Arctic Offshore Fields Development: New Challenges & Opportunities at the Current Post-Pandemic Situation

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Abstract. The situation associated with the spread of the coronavirus COVID-19 in the world has had a significant impact on all sectors of the global economy. The development of the Arctic shelf, as the most capital-intensive direction of the oil and gas complex, was also affected by macroeconomic circumstances that objectively arose during the post-pandemic. At the same time, hydrocarbon production on the shelf of the Arctic implies intensive development of infrastructure, transport, loading of related industries, which allow generating significant multiplicative and complex-forming effects. The development of offshore projects in the Arctic can become a driver, a locomotive of economic development not only in coastal regions, but also in the state as a whole.

1. The current status of the implementation of existing and prospective offshore projects in the Arctic under current macroeconomic conditions

The oil and gas complex, like all other sectors of the economy, is subject to the influence of external macroeconomic factors. It is important to note that the development of hydrocarbon resources on the Arctic shelf is objectively the most capital-intensive area of the Russian oil and gas industry [1].

Of course, the economy of Arctic projects, involving significant investments, is sensitive to the price of oil.

However, hydrocarbon production on the Arctic shelf is, for the most part, a long-term prospect. As for making decisions today on investments in geological exploration on the Arctic shelf, it is important to highlight that the time horizon for the practical launch of these projects is outside 2030-2040. Taking into account the cyclical development of the global economy, the recession and upsurge in energy consumption in the world, there is reason to believe that the cost of a barrel of oil will return to a fair level by this time, which will help to profitability of offshore projects in the Arctic.

Current fluctuations will not significantly affect the plans of energy companies for the offshore projects development in the medium and long term. Russia is a pioneer in oil production on the Arctic shelf and there is every reason to maintain this leadership in the future.

Arctic is very heterogeneous: both in terms of ice conditions, and in terms of logistic accessibility, and in the technological capabilities of developing individual fields. Nevertheless, studies show that some of the fields in the Western Arctic (primarily located in the Barents Sea) are more than competitive, cost-effective and can be put into development in the coming years [2].
Today, work on the shelf, especially the Arctic, has become the subject of a fairly large number of speculations. Along with this, the practice of Russian energy companies convincingly proves that working in the Arctic can be not only safe, but also cost-effective. The interest shown by foreign colleagues in the implementation of current and future fuel and energy projects in the Arctic is a confirmation of this.

It is important to emphasize that if today the operating companies will not invest in geological exploration, the cost of hydrocarbons will increase significantly in the medium term, but for another reason, due to the exhaustibility of the fields. This must be remembered. In this case, it will not be possible to quickly fill the demand for production, so the continuation of exploration in the Arctic is fully justified.

In addition, if we look today at the offers of the oil and gas service market, we will be able to note a significant decrease in the cost of services for geological exploration - the decrease also affected the rates for drilling rigs, support vessels, and related services. In this sense, the current pricing environment is conducive to offshore exploration [3], [4].

Finally, it is important to add that, along with the fall in oil prices, there was a weakening of the ruble, its devaluation. Paradoxical as it may sound, this is a positive fact for Russian oil exporters. Oil is exported and sold for dollars, which, given the current dollar exchange rate, leads to a significant increase in ruble revenues to the Russian Federation, creating opportunities for investment development.

2. External sanctions and import substitution
The obvious fact is that sanctions did not have a critical impact on ongoing projects, that is, they did not stop them. Perhaps the sanctions made the current projects a little less convenient - there was a need to reorient suppliers from West to East, and, most importantly, the sanctions created additional opportunities for the development of the Russian supplier market for the oil and gas industry.

Many experts consider sanctions only from a negative point of view. Along with this, without challenging the negative impact of these sanctions, I see obvious pluses in the current situation - today the Russian oil and gas service has a unique opportunity to develop and enter the high-tech market of oil and gas equipment and services.

For Russian companies, the restrictions imposed on the supply of Western equipment and technologies are becoming new points of growth for professional competencies and long-term development.

Of course, a lot of work needs to be done to meet international requirements in the field of HSE, quality, terms of work, but international experience shows that this is possible.

Speaking about technologies, of course, we cannot ignore the import substitution and the development of a national service market for suppliers. Here, Russian energy companies, together with Russian industry, also carry out systematic work to create Russian models of equipment and machinery for seismic exploration. Several projects have already been implemented.

So, for example, today in Russia, the “CRAB” marine seismic exploration complex with the use of bottom stations has been fully prepared for use, and today we can confidently note the absence of dependence on foreign equipment during seismic surveys with bottom stations.

The manufactured complex presented last year at the largest international exhibition EAGE-2019 in London on June 3-6 and was highly appreciated.

3. Development of the Arctic shelf and prospects for improving the socio-economic situation in coastal regions
Today in Russia there are several regions that have every right to be considered the gateway to the Arctic. This is, first of all, Murmansk, Arkhangelsk regions and Nenets Autonomous Okrug.

The proximity to the explored hydrocarbon deposits, high personnel, intellectual potential - all these are obvious competitive advantages of these geographical locations (Fig.1, 2).
Figure 1. Murmansk port is a promising site for transshipment of hydrocarbon products [5]

Oil and gas industry is able to provide load for hundreds of enterprises in related industries and currently has exceptional economic and social significance, predetermining employment, the efficiency of economic relations, strengthening interregional relations, and increasing the tax base.

Figure 2. Arkhangelsk - a promising transport hub for transshipment of cargo in the development of the Arctic [4]

Increasing production in related industries will increase demand for the products of these industries through chains of technological ties and thereby form additional resources for them.

Industry creates the bulk of the gross domestic product, and it is industry that determines the technical level of other sectors of the national economy and the social sphere, and, consequently, the positive dynamics of industry determines the entire state of social development of the region.

Some Russian suppliers are already successfully participating in tenders held by operators.
At the initial stage of oil and gas projects development, small and medium-sized enterprises in the region are able to carry out drilling and blasting operations, crushing, moving rocks, sand washing, construction of access roads and internal roads, construction of moorings, all electrical work for temporary power supply for the construction period, installation of networks and communications for temporary and permanent buildings and structures. [6], [7]

Ship repair enterprises of the region are capable of assembling metal structures, building berths, and repairing ships engaged in field development works.

Much of the necessary for projects development can be represented by Russian, including regional companies: from gas turbines, pipes, steel to nails. The capacities of small and medium-sized regional companies may be involved in surveys, drilling, and the provision of transportation services, including shipping companies. Very promising is the use of an icebreaker fleet for the needs of the projects.

Often the territories and production capacities of small and medium-sized enterprises are promising for locating material and technical supply bases for drilling operations, field exploitation, transportation of oil, gas and gas condensate, installation and repair of platforms and equipment, maintenance of the fleet and social security using existing production facilities and labor resources.

High-tech projects will also be available to Russian companies in the near future. Participation in import substitution programs, which are now actively conducted at all levels, is also a great opportunity for Russian enterprises to declare themselves.

4. Ecological risks of the Arctic shelf development

The ecosystem of the Arctic is highly sensitive to anthropogenic impact and is recovering extremely slowly after unreasonable interference. Even a slight leak of produced hydrocarbons on the shelf can lead to irreparable environmental damage. And world experience in hydrocarbon production eloquently testifies to this.

For this reason, there can be no random experiments in the Arctic. The development of the Arctic requires a carefully calibrated approach.

Arctic projects should be implemented by operators with experience in such operations, investment opportunities and able to minimize environmental risks.

During the implementing oil and gas projects, the unprecedented measures are needed in the field of industrial and environmental safety.

At the same time, as the experience of Russian energy companies shows, it is possible to work in the Arctic not only efficiently, but also safely [8], [9], [10].

5. Conclusions

In the current post-pandemic situation, the development of offshore projections in the Arctic may become a driver of development not only of the Russian oil and gas complex, but also of entire coastal territories.

The development of offshore projects in the Arctic has powerful multiplicative and complex-forming effects that can significantly improve the economic situation in the country (Fig. 3).
Figure 3. Direct and indirect effects of development of Arctic offshore oil and gas fields

One workplace in the Arctic creates 14 workplaces in related regions, largely predetermining employment in many regions.

Up to 80% of the work in the implementation of offshore oil and gas projects is carried out by suppliers - industrial enterprises, which suggests that oil and gas projects on the shelf can become drivers of economic development of territories in the post-pandemic.

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