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# State Regulation of the Oil and Gas Complex in the Conditions of Digitalization of the World Economic System

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#### **ABSTRACT**

The **purpose** of article is to study the issues of state regulation of the oil and gas complex, including current areas of its improvement, environmental factors, in the context of the digitalization of the global economic system and the global energy market. The author investigated the importance of increasing the efficiency of state regulation of foreign economic activity in the context of ensuring national and energy sustainability, developing forecasts of strategic development. It was concluded that it is necessary to reflect long-term goals and tactical tasks in program-targeted documents, expand co-operational interactions with various sectors of the economy and industries, and promote technological innovations at the state level that allow expanding industrial and production potential and ensuring faster development of the oil and gas complex. The article was carried out using such **scientific methods** as synthesis, analysis, generalization and comparison, as well as from the standpoint of system-functional and complex or integrated approaches. The practical significance of the results lies in the theoretical justification of the need for state regulation of the oil and gas complex in the context of digital technological changes. It is aimed at promoting domestic industry and sectoral development, stimulating the integrated introduction of innovations, and reaching outstripping economic growth rates that are ahead of the pace.

**Keywords:** state regulation; oil and gas complex; fuel and energy complex; fuel and energy balance; digitalization; digital economy; economic policy; technological structure and paradigm; renewable energy sources; energy sustainability; energy efficiency

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#### INTRODUCTION

Government regulation (GR) of foreign economic activity involves the interaction with foreign states and oil and gas companies, aimed at achieving a common strategic goal. The measures taken by OPEC can serve as such an example: in particular, the 1973 oil embargo had a significant impact on the entire world economy and changed the structure of the global fuel and energy balance (FEB) [1]. For the countries — importers of hydrocarbons energy security is expressed, among other things, in long-term supplies of energy carriers in accordance with the schedule at prices that allow to create internal profitability of economic production while minimizing all kinds of risks.

The oil and gas complex (OGC) contributes to strategic priorities implementation through its huge mineral resource base (MRB), developed industry, relatively high sectoral productivity rates and effective implementation of social support measures, as well as public acceptance of government actions.

Ensuring of national foreign economic interests is an integral part of the GR OGC mechanism through the interaction of state authorities and fuel and energy companies in various directions, taking into account industry specifics and studying the prospects for oil and gas projects, which are critical for socioeconomic development. It is also necessary to highlight political risks, inappropriateness of sanction policy on the part of foreign countries, which is unlawful and destructive in nature.

The state may own oil and gas companies, create joint ventures with them, or promote, on a governmental or cross-national level, the coming together of several organisations, for example for a major investment project, such as the development of the Shtokman field. Such ventures are also intended to share professional experience, increase planning

horizons, and improve the quality of industry interactions.

GR OGC implies a long-term strategy, development of target indicators for all areas of production processes, means and technologies to achieve them. Implementation mechanisms involving the study of accumulated regulatory impact practices may be open to businesses and the public, or they may be of classified nature with closed operational or tactical information.

External economic aspects of GR OGC are also related to the ways of hydrocarbon supply, selection of optimal routes, taking into account transit through the territory of foreign countries, bringing the legislative aspects of different countries under a single platform reflected in the agreements and contracts concluded between them. Issues of national and energy security may conflict with the interests of foreign partners in terms of their under-receipt of certain benefits. The Russian Federation has a reputation of a reliable supplier of energy resources and advanced processing products to international markets, it has sufficient political and military-industrial potential to defend its own positions based on strategic priorities in OGC development.

The oil and gas complex is significantly influenced by many root causes that form its structural elements and external factors. Accordingly, the task of the GR mechanism as a set of methods, forms and instruments of influence is reduced to maintaining the dynamic equilibrium in the OGC by creating favourable conditions for its economically sustainable development. Thus, the current role of the cartel form of interaction between the states (as compared with the 20th century) is gradually decreasing. At present, oil and gas fields are usually developed either after a competitive bidding procedure, or within the framework of a concession agreement.

Economically sustainable development of the OGC is based on the balance of supply

and demand: developing countries, primarily from East Asia, forming the core of the new world economic order and increasing their own economic and technological potential, are the key consumers in the global fuel and energy market; this can be judged from the dynamics of global hydrocarbon consumption. Russia's participation in the development of global OGC has undergone adjustments as a result of geoeconomic and geopolitical factors. This is due to supplies to the European market, pipeline sabotage in September 2022, a significant discount on Russian oil exports.

In this context, the external economic direction of the GR OGC is based on the conclusion and implementation of strategic international contracts, in particular, with East Asian countries, development of fields in foreign countries, participation in joint projects, acquisition of oil and gas infrastructure facilities. It is directly linked with the level of socio-economic development and implies changes in the structure of the GR OGC exploration mechanism that comprehensively covers all stages of the production cycle, ensuring national security, long-term demand for hydrocarbon products, rational use of MRB, and environmental conservation in the areas of OGC operations. Transparent and stable legislation that takes into account the interests of both the state and investors, provides clear rules for access to hydrocarbon deposits, promotes the development of Russian oil and gas enterprises and improves the energy efficiency of production.

# STRATEGIC DEVELOPMENT OF RUSSIA'S OIL AND GAS SECTOR IN THE CONTEXT OF THE DIGITALISATION OF THE GLOBAL ENERGY MARKET

Forecasts of global energy development are usually based on several components: the structure of fuel and energy balance, the level

of supply and demand for hydrocarbons, the amount of proven reserves, oil prices, etc., but they do not always take political factors fully into account [2–9]. In particular, they foresee gradual use of technologies of the Fourth Industrial Revolution, such as artificial intelligence and the Internet of things (aimed at energy and resource saving), blockchain, big data, additive, quantum technologies, etc. Gradual depletion of reserves will mean more expensive production technologies and, eventually, higher oil prices and the need for products of higher redistribution. The costs required to discover new fields may be partly compensated by higher recovery of hydrocarbons (compared to existing technologies) at the already producing fields, which is a factor counteracting the rise in oil prices.

Numerous factors influence the sustainable development of national OGC: GDP growth in Russia and leading world economies, their socio-economic situation, levels of hydrocarbon demand and consumption that correlate significantly with each other, state of the global financial sector, major banking organisations and hedge funds, key performance indicators of leading oil and gas corporations, level of reserves and MRB status, technological development, infrastructure and institutional components, pragmatism in governmental decision-making at national level and at various stages of production processes, etc. In this aspect, GR is based on development of relevant fiscal and environmental policies; it has direct or indirect impact on consumption of energy resources, number of vehicles, etc.

The development of national oil and gas reserves must be based on pragmatic principles, based on rational and economically viable use. Digital technologies make it possible to develop previously unprofitable fields and significantly reduce the cost of exploration, production and refining

of hydrocarbons. Energy efficiency and energy security of the economy are the most important criteria for improving the quality of GR, its comparative evaluation in relation to other countries and individual economic regions, which generally affects the state of national industries, sectors and complexes. Measures to improve these quality indicators ultimately help to substantially reduce consumption of both primary hydrocarbons and refined products, with the resulting savings channelled into the development of other promising areas.

It should be taken into account that different phases of the economic cycle affect the level of fuel and energy resource (FER) consumption, in particular there is a significant reduction during recessions and depressions. The development of transport infrastructure also has a qualitative impact on the OGC, especially in the upstream and downstream segments due to stricter environmental regulations. The technology component in this aspect implies improvements in energy efficiency.

Pragmatism in the development of hydrocarbon reserves lies in the safe development of the most profitable provinces and deposits with maximum return on invested capital and a shorter payback period of projects, as well as limited access of foreign oil and gas corporations to the Russian market, which allows a responsible approach to economic and energy security and provides for the further processing and transportation of recoverable raw materials. Research and development and additional exploration works contribute to the discovery of new fields, and consequently to the reproduction of MRB, to the organic integration of extracted resources into the production processes, because today oil and natural gas have practically no substitutes for the needs of the industry.

With respect to the development of discovered fields, it is important to create a transparent ownership structure, to secure investment and to strengthen the potential of the Russian economy in world stock markets, including with respect to the level of capitalisation of domestic energy companies. This is necessary because a significant proportion of hydrocarbon supplies are traded on futures and spot capital markets, and in the long term this may only increase in real terms, mainly due to growing demand and consumption of oil and gas in East Asia and certain developing regions.

Oil is a relatively cheap way of producing energy. The efficient use of oil as a source of energy was mentioned by D.I. Mendeleev.

D. I. Mendeleev who compared oil combustion instead of coal with the fact that "one can heat up with banknotes" [10, p. 42]. The cost of hydrocarbon production in the continental part of the Russian Federation is much lower than in most other countries (except for the Persian Gulf countries). For example, in the wells that have been in commercial production for a long time, at the design capacity level this figure is \$ 3-7 dollars per barrel, at the stage of intensive development — \$ 15-20 dollars per barrel.<sup>1</sup> In particular, PJSC Oil Company Rosneft's production operating costs are comparable to those of Saudi Aramco — \$ 3.1 and \$ 2.8 dollars per barrel, respectively.

The gradual increase of shale, extraheavy and bituminous oil in the production structure indicates a general deterioration of the latter (in terms of global reserves) and a gradual shift towards types of hydrocarbon recovery that were relatively recently considered unconventional: "oil production

<sup>&</sup>lt;sup>1</sup> A. Novak: "Russian oil producers have a sufficiently diversified infrastructure". Ministry of Energy of the Russian Federation (official website). URL: https://minenergo.gov.ru/node/17497 (accessed on 17.07.2021).

from conventional sources is close to reaching its peak, has growth potential only due to increased production in Iraq, offshore (in the shelf area), but also due to increased production of gas condensate liquids and increased oil production from oil sands" [11, p. 54].

Oil production in Russia has increased from 326.7 million tonnes in 2000 to 524.4 million tonnes in 2020 and natural gas production — from 537.1 to 638.5 billion Cubic metres. In terms of total oil production, the share of our country has changed: from 9.08% in 2000 to 12.59% in 2020 and of natural gas - from 22.37% to 16.57% over the same period.<sup>2</sup> The main reason for this significant growth in global natural gas production is the development of new cheaper technologies, as well as its liquefaction and transportation. Global oil consumption grew from 3568.8 to 4006.7 million tonnes and natural gas consumption grew from 2399.5 to 3822.8 billion Cubic metres during the same period<sup>3</sup> because of the expansion of industrial applications and a significant increase in demand in developing countries. Proven oil reserves in Russia are estimated at 14.8 billion tonnes, natural gas — at 37.4 trillion Cubic metres.4

The digital transformation of the global economy and the fuel and energy complex (FEC) makes it possible to clarify the reserves of MRB and the prospects for their use, to make long-term forecasts of the development of the global and Russian energy sector, and to generally pursue a more balanced government policy in the OGC. Digitalisation and technologisation of all the stages of the production processes result in the prospects of hydrocarbon recovery at formerly unprofitable

fields, pragmatism in supplying hydrocarbons to external customers, and developing related industries, concluding mutually beneficial agreements in the related sectors of economy and the military-industrial sector. This is of key geostrategic importance for the Russian economy, hence one of the tasks of GR is to control the quality and volume of exported oil and gas.

For example, in April 2019, tens of times the permissible values of chlorine were exceeded in the pipeline system of PJSC Transneft, which supplies oil to Belarus. A relevant commission was set up to investigate the incident which resulted in a signed protocol on compensation from the Russian company in the amount of USD 61.6 million for processing 563 thousand tonnes, based on a price of USD 15/barrel. This makes it important to take preventive measures and avoid similar situations in the future. [12].

At government level, particular attention is paid to the development of the world's major oil and gas centres, which have an increasing influence on the global economy and politics, the growing trend towards gas production, clarification of the key parameters of existing energy supply contracts, and the development of offshore and Arctic fields, including the necessary legal framework and creation of the infrastructure in hard-to-reach or inaccessible areas.

Natural gas, due to its environmental friendliness, is gradually replacing part of the power segment, which implies rational and efficient use of associated petroleum gas and the development of the liquefied natural gas sector. The quality of natural gas output depends on both pipelines and supply routes. The transmission system requires large-scale, long-term investments. Natural gas supply contracts therefore specify in detail the terms of financing, responsibility for default or postponement, provisions for termination of

<sup>&</sup>lt;sup>2</sup> BP Statistical Review of World Energy. 2021. P. 19, 36. URL: https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html

<sup>&</sup>lt;sup>3</sup> Ibidem. P. 23, 38.

<sup>&</sup>lt;sup>4</sup> Ibidem. P. 16, 34.

agreements to offset potential financial losses and, in some cases, directions for expansion of the oil and gas transmission system and diversification of transport flows.

Stabilisation of market conditions is possible as a result of pragmatic and transparent oil and gas contracts. A number of producing states are taking joint action to meet these targets, including by challenging individual countries and economic actors.

Increasing global consumption of hydrocarbons in various economic, industrial and social sectors makes it possible in the long term to increase own production capacities, to use available resources, investment and technological potential. The objectives of the OGC GR are to improve the environmental situation at existing projects and fields, to stimulate the construction and increase the efficiency of enterprises with high added value, to develop deep refining, oil and gas chemistry and export directions.

With the transformation of the global fuel and energy sector and the energy transition, some oil and gas consumers are actively conducting research and development in the field of renewable energy sources (RES). Accordingly, the emphasis in oil and gas supply should be placed on industrialised nations with high levels of energy consumption. The growth of hydrocarbon reserves in the near term should outstrip their consumption, which is also a factor in the economically sustainable development of the OGC.

### ENSURING NATIONAL AND ENERGY SECURITY OF THE STATE

The economic aspect of national security involves the formation and intertwining of certain global economic, information and technological links between states, virtually none of which can implement a comprehensive state policy in this area without some support from other countries,

their alliances, various institutions, international organisations or the global community.

Identifying and exploring global OGC issues allows for successful resolution of many internal issues of economically sustainable sector development, taking into account the views and positions of various parties and, above all, the state and oil and gas companies. (see *Fig.*).

Not only main socio-economic indicators of the state, but also the issues of national, including energy security, depend on the state of OGC and efficiency of GR. Sensitivity of domestic economy to price fluctuations, its high dependence on hydrocarbon export, considerable specific weight of both industrial production and external supplies in its structure indicate the need to improve the mechanism of GR OGC in the transition to a new technological way. The task of GR in this aspect is to control compliance with the necessary environmental requirements, filling the oil and gas revenues of the state budget, which does not undermine the investment opportunities of OGC.

The energy component of state security implies uninterrupted functioning of both the oil and gas complex (its main enterprises) and other energy sectors. This is predetermined by the provision of raw materials on long-term mutually beneficial terms, taking into account environmental factors, uninterrupted cycle of OGC and its components (manifested in an increase in the final manufactured products) and achieved through the prevention of anthropogenic situations, counter-terrorism, creating a high degree of reliability and protection of key facilities. <sup>5</sup> Consequently,

<sup>&</sup>lt;sup>5</sup> Presidential Decree No. 400 of 02.07.2021 on the National Security Strategy of the Russian Federation. URL: http://www.consultant.ru/document/cons\_doc\_LAW\_389271/; Presidential Decree No. 645 of 26.10.2020 "On the Strategy for Development of the Arctic Zone of the Russian Federation and Ensuring

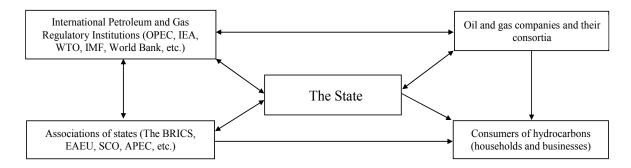


Fig. Interaction between the state, oil and gas companies, international petroleum industry regulatory institutions and hydrocarbon consumers

Source: compiled by the author.

consumers — at both national and company level — prefer to have several suppliers of raw materials or sources of financing, in order to avoid artificial shortages, monopolistically high prices, martial law or hostile takeovers.

In some cases, foreign supply may be available, but only in the short term, otherwise the state's energy security may be undermined by overdependence on the external environment. Some oil and gas projects are implemented in cooperation with foreign countries or international organisations (e.g., exporter and consumer) and require understanding of the interests of the economic operators involved. The state policy pursued takes into account the tendencies in the world energy markets, and provides for elimination of destructive factors.

For Russia, energy security implies the ability of the state to own, use and dispose of its own natural resources, to use them for the benefit of its own economy and industry, to ensure long-term sustainable rent from

National Security for the Period to 2035". URL: http://www.consultant.ru/document/cons\_doc\_LAW\_366065/; Presidential Decree No. 213 of 13.05.2019 "On the Approval of the Energy Security Doctrine of the Russian Federation". URL: http://www.consultant.ru/document/cons\_doc\_LAW\_324378/; Presidential Decree No. 327 of 20.07.2017 "On Approval of the Principles of State Policy of the Russian Federation in the Field of Naval Activities for the Period to 2030". URL: http://www.consultant.ru/document/cons\_doc\_LAW\_220574/

their exploitation, maximum oil and gas budget revenues over a long-time horizon. At the same time, GR should not limit the opportunities of OGC, but promote its economically sustainable development and get the greatest benefits from the export of natural resources for the needs of the national economy. For countries that are Russia's foreign economic partners in hydrocarbon supply, energy security allows preventing or mitigating possible risks, including through diversification of suppliers, or strengthening security measures on oil and gas pipeline routes.

National and energy security is the most important aspect of the state's foreign economic policy, which is fully reflected in the economic and military power of the state, its position in addressing international issues, defending its own interests, taking into account key international trends and profiting from inefficiencies in the global economy. Volatility of oil prices in stock markets creates opportunities to gain additional competitive advantage expressed, among others, in strengthening of state impact on the key international energy processes, active opposition to political threats, conclusion of oil and gas export contracts with longterm economic effect, assertion of the rights to sovereignty over the natural resources in

some provinces and regions. On a number of issues — Russia is to be an international arbiter over ownership of individual projects or hydrocarbon reservoirs.

Energy security implies guarantees of stable supplies to foreign and domestic markets and the stability of existing political regimes. The state's geographical position allows it to perform a very important bridging function and to expand cooperation with producers and consumers of hydrocarbons, key partners in the most strategically important regions of the world, their associations, and international organisations to solve current economic and energy issues. [13–18].

Competition in international economic and energy markets and their state are directly linked to energy security, which is regulated directly by the state and is subject to possible influence from foreign countries, oil and gas corporations and supranational organisations. Consequently, it is advisable to strengthen institutional support in key areas of cooperation. State energy security takes into account the political situation and may adjust the course of certain government decisions; for example, certain government actions affect the OGC through economic and administrative methods. This aspect is also related to defence of state interests in different geographical regions of the world, protection of national assets located in other countries from change of political regimes, sanctions, or raiding of enterprises — in accordance with the norms of international law.

GR contributes to the improvement of economic and technological direction, including through timely changes in legislation, measures aimed at improving energy efficiency and reducing domestic consumption of hydrocarbons (in accordance with certain regulations and quality standards), expansion of external and internal economic interactions between the state and

enterprises in OGC. Developed MRB reserves, together with the established production and institutional infrastructure, a clear and stable legal and tax environment, ensure economically sustainable development of OGC and the national industry.

#### **ENVIRONMENTAL FACTORS**

Energy security of the state is connected with environmental issues, both in terms of harmful emissions into the atmosphere and their impact on climate change, and in terms of proven reserves and hydrocarbon production levels in general and for specific provinces, industrial development of promising areas, expansion of foreign economic activities through the creation of unrelated areas of hydrocarbon exports. State measures aimed at additional exploration, discovery of new fields, construction of an extensive network of oil and gas pipelines, and new processing plants that would meet the demand and improve the quality of hydrocarbon products are of great importance.

The environmental factor of pollution and climate change, mainly through excessive carbon dioxide emissions, will continue to play a key role in the economically sustainable development of the OGC. Despite the 1992 UN Climate Change Convention and its 1997 Kyoto Protocol,<sup>6</sup> the environment is under increasing pressure, partly because the main source of emissions, the USA, has not ratified it, and key developing nations, including China and India, have no legal obligations to abide by the Kyoto Protocol.

The environmental component is the main reason for the importance of reducing the

<sup>&</sup>lt;sup>6</sup> The United Nations Framework Convention on Climate Change. URL: https://www.un.org/ru/documents/decl\_conv/conventions/climate\_framework\_conv.shtml; The Kyoto Protocol to the United Nations Framework Convention on Climate Change. URL: https://www.un.org/ru/documents/decl\_conv/conventions/kyoto.shtml

level of global energy consumption, growth of industrial use of natural gas and multiple increase in the use of renewables, deeper processing of feedstock (raw material input) and, consequently, less air pollution as a result of setting higher quality standards. In the future, OGC will continue to be a key economic and energy sector, which implies further negative impact of the greenhouse effect on the environment, the need for environmental control in the areas where oil and gas enterprises operate [19–22].

## TOPICAL DIRECTIONS FOR IMPROVING STATE REGULATION OF THE OIL AND GAS SECTOR

Oil and gas projects take into account the geographical location of hydrocarbon-producing and consuming countries and their influence on global economic and energy processes, which is manifested, in particular, in the fierce competition for access to deposits and the shortest routes to deliver final products. OGC economic sustainability does not always coincide with pragmatic resolution of current issues (such as environmental direction or the stability of political and legal regimes in producing countries), the economic or forceful impact of which provides strategic competitive advantages, both for the long term and for use in pursuit of self-interest.

For example, significant areas of development include increasing exports, expanding oil and gas services, and implementing digital solutions that enable the refinement of logistics and other parameters during field development. Reduction of production and transportation costs allows for additional profit and, consequently, serves as a source of oil and gas budget revenues. Expansion of production activity is associated with construction of necessary transport infrastructure, including access to sea and river waters, and conclusion of long-term

foreign economic contracts. For states — consumers of hydrocarbons it is important to reduce risks associated with a single supplier.

Special attention is paid to the issues of safety on the supply routes, the identification of the most important aspects (means, technologies) of their resolution, including in terms of compliance of the current situation with the strategic governmental guidelines. This complex coordination of goals and tasks of OGC and the economy as a whole, allows to exclude essential components, e.g., the ecological factor, at certain stages. For example, in order to obtain long-term benefits, it is possible to reduce current profits, reduce consumption levels.

States and oil and gas companies are interested in access to locations in the world's most important geostrategic areas, which offer significant economic and political opportunities. Individual countries with no direct access to this or that region may be keen to control its transport component, which implies increased profitability of domestic production, prospects for national projects, diversification of hydrocarbon supply routes, and reduction of competitors' influence. Transit of oil and gas through territories offers certain countries prospects of monopoly dictation of transportation conditions, ensuring energy security, expansion of oil and gas infrastructure and construction of plants. The activities of major corporations and international institutions can also influence the foreign economic policy of states, for example in terms of the political and legal regimes of prospective oil and gas provinces.

Integrated field development implies state control over supplies to domestic and foreign markets. This particularly applies to the most significant projects with international participation, their investment, technological and infrastructural support, as well as environmental protection. The balance of

supply and demand for hydrocarbons is possible as a result of many different factors and diverse interests of economic agents, first and foremost the state and oil and gas companies, which makes it possible to identify key areas of OGC sustainable development. Joint development of technologies with foreign countries and foreign corporations provides for primary protection of national and energy interests.

### CONCLUSIONS AND RECOMMENDATIONS

GR implies strategic objectives and tactical tasks for economically sustainable development of OGC, which are reflected in the economic mechanism in theoretical and applied aspects, taking into account internal and external priorities of the state. Improvement of technologies, improvement of the environmental component, including through reduction of general risks, is necessary at all stages of production processes and requires joint actions of the state and enterprises to achieve the set targets, implementation of projects, increase in the depth of product processing and expansion of supply routes.

One of the trends in the global economic marketplace is for governments to routinely support their leading fuel and energy companies, resulting in a simultaneous monopolisation of the industry within oil and gas producing regions in the global OGC. Globalisation and internationalisation are also taking place, leading to the formation of new international institutions and the concentration of key decision-making in certain centres. Continuing growth in demand for oil and gas products is driving the emergence of new organisations, their entry into various segments of the energy market, including oil and gas services, and increasing competition for hydrocarbon

extraction, refining and shipping rights. As a result the positions of major corporations may be significantly adjusted, which is mainly predetermined by the dynamics of oil prices, export volumes on the key supply routes, development of related businesses and productions.

Energy-importing states seek to diversify supply directions, expand their own economic and industrial potential due to their presence on foreign markets, including access to MRB development in other countries, and take into account the interests of transit countries. In some cases, territorial claims, lack of officially approved borders between the states where oil and gas fields are located in disputed areas are the subject of contradictions.

Competition in the OGC is designed to strengthen national security of exporting countries, to improve economic stability of upstream enterprises and reliability of forecasting, to reduce risks with respect to factors affecting the volatility of oil prices and the structure of supply and demand for hydrocarbons. Coordination of actions of various countries and organizations contributes to a more stable situation on the global fuel and energy market, more stable exchange quotations, export and consumption of raw hydrocarbons, development of oil and gas technologies and solving urgent environmental issues. Improvement of energy efficiency implies reduction of overall costs, qualitative improvement of the logistics component and creation of unified OGC development schemes on an interstate and regional scale, including in terms of transit flows.

The economically sustainable development of the OGC necessitates an expansion of cooperative interactions with other sectors of the economy, industrial production segments and businesses, where disruptions should not have disruptive

consequences. This allows to eradicate the existing mistakes and miscalculations of the regulatory policy, to develop the most pragmatic directions of further state actions on the basis of forecasting the global and national fuel and energy security, compliance with energy security, energy efficiency and environmental requirements, integrated social and economic development of specific regions and oil and gas provinces, which are subject to the state, managed and regulated by it.

#### REFERENCES

- 1. Yergin D. The prize: The epic quest for oil, money and power. New York, NY: The Free Press; 2008. 928 p. (Russ. ed.: Yergin D. Dobycha: Vsemirnaya istoriya bor'by za neft', den'gi i vlast'. Moscow: Alpina Publisher; 2016. 956 p.).
- 2. Baikov N.M., Grinkevich R.N. Forecast for the development of fuel and energy complex sectors in the world until 2035. Moscow: IMEMO RAS; 2012. 60 p. (In Russ.).
- 3. Kononov Yu.D. Ways to increase the validity of long-term forecasts for the development of the fuel and energy complex. Novosibirsk: Nauka; 2015. 147 p. (In Russ.).
- 4. Mastepanov A. M. Forecasting the development of the world oil and gas complex as a reflection of global problems and trends in energy consumption. *Neftyanoe khozyaistvo* = *Oil Industry*. 2018;(5):6–11. (In Russ.). DOI: 10.24887/0028–2448–2018–5–6–11
- 5. Plakitkin Yu. A. The cyclicity of innovation and technological processes in the global energy sector, fractals of technological time and their use in the prediction the fuel and energy sector of the world and Russia. Moscow: ERI RAS; 2014. 292 p. (In Russ.).
- 6. Makarov A.A., Grigor'ev L.M., Mitrova T.A., eds. Forecast for the development of energy in the world and Russia 2016. Moscow: ERI RAN, Analytical Center under the Government of the Russian Federation; 2016. 200 p. URL: https://www.eriras.ru/files/forecast\_2016\_rus.pdf (In Russ.).
- 7. Makarov A.A. et al. Forecast for the development of energy of the world and Russia until 2040. Moscow: ERI RAN, Analytical Center under the Government of the Russian Federation; 2013. 110 p. URL: https://www.eriras.ru/files/prognoz-2040.pdf (In Russ.).
- 8. Eder L.V. Forecasting the production and use of hydrocarbon resources in Russia taking into account the development of world energy markets. Doct. econ. sci. diss. Novosibirsk: Novosibirsk State University; 2015. 319 p. (In Russ.).
- 9. New energy forecasts. Energeticheskii byulleten'. 2018;(66). URL: https://nangs.org/analytics/analiticheskij-tsentr-pri-pravitelstve-rf-novye-energeticheskie-prognozy-noyabr-2018-pdf (In Russ.).
- 10. Chugaev L. Dmitry Ivanovich Mendeleev: Life and work. Leningrad: Scientific Chemical-Technical Publ.; 1924. 57 p. (In Russ.).
- 11. Shafranik Yu.K., Kryukov V.A. Oil and gas sector of Russia: A difficult path to diversity. Moscow: Pero; 2016. 272 p. (In Russ.).
- 12. Fadeeva A. Belarus will receive more than 60 million dollars for dirty oil. RBC. Feb. 25, 2020. URL: https://www.rbc.ru/business/25/02/2020/5e5528cc9a79471f3bb0b205 (In Russ.).
- 13. Bogoyavlensciy V.I., Bogoyavlensciy I.V. Arctic oil and gas resources production strategy maintenance of Russian economic, environmental and energetic security. *Geopolitika i bezopasnost'*. 2017;(3):72–86. (In Russ.).
- 14. Lisin E.M. Methodology for ensuring energy security in the multilevel management of territorial general energy systems. Doct. econ. sci. diss. Moscow: Plekhanov Russian University of Economics; 2018. 431 p. (In Russ.).
- 15. Mastepanov A.M. Problems of energy security assurance under new geopolitical conditions. *Energeticheskaya politika* = *The Energy Policy*. 2017;(1):20–37. (In Russ.).

- 16. Rukinov M.V. Protection of national economic interests and ensuring the economic security of Russia in the context of economic, political and technological transformations. Doct. econ. sci. diss. St. Petersburg: St. Petersburg State University of Economics; 2020. 408 p. (In Russ.).
- 17. Telegina E.A., Khalova G.O. Energy security and integration in Central Asia. *Energeticheskaya politika = The Energy Policy*. 2017;(1):38–46. (In Russ.).
- 18. Trofimov E.A., Trofimov S.E. Energy security in the system of the market relations. *Izvestiya Rossiiskoi akademii nauk. Energetika*. 2018;(6):18–23. (In Russ.). DOI: 10.31857/S 000233100003516–1
- 19. Bushuev V. Energy of the future: Technological synergy. *Energeticheskaya politika = The Energy Policy*. 2022;(2):54–61. (In Russ.). DOI: 10.46920/2409–5516\_2022\_2168\_54
- 20. Lipina S.A., Zaikov K.S., Lipina A.V. Introduction of innovation technology as a factor in environmental modernization in Russian Arctic. *Economic and Social Changes: Facts, Trends, Forecast.* 2017;10(2):164–180. (In Russ.: *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz.* 2017;10(2):164–180. DOI: 10.15838/esc.2017.2.50.9).
- 21. Mastepanov A. Energy security European way.  $Energeticheskaya\ politika = The\ Energy\ Policy.\ 2023;(1):4–23.$  (In Russ.). DOI:  $10.46920/2409-5516_2023_1179_4$
- 22. Stennikov V. Sustainable energy development: Trends and challenges. *Energeticheskaya politika = The Energy Policy*. 2023;(2):32–39. (In Russ.). DOI: 10.46920/2409–5516\_2023\_2180\_32

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