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Methodological Tools for the Implementation of Oil and Gas Projects on the Arctic and Continental Shelf

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ABSTRACT

The presented article considers the methodological tools for the practical implementation of offshore hydrocarbon projects from the perspective of the system-functional approach. The research analyzes the provisions of the concept of integrated field development in the context of the policy of import substitution in the Russian oil and gas industry. A number of directions of methodological tools application have been identified and distinguished: environmental, technological, transport, infrastructure (including construction and improvement of new supply routes). The article shows how the sustainable development of all segments of the oil and gas complex, the institutional platform on which they are based, and the introduction of the latest technologies — all contribute to the integrated development of offshore hydrocarbon reserves.

Keywords: oil and gas complex; oil and gas project; state regulation; Arctic shelf; continental shelf; import advance; national security; energy security

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INTRODUCTION

The sanctions policy against Russia has resulted in the development of strategic and programme-targeted documents aimed at import substitution in the oil and gas industry and tightening the access of foreign companies to the development of Russian fields. Interaction between the state, oil and gas business and various institutions allows consolidation of regulatory measures, including the creation of advanced development territories, provision of special conditions for the implementation of Arctic projects, preferential regimes and benefits, development of interaction with domestic consumers, organisation of two-way feedback, elimination of contradictions between the actions of various departments and levels of government, which is reflected in the socio-economic indicators of the Arctic region and constituent entities of the Russian Federation. In terms of the conditions for the presence and functioning of foreign companies, restrictive measures are established to ensure national and energy security and to utilise the industrial potential of Russian enterprises.

PRACTICAL IMPLEMENTATION OF THE CONCEPT

The oil and gas complex (OGC) as an object of government regulation (GR) involves a comprehensive study of domestic and global energy demand, the use of accumulated economic potential, the subsequent implementation of strategic and programme-targeted documents aimed at the establishment of large production centres in the Arctic region, the improvement of subsoil use and the regulatory mechanism as a whole. The analysis of the economic potential of the Arctic regions makes it possible to identify key points and projects for breakthrough economically

sustainable development, to expand the interaction of OGC with related industries, to take direct and indirect regulatory measures aimed at the integrated implementation of projects [1–3].

This results in the selection of specialised companies and the development of proposals for the development of production centres that have a favourable impact on the social and economic indicators of the regions where energy companies operate. As a result, many companies specialising in the provision of specific works and services, equipment supply, etc. are involved in field development. The elaboration of mechanisms for the execution of regulatory actions, practical implementation of regulatory legal acts (RLAs) (i.e., the execution of the GR control function at various stages of oil and gas projects) determines the importance of creating federal and regional institutes for the professional development of employees within the framework of projects for the development of deposits on the Arctic and continental shelf. Expansion of sectoral interactions favours the activities of participants of economic relations, contributes to the improvement of socio-economic indicators, involves the use of special regulatory tools taking into account the specifics of the implementation of a particular project, in some cases adjusting the management structure of enterprises in the presence of bilateral ties.

The implementation of the industrial potential of enterprises is conditioned by the need to improve the efficiency of field development. This involves the formation of economic criteria for the efficiency of their development, selection, competitive procedures for choosing an operator company, which subsequently invites contractors, service, and other enterprises to participate in oil and gas projects, co-operates with them, develops an investment project for the development of reserves, proposals to improve efficiency, and the possibility of their practical application.

Management and technological experience of foreign companies is utilised, taking into account compliance with environmental requirements and national legislation. GR measures are aimed at promoting economically sustainable development of oil and gas companies; improving socio-economic indicators of project implementation; utilisation of industrial potential; development of technological direction; expansion of the range of works and services provided by Russian companies; modernisation of enterprises and equipment. Stability of the tax policy implies an increase in budget efficiency, improvement of financial and economic results of enterprises, inflow of additional capital investments, development of new directions of project development. Taking into account various positions of oil and gas entities allows the government to avoid certain risks, including those related to ensuring environmental standards.

Special emphasis is placed on the transportation of extracted hydrocarbons to processing points and then to end consumers (both enterprises and the private sector). In this way, upstream centres, production facilities and major distribution points are linked together. The development of oil and gas reserves involves the construction of pipeline branches and the introduction of new tanker fleet units. A separate issue is the delivery of equipment and fixed assets to the fields in compliance with environmental requirements. In other words, the creation of favourable investment conditions, as well as the development of infrastructure for various types of transport, contributes to the development of the Arctic and continental shelf reserves. This contributes to linking communications between individual regions; it promotes the development of trans-shipment points and storage systems in the

region, the development of the largest fields, and the expansion of innovative opportunities for production.

The construction of new transport branches increases the efficiency of deliveries and reduces their cost. The introduction of technological solutions makes it possible to accelerate transport times, for example, to ensure delivery routes via the North Pole to the USA and Canada. The development of the transport sector increases the competitiveness of Arctic hydrocarbons in the global energy market. It connects and establishes communication between the main points of the Arctic shelf and internal and external consumers. The Northern Sea Route (NSR) is becoming a connecting transport artery between Europe, Asia, and America; relatively small inland routes, which are its branches, are being developed and used to supply equipment. In this aspect, the Arctic region serves as a transit transport connection.

Field development determines the importance of timely supply of necessary fixed assets and production funds for the development of reserves, increasing the economic efficiency of hydrocarbon transport, establishing new routes and branches [4]. This provides the possibility of additional geological exploration and drilling works, i.e., promotes the integrated development of shelf water areas, suggests a significant increase in cargo flows, additional revenues to the budget, the solution of certain technological issues, including those related to ensuring the defence capability of the state. Reduction of transportation costs contributes to the competitiveness of Arctic coal and hydrocarbons on the world energy market by eliminating certain intermediaries from the sales chain. In fact, the potential of hydrocarbon storage and transport segments is developed and expanded, new markets, processing and chemical enterprises are created, and demand for hydrocarbons in the Arctic regions is secured.

At the present stage, the service segment is being improved, construction of the necessary infrastructure is underway, and major shipbuilding projects are underway, with capacity building in the main port cities, which occupy key positions in the development of Arctic oil and gas production centres. Particular attention is paid to cities and major settlements along the NSR, where production facilities that provide oil and gas products to the neighbouring regions are located.

The development of Arctic fields is being carried out systematically: the main ports are becoming geostrategic destinations, cargo turnover is increasing, including due to hydrocarbons produced in the region. As a consequence, the need to improve the storage system, terminals, etc. is growing. Development of the transport segment in the OGC is associated with the implementation of existing territorial and foreign economic opportunities, expansion of throughput capacities (including oversized vessels), improvement of socio-economic indicators of coastal areas. In turn, the development of ports and storage systems makes it possible to increase the efficiency of transport flows taking into account ice conditions, to commission new vessels, and to realise natural resource and industrial potential.

The state policy takes into account the target benchmarks for the comprehensive development of all segments of the Arctic region's oil and gas industry. It envisages expansion of sales channels, industry interaction and co-operation; large-scale geological exploration aimed at discovering new fields; flexibility in taking regulatory measures due to the internal and external environment; development of shipbuilding, air transport and related infrastructure [5].

The issues of ensuring environmental security affect social and technological aspects. There is a growing need to improve normative and legal acts; to legislate the rights to Arctic territories, transit in relation

to the NSR, shipping; to analyse legal practice and positions of the Arctic states; to take into account economic and political contradictions. The expansion of transport flows is impossible without the involvement of multiple economic actors, in most cases several states. Transportation of hydrocarbons is associated with the legal factor, peculiarities of the legislation of foreign countries, development of port infrastructure in different water areas, creation of new, more economically attractive supply directions, their financial support, implementation of technological solutions, monitoring of the results, etc.

Phased implementation of projects implies that new participants with the necessary resources, capable of improving organisational, financial, and economic activities, bringing new management solutions and technological innovations, can enter them. The establishment of production centres allows for additional benefits from transit traffic and cargo turnover, geographical location, infrastructure, energy security and synergy effect. This takes into account the provision of Arctic ports with production funds, developed social sphere, natural and climatic factors, various forecast scenarios, multifunctionality in relation to different types of vessels, promotion of oil and gas service development.

The ice situation is monitored in real time, aimed at field development and transit opportunities, coordination, and safety of transport routes through the use of modern technological solutions, pragmatic regulatory impact aimed at removing restrictions, application of incentive measures, development of a common position of the state and oil and gas companies on important industry issues, financial support for projects, expansion of the network of interactions.

Joint and collaborative development of offshore fields makes it possible to compensate for some of the risks and depletion of individual deposits in the continental part in order to achieve acceptable economic results. Individual supply routes and oil and gas service solutions are envisaged for each Arctic project. Within the framework of various segments of OGC, the legislation stipulates conditions for the admission of foreign companies, which bear responsibility, bring technologies, and perform certain organisational and management functions. In turn, Russian enterprises interested in active development of foreign offshore reserves also participate in foreign projects under production sharing agreements (PSAs).

The implementation of the proactive import substitution policy promotes the development of domestic industrial production [6, 7]. The state makes part of the investments in the development of the Arctic: new promising water areas are analysed, the possibilities of putting large deposits on the state balance are studied. Restriction of access of foreign companies, their financial and investment resources — serves as a factor in ensuring national and energy security. The largest contracts are concluded taking into account long-term economic and political co-operation in the energy and related areas and the introduction of the latest technological solutions. This allows Russian companies to effectively develop hydrocarbon reserves, implement oil and gas projects, and expand the socio-economic effect in the strategic perspective. Inter-enterprise cooperation facilitates the development of managerial and technical solutions, the creation of patents, and the involvement of relatively small companies from various sectors of the economy [8–10].

A significant factor in the economically sustainable development of OGCs is the legal and regulatory framework for ensuring national and energy security. Foreign enterprises are designed to stimulate field development, improve financial and economic indicators of project implementation, promote technological developments of Russian companies, increase

their capitalisation, participate in global oil, and gas cooperation, apply the accumulated scientific and technical experience, and expand their impact in new markets. The development of OGC-related industries is conditioned by scientific and technological progress (STP) and the need to introduce digital technologies. Legislative acceleration of the processes of field development and project implementation makes it possible to increase the efficiency of licence granting and subsoil use in general, orienting enterprises towards proactive import substitution in the oil and gas industry.

Due to the fact that Arctic projects are characterised by particularly difficult natural, climatic and geological conditions of field development, there is a need to ensure safety at production facilities, prevent man-made and human-caused emergencies, expand the fleet of specialised vessels, establish differences between Russian legislation and international law when operating in the Arctic.[1] At the same time, the enterprises fulfil in full their obligations in terms of subsoil use, technological and environmental safety; they take into account the potential increase in economic costs. This implies flexibility in making management decisions, the possibility of using fixed assets in the implementation of other oil and gas projects, simplification of licensing, reduction in the time of state control procedures.

The development of Arctic fields should not be postponed indefinitely. Improvement of the customs and tariff form of OGC GR, legislative adjustment of certain units of the conceptual and categorical apparatus are due to the fact that some measures and restrictions preventing the development of reserves are being excluded from the regulatory framework. For example, administrative barriers between the Eurasian Economic Union (EAEU) states continue to be removed, transparency of trade operations and foreign economic activities with foreign countries is increased through interdepartmental cooperation, and delivery times for products are accelerated. As part of the implementation of major projects, special regulatory and legal acts and subordinate acts are being drafted regarding special procedures, privileges, preferential regimes, taxes, customs duties, and payments to budgets of various levels, payment terms within the framework of concluded contracts, measures of responsibility for non-fulfilment of such contracts, etc. In other words, the governmental bodies are adjusting the existing regulatory and legal framework with regard to budget and tax policy, accelerating the processes of regulatory decision-making, analysing the positions of enterprises and international best practices, coordinating the work of various government agencies.

Separate legislative measures are being taken to ensure technological and environmental safety within the framework of both national regulatory and legal acts and international law; procedures in foreign economic activities are being improved to remove existing barriers and bring national legislation and EAEU legal norms into compliance. This takes into account the different positions of oil and gas participants in the implementation of offshore projects, in particular with regard to the distribution of the fiscal burden on offshore oil and gas projects.[2]

One of the directions for improving the methodological tools is the specification of the

[1] United Nations Convention on the Law of the Sea (UNCLOS). URL: https://base.garant.ru/2540700; Convention on the Continental Shelf. URL: https://base.garant.ru/72164534; Convention on the Territorial Sea and Contiguous Zone. URL: https://base.garant.ru/2540247; Convention on the High Seas. URL: https://base.garant.ru/70255080

[2] Federal Law No. 268-FL dated 30.09.2013: (as amended on 28.12.2016) "On Amending Parts One and Two of the Tax Code of the Russian Federation and Certain Legislative Acts of the Russian Federation in Connection with the Implementation of Tax and Customs Tariff Incentives for Hydrocarbon Extraction Activities on the Continental Shelf of the Russian Federation". URL: https://base.garant.ru/70461612

differential taxation scale depending on the conditions of the project being implemented, which is designed to stimulate the development of fields with a significant delay in the date of commercial exploitation of some of them. This is especially relevant given the complex natural, climatic, geological and ice conditions. Sustainable development of the enterprises is conditioned, among other things, by the transparency and predictability of the state policy in the field of subsoil use, the adoption of legislative measures aimed at accelerating the development of hydrocarbon reserves, and the possibility of communicating our own position to government authorities.

The forms and tools of OGC GR applied within a particular field are subject to adjustment in connection with changes in the volume of recoverable hydrocarbons or production start dates. They are on the balance of the state and oil and gas companies, which are not interested in delaying the development of reserves [6, 7]. The level of tax burden of field development is determined by various factors: expected production volume, incurred costs, financial and economic results, etc. Licensing conditions, tax and customs measures are also subject to adjustment for a number of projects. This is due to the clarification of field boundaries and the volume of proved reserves, and allows enterprises to improve the efficiency of development.

The development of the unique explored reserves of the mineral resource base (MRB) implies ensuring a favourable investment climate, creating the necessary infrastructure, which is associated with the socio-economic development of the subarctic regions, providing employment for the local population while respecting environmental requirements. Many industries are linked to oil and gas production centres, which allows enterprises to reduce costs and strengthen economic performance. Arctic shelf development requires calibrated regulatory measures for each project, which together aim to achieve uniform performance without internal opposition between different economic directions.

The mechanism of OGC GR implies functional distribution of responsibilities, subsequent control function, responsibility measures for enterprises. The related industries and productions can function independently of each other. Accordingly, the task of the GR is to combine them to achieve the designated goals, thus having a directed impact on all aspects of field development, development of new orientations. The development of related areas contributes to the establishment of oil and gas production centres, provides socio-economic benefits to the Arctic territories, and allows for the expansion of export supplies when destructive factors are eliminated, as well as when organisations that have not adapted to the changing economic conditions leave the market.

The development of hydrocarbon reserves on the Arctic and continental shelf should not disturb the unique ecosystem of the region, but, on the contrary, should contribute to achieving the best results within the framework of the environmental direction. Certain organisational and regulatory decisions are made taking into account the experience of developing continental reserves. Thus, economic performance is not the only performance criterion: the methodological toolkit used is oriented towards the environmental component and involves responding to emerging situations, eliminating possible risks, applying the safest technologies, and resulting infrastructure solutions. Analysing the impact on the region's ecosystem allows us to identify negative factors, effective forms and tools of oil and gas exploration and government regulation, and conduct an environmental scenario analysis of field development. Comprehensive consideration of various factors and their interrelationships can lead to a sustainable development trajectory

in the development of hydrocarbon reserves of the Arctic and continental shelf, which is linked to macro-economic goals and objectives in the context of the implementation of the state energy policy.

The oil and gas industry follows common environmental guidelines and matches them with national interests in environmental protection and conservation, while identifying the overall disruptive impact of all factors. Within the enterprises, there is two-way communication between the different levels in the organisational structure, which allows for more efficient operations and promotes the development of production centres in the Arctic. The regulatory impact extends to OGC-related industries, as it is the total socio-economic effect that is important. Technological changes should not lead to irreparable ecological damage to the Arctic ecosystem. The resulting indicators of all impact factors, in our opinion, are most fully disclosed from the standpoint of the system-functional approach. The absence of contradictions between regulatory measures, which is characteristic of all oil and gas companies, is aimed at the step-by-step implementation of long-term goals and is adjusted to different positions and approaches to resource development.

The state pays attention to the activities of global energy and financial corporations, foreign governments, and international institutions, as well as the extent of their impact on domestic economic processes. Thus, the factors that can influence the implementation of oil and gas projects, including through the use of digital technologies, are studied. In particular, this applies to the structure of domestic and external consumption of hydrocarbons in general and by types of products, supply directions, social, demographic and ethnic factors in the regional context. In fact, the supply chain is being improved and deep processing of high value-added products is being carried out.

The regulatory measures taken are functioning on a permanent basis, without temporary gaps, to avoid additional risks in the implementation of offshore projects, and to pursue a pragmatic state policy in the context of intertwined economic, political, environmental, and other factors. This implies possible adjustment of the mechanism of oil and gas exploration and government regulation and stimulation of internal sources of development, for which regulatory measures act as a natural organic supplement.

Improving the efficiency of subsoil use takes into account trends in the development of alternative energy sources, various environmental criteria and their assessment: the extraction of hydrocarbons does not undermine possible production volumes. The integrated development of oil and gas projects on the Arctic and continental shelf is the most pragmatic, given the lack of opposition of economic entities to each other. An important aspect is the fair distribution of licence areas between energy companies, aimed at maximising the economic effect in the absence of internal and external destructive factors. Rational nature management implies the achievement of acceptable financial and economic indicators, taking into account the fulfilment of environmental obligations. The emphasis is placed on programme-targeted planning methods and long-term forecasting.

CONCLUSIONS AND RECOMMENDATIONS

The development of reserves implies a comprehensive study of various impact factors; it is important to coordinate actions between oil and gas companies and state authorities that exercise environmental control over various qualitative and quantitative parameters. Subsoil use is intended to contribute to the socio-economic development of the Arctic regions and the preservation of the unique

ecosystem. In turn, enterprises try to maximise the return on available resources, giving a special role to the prevention of various risks (which is more expedient than the elimination of environmental, technological and other consequences), systematic consideration of emerging situations, and the choice of long-term priorities.

The theoretical and methodological tools allow to improve the institutional platform, expand promising areas of development, and adjust the existing mechanism of hydrocarbon exploration and government regulation in relation to the Arctic and continental shelf. Improving the efficiency of subsoil use is impossible without the development of related industries and productions, the formation of oil and gas production centres, improving the quality of forecasting, expanding the source data on the basis of which additional investments are attracted, regulatory decisions and targets are adjusted. Particular attention is paid to growth points that can have a key impact on the planned development of the entire Arctic region and the preservation of the environment: in most projects, the technological component prevails over the potential economic effect. Modern technologies have a direct impact on the completeness of geological exploration of territories, hydrocarbon recovery and processing processes.

Regulatory measures are developed by the federal centre and constituent entities of the federation due to the organic interaction between government authorities and oil and gas companies. Investments require comprehensive data on the current situation and development prospects, as well as management and regulatory decisions. OGC GR is aimed at strengthening internal and external interactions and improving the environmental situation. The extraction of hydrocarbons is a component of the mechanism for developing the Arctic region's deposits and is interrelated with ensuring environmental safety, preserving the environment, suppressing external negative impact on the Russian economy, and a comprehensive analysis of various groups of factors. In this regard, it is important to pragmatically distribute functional responsibilities between government authorities and responsible executors, to make changes in the regulatory and legal framework, including state strategies and programme-targeted documents.

Digital technologies allow using the economic and resource potential of the state more efficiently. According to various parameters, the most suitable fields are identified from the point of view of their commercial exploitation [11], relatively easier conditions of extraction and transport, and the formation of optimal logistical routes. One of the main factors in the development of Arctic fields is remoteness from the coastline, as well as geological conditions of extraction. As a result, the development of Arctic and continental shelf fields has a significant impact on the national economy, the structure of internal processes; it ensures the increase in the sustainability of interrelationships in the context of increased competition for the most promising licence areas and disputes over the ownership of water areas at the international level.

The multiplicity of impact factors necessitates the concentration of production facilities, distribution of responsibilities, goals, and objectives among economic agents. Particular attention is paid to the justification of licence area boundaries due to the possible transition to a new taxation and payment system. This will make it possible to improve certain subsoil use projects, eliminate contradictions between oil and gas companies for the right to obtain licences and to put subsoil areas on the balance sheet of the government, and will promote the development of geological exploration and production technologies.

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