petersburg Exchange, the St. Petersburg International Mercantile Exchange and the Interregional Exchange of the Oil and Gas Complex (Moscow International Commodity and Power Exchange – MICPE). The state regulates this field through the adoption of mandatory targets. For example, the FAS and the Ministry of Energy of Russia adopted Order No. 313/13/225 in April 2013, which defined the minimum volume of petroleum products sold on the exchange by companies.

- The regulatory framework for the gradual transition to the domestic production of competitive products in the FEC sectors has been established and is developing.

The intensive development of import substitution began in 2015 with the adoption of the Plan for Import Substitution Promotion in Industry (Order of the Government of the Russian Federation No. 1936-r., 2014). Nevertheless, companies producing equipment and FEC products note that the implemented measures of state support for import substitution do not efficiently contribute to innovation activities and creation of new industries.

According to a survey among Russian companies, they note a lack of efficiency in the operation of the existing development institutions and implementation of industrial policy measures in relation to the development of innovation activities, creation of new industries or support for the existing enterprises (Analytical Center under the Government of the Russian Federation, 2016).

- Tax policy measures to encourage oil production are being improved.

A procedure to grant exemptions for the export customs duty on oil for deposits in new regions was launched in 2014 (Decree of the Government of the Russian Federation No. 846, 2013). The Plan of comprehensive stimulation of hydrocarbon deposits development on the continental shelf of the Russian Federation and in the Russian part of the Caspian Sea is being implemented in

order to develop hydrocarbon resources on the continental shelf of the Russian Federation (Order of the Government of the Russian Federation No. 987-r, 2014).

The fourth tax maneuver in the newest history of Russia, the so-called Great tax maneuver, came into effect on January 1, 2015. The oil tax maneuver is understood as the gradual reduction of import customs duties with the simultaneous adjustment of the MET rate for oil and gas condensate in order to balance the interests of the budget, oil industry and consumers on the domestic market.

- Measures to increase the affordability of energy infrastructure are implemented.

The amendments to certain governmental acts were adopted; the “Roadmap” was developed in 2012, which outlined the measures to simplify procedures and shortened the time for technological connection, as well as general institutional measures and the adoption of regulations governing the connection to gas distribution networks.

The regulatory and legal framework for pricing is improved. Government Decree No. 1157 dated November 12, 2016 amended the Rules for the adoption of investment programs for electric power entities and the “basis for pricing in the field of regulated prices (tariffs) in the electric power industry” (Government Decree No. 1157, 2016).

With the purpose of tariff smoothing (avoiding spikes), it is allowed to distribute the accounting of performance results for the previous regulatory period (exclude unreasonable expenses and incomes, account for reasonable expenses) for a period of not more than 5 years, including the one related to various long-term periods of regulation.

At the same time, it must be noted that there are a number of problems in the FEC development that require their immediate resolution and improvement of the state regulation system.

#### 4.1. Regulation of RES Development

Some researchers point out that state support for the renewable energy market in Russia can already be achieved by developing strategies for transition to a new technological structure of the economy and creating a regulatory framework to regulate this market (IFC Advisory Services in Europe and Central Asia, n.d.). Preferential/feed-in tariffs are one of the most promising mechanisms for supporting RES.

The feed-in tariff is the cost of one kilowatt of electrical energy produced per unit of time by using alternative, RES, such as solar, wind, water and biofuel energy.

At the moment, the Government of Russia has approved the Rules under which individual producers of electric power can sell the surplus generated at their facilities; and draft Decrees to define the conditions for granting a feed-in tariff were prepared.

At the moment, although the Law on feed-in tariff has not yet been finalized and adopted, the main parameters that should be

reflected in it are defined in the Plan of measures to promote the microgeneration development in Russia.

At the moment, the feed-in tariff is in effect in more than 60 countries. The issue of the feed-in tariff for individual producers of electric power and small enterprises that have such facilities is supported at the state level in various technically developed countries. This is determined by the development of green energy, its role in the overall energy balance of a particular state.

The feed-in tariff has been in force in Japan since 2012. In accordance with the relevant law, large energy companies of Japan are obliged to buy kilowatt-hours from small power stations operating on alternative energy sources.

This tariff has existed in the USA since 1978, and its emergence was caused by the energy crisis, which required efforts for energy conservation and energy efficiency of alternative energy sources.

#### 4.2. Measures to Encourage Investment in the Russian FEC

The problem of raising investments in the renewal of energy-consuming equipment can be solved through the use of energy service contracts (ESCs), the distinguishing feature of which is funding the implementation of energy-saving equipment and technologies at the expense of the organization performing the work or a third-party – an investor (Dzuba 2017).

The ESC has become widespread in countries with developed economies as an organizational, legal and financial mechanism that allows to reduce energy consumption through the implementation of energy conservation measures.

Developed European countries have achieved significant energy conservation as a result of supporting the activities of energy service companies (ESCOs). Energy services in these countries include both one-time measures (for example, the creation of one or more state ESCOs) and comprehensive targeted programs, which include the implementation of pilot projects, wide dissemination of information and the best practices, development of methodological recommendations and standard contracts, etc.

Germany’s experience in promoting investment in the FEC is of particular interest. German legislation motivates management companies to invest their own or borrowed funds in energy conservation in apartment houses, providing preferential terms or targeted subsidies (grants). In order to develop energy services, in addition to the Feed-in Tariff Law adopted back in 1992, a number of motivating normative documents were adopted, such as the Tenants Law (regulating the preferential investment offers for tenants for housing modernization), the Law on Environmental Tax, the Law on Energy Conservation, the Law on Renewable Energy, the Energy Saving Order (EnEV), the Heating Market Stimulation Program, the Building Modernization Program, the Energy Conservation and Carbon Reduction Program, etc.

Most of the ESCs in Germany are concluded in the public sector. The relevant legal framework has been formed for such contracts, namely:

- The budget policy is regulated by the Federal Law – in particular, by the Regulation on the budget division for operating expenses and capital investments;
- An important “full coverage” principle has been adopted. This means that all budget expenditures must be consistent with the revenues from the implemented ESCs;
- The costs and benefits in the implementation of ESCs based on the use of extrabudgetary financial resources should always be assessed in comparison with direct budget expenditures.
- The ESCs are approved if the conditions established by government agencies are met. Besides, the level of borrowing should be balanced with the economic benefits of energy conservation.

Measures to promote energy services include agreements between the federal government and the local governments on measures to be implemented in buildings in order to reduce greenhouse gas emissions (the so-called Agreement 15A-B).

In accordance with the EU Public Procurement Directives, the procedures for negotiating the procurement or competitive dialogue between bidders are required to conclude the ESCs. However, the key idea is that the purchase of an energy service requires considerable time for preparation and implementation, as well as involving highly qualified specialists.

The adoption of a number of regulatory documents that promote the development of the market for energy services has yielded some results. According to expert estimates, Germany has the most developed market of energy services in Europe.

The most common models of energy services are energy supply contracts. These contracts are similar to the contracts for energy management, which are widely used in England, as well as contracts for energy resources and management (Chauffage Contract), which are most common in France. There are also many classic ESCs in Germany, where owners of facilities who pay ESCOs from their savings directly benefit from the energy provision measures.

### 4.3. Improving the Tariff System for Electricity Transmission Services

At the moment, each tariff rate is calculated as a unified value for all consumers of the same voltage level, regardless of the distance for which the electricity is transmitted from the power center (boiler method of tariff assignment). However, the boiler method does not take into account the actual costs of network maintenance and the transmission of electricity to a specific consumer and makes it difficult to maintain competition in the retail electricity markets (Stennikov et al. 2018). The Energy System Institute, Siberian Branch of the Russian Academy of Sciences (ESI SB RAS), has tested the method for assigning tariffs, taking the costs of electricity transmission to each large customer into account (Shevkoplyas and Palamarchuk, 2017).

The market experts believe that it is necessary to withdraw from the practice of using the boiler method for calculating the tariff for electricity transmission and introduce a method for the tariffs

formation, taking the real costs of electricity transmission to each large customer into account. This will allow to differentiate them, which will promote a more justified deployment of productive forces, new construction and dispersal of generating capacity throughout the country and regions.

In conclusion, it must be noted that further progress towards achieving the ES-2030 objectives will require more efforts and additional state regulation of the FEC development.

## 5. CONCLUSION

The results of this research allow to draw the following conclusions:

- The Russian Federation has the world’s largest reserves of fuel and energy resources, ranking second in the world in terms of natural gas and coal reserves and sixth in terms of oil reserves. At the moment, it is one of the largest producers and exporters of energy resources.
- The Energy Strategy through to 2030 was adopted in order to make the most efficient use of the natural energy resources of the Russian Federation. The state program of energy efficiency and energy development for 2013–2020 gave a new impetus to the development of the Russian FEC.
- Energy security and budgetary efficiency of the FEC have increased, the exchange trade in oil and petroleum products has developed, the regulatory framework for import substitution in the FEC industries has been established and developed, the tax, customs and tariff policy measures have been improved, the measures to increase the availability of energy infrastructure have been developed and implemented over the course of the Strategy 2030 implementation, etc.
- Problems that require immediate elimination and improvement of the state regulation system include measures to regulate the renewable energy market, promote investments in energy sector, and improve the tariff system for electricity transmission services.

## REFERENCES

- Analytical Center under the Government of the Russian Federation. (2016), Problemy Importozameshcheniya v Otrasyakh TEK i Smeznykh Sferakh [Problems of Import Substitution in the FEC and Related Fields]. Available from: <http://www.ac.gov.ru/files/publication/a/10298.pdf>. [Last accessed on 2018 Feb 28].
- Arkatov, A.Y. (2013), Improving the mechanism of the state regulation of innovation activity in the Russian Federation. *World Applied Sciences Journal*, 25(2), 202-206.
- BP Statistical Review of World Energy. (2017), Available from: <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>. [Last accessed on 2018 Feb 28].
- Decree of the Government of the Russian Federation dated November 12. (2016), No. 1157 O vnesenii Izmeneniy v Nekotoryye akty Pravitelstva Rossiyskoy Federatsii po Voprosam Tsenobrazovaniya v Oblasti Reguliruyemykh Tsen (tarifov) v Elektroenergetike [On amending some acts of the Government of the Russian Federation Regarding Pricing in the Field of Regulated Prices (tariffs) in the Electric Power Industry].
- Decree of the Government of the Russian Federation dated September 26.



- (2013), No. 846 (as amended on November 22, 2016) O Poryadke Podgotovki Predlozheniy o Primenenii Osobykh Formul Rascheta Stavok Vyvoznnykh Tamozhennykh poshlin na nefi syryuyu, ukazannykh v podpunktakh 2 ili 3 punkta 5 stati 3.1 Zakona Rossiyskoy Federatsii o tamozhennom tarife, i provedeniya monitoringa obosnovannosti ikh primeneniya” [On the procedure for preparing proposals for the application of special formulas for calculating the rates of export customs duties on crude oil specified in Subparagraphs 2 or 3 of Paragraph 5 of Article 3.1 of the Law of the Russian Federation “On Customs Tariff” and monitoring the validity of their application].
- Dzuba, A.P. (2017), Kak stimulirovat pritok investitsiy v energeticheskuyu infrastrukturu promyshlennoy kompanii [How to promote the flow of investments in the energy infrastructure of an industrial company]. Energy Council, 3(49), 44-49.
- Energeticheskaya strategiya Rossii na period do 2030 goda [Energy strategy of Russia for the period through to 2030]. Official Portal of the Ministry of Energy of the Russian Federation. Available from: <https://www.minenergo.gov.ru/node/1026>. [Last accessed on 2018 Feb 28].
- Federal Customs Service of the Russian Federation. (n.d.), Vneshnyaya trgovlya Rossiyskoy Federatsii [Foreign Trade of the Russian Federation]. Available from: [http://www.customs.ru/index.php?option=com\\_newsfts&view=category&id=125&Itemid=1976](http://www.customs.ru/index.php?option=com_newsfts&view=category&id=125&Itemid=1976). [Last accessed on 2018 Feb 28].
- Federal Law dated November 23. (2009), No. 261-FZ (as amended on July 29, 2017) “Ob Energoberezhenii i o Povyshenii Energeticheskoy Effektivnosti i o Vnesenii Izmeneniy v Otdelnyye zakonodatelnyye akty Rossiyskoy Federatsii [On Energy Conservation and Improving Energy Efficiency, and on Amending Some Legislative Acts of the Russian Federation]. Official portal Laws, Codes, Normative and Judicial Acts. Available from: <http://www.legalacts.ru/doc/FZ-ob-jenergoberezhenii-i-o-povyshenii-jenergeticheskoy-jeffektivnosti-i-o-vnesenii-izmeneniy-v-otdelnye-zakonodatelnye-akty-Rossiyskoj-Federacii/>. [Last accessed on 2018 Feb 28].
- Gabdrakhmanov, N.K., Kreidenko, T.F., Aleksandrovna, R.I., Mikhailovna, G.E. (2017), Problems of energy services market development in the regional economy of the Russian Federation. *Astra Salvensis*, 2017, 203-211.
- Georgiou, N.A. (2016), Energy regulation in international trade: Legal challenges in EU-Russia energy relations from an investment protection perspective. *International Economic Law: Contemporary Issues*, 2016, 151-168.
- Global Energy Statistical Yearbook. 2017. Available from: <https://www.yearbook.enerdata.net/>. [Last accessed on 2018 Feb 28].
- Grabchak, E.P. (2016), Problems of standardizing and technical regulation in the electric power industry. *Thermal Engineering*, 63(14), 971-977.
- Guliyev, I.A., Mekhdiyev, E.T. (2017), The role of fuel and energy sector in the Eurasian economic community integration process. *International Journal of Energy Economics and Policy*, 7(2), 72-75.
- IAEA. (2017), Country Nuclear Power Profiles. Available from: <https://cnpp.iaea.org/countryprofiles/Russia/Russia.htm>. [Last accessed on 2018 Feb 28].
- IFC Advisory Services in Europe and Central Asia. (n.d), Renewable Energy Policy in Russia: Waking the Green Giant.
- Khasaev, G.R., Tsybatov, V.A. (2017), Tooling of modeling and strategic planning of energy-efficient development of the regional fuel and energy complex. *Eurasian Journal of Analytical Chemistry*, 12(7), 1169-1182.
- Kulagin, V., Melnikova, S., Galkina, A., Osipova, E., Kozina, E. (2016), The prospects for Russian gas in the European market within the context of changing market conditions, regulatory environment and the EU policy. *International Organizations Research Journal*, 11(1), 22-38.
- Makarov, A.A., Grigoriev, L.M., Mitrova, T.A. (2016), Global and Russian Energy Outlook 2016. Moscow: ERI RAS-ACRF. p198.
- Muslimov, R.K. (2014), Effective oil and gas sector management can be an adequate response to the current challenges to the energy security of Russia. *Neftyanoe Khozyaystvo [Oil Industry]*, 5, 26-30.
- Order of the Government of the Russian Federation dated June 7. (2014), No. 987-r O Plane Kompleksnogo Stimulirovaniya Osvoyeniya Mestorozhdeniy Uglevodorodnogo Syrva na Kontinentalnom Shelfe RF i v Rossiyskoy Chasti (Rossiyskom Sektore) dna Kaspiskogo morya [On the Plan for the Comprehensive Promotion of the Development of Hydrocarbon Deposits on the Continental Shelf of the Russian Federation and in the Russian Part (Russian sector) of the Caspian Sea Bed].
- Order of the Government of the Russian Federation dated September 30. (2014), No. 1936-r Ob Utverzhdenii Plana Sodeystviya Importozameshcheniyu v Promyshlennosti [On Approval of the Plan to Promote Import Substitution in the Industry].
- Pilipenko, N.V., Sivakov I.A. (2013), Energoberezheniye i Povysheniye Energeticheskoy Effektivnosti Inzhenernykh Sistem i Setey [Energy Conservation and Increasing the Energy Efficiency of Engineering Systems and Networks]. St. Petersburg: NRU ITMO. p274.
- Proskuryakova, L. (2017), Energy technology foresight in emerging economies. *Technological Forecasting and Social Change*, 119, 205-210.
- Proskuryakova, L. (2017), Russia’s energy in 2030: Future trends and technology priorities. *Foresight* 19(2), 139-151.
- Pyatkova, N., Rabchuk, V. (2017), Energy Security Problems and Features of its Research at the Present Stage. *E3S Web of Conferences*. 25, 01007.
- Shadikhodjaev, S. (2016), Russia and energy issues under the WTO system. *Journal of World Trade*, 50(4), 705-732.
- Shevchenko, L.I., Ivanova, S.A. (2016), Theoretical and practical issues of systematization of Russian energy legislation when bringing it into a coherent system. *International Journal of Environmental and Science Education*, 11(18), 12337-12343.
- Shevkoplyas, K.I., Palamarchuk, S.I. (2007), Sovershenstvovaniye Metodiki Naznacheniya tsen za Uslugi po Peredache Elektroenergii. *Povysheniye Effektivnosti Proizvodstva i Ispolzovaniya Energii v Usloviyakh Sibiri [Improving the Method for Assigning Prices for Electricity Transmission Services. Increasing the Efficiency of Energy Production and use in Siberia]*. Publishing House of the IrNRTU, 2, 438-442.
- Shulginov, N., Kucherov, Y., Fedorov, Y. (2015), National Regulation and Standards Development for Russian Power System Operation and Control. *International ETG Congress 2015; Die Energiewende, Blueprints for the New Energy Age*. 7388537.
- Simoniya, N., Torkunov, A. (2015), European Union’s energy security and Russia. *Social Sciences (Russian Federation)*, 46(2), 78-89.
- Smirnova, E., Senderov, S. (2017), Main Trends and Scale of Changes in State of Energy Security of the Regions of Russia. *E3S Web of Conferences*. 25, 01005.
- Stennikov, V.A., Palamarchuk, S.I., Golovshchikov, V.O. (2018), Napravleniya povysheniya effektivnosti elektroenergetiki [Areas of increasing the efficiency of the electric power industry]. *Energy Council*, 1(51), 31-36.
- Titov, B. (2018), Zavisimost Rossiyskoy Ekonomiki i Byudzheta ot Nefti [Dependence of the Russian Economy and Budget on Oil]. *Stolypin Institute for the Economy of Growth*. Available from: <http://www.stolypin.institute/institute/issledovanie-instituta-ekonomiki-rosta-zavisimost-rossiyskoy-ekonomiki-i-byudzheta-ot-nefti/>. [Last accessed on 2018 Feb 28].
- Trubaev, P., Shirrime, K., Tarasyuk, P. (2014), Peculiarities of implementation of the energy management system in conditions of Russian economy. *World Applied Sciences Journal*, 30(8), 990-994.
- Yekimova, K.V., Savel'yeva, I.P., Tsalo, I.M. (2016), Assessment of the impact of the changes in the situation of the world markets on the regional processes. *Economy of Region*, 3, 670-683.