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**DIGITAL DEVELOPMENT OF THE ARCTIC ZONE AND**  
**ENSURING NATIONAL SECURITY**

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**Abstract**

Aspects of Ensuring Russia's economic security in connection with the development of processes of increasing the presence of the United States and its Western partners in the Arctic are considered. The trend towards new centers of economic power, such as China and its Arctic strategies, has been analyzed. The need to develop domestic innovative technologies based on digitalization in the extractive industries for their implementation in the Russian segment of the Arctic is shown. It is emphasized that such technologies should not create additional risks of man-made disasters in such a fragile natural ecosystem as the Arctic. Aspects of Ensuring Russia's economic security in connection with the development of processes of increasing the presence of the United States and its Western partners in the Arctic are considered. The trend towards new centers of economic power, such as China and its Arctic strategies, has been analyzed. The need to develop domestic innovative technologies based on digitalization in the extractive industries for their implementation in the Russian segment of the Arctic is shown. It is emphasized that such technologies should not create additional risks of man-made disasters in such a fragile natural ecosystem as the Arctic.

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## 1. Introduction

The modern global economy is characterized by a shift in strategic priorities caused by an increase in national interests over the world and a tightening of economic security.

In such a new environment, transnational corporations, which dominated the market for more than a quarter of a century, are forced to modernize the tools of their influence on the economy and to some extent accept the loss of position.

As a result of the qualitative systemic transformations of the late XX and early XXI century, the Arctic has developed a transnational environment of world politics, and the management of the Arctic transnational environment is on the agenda (Kharlampyeva, 2007). World politics has become increasingly aware of the current problems of the Arctic and its energy importance. Along with national States, all stakeholders representing transnational companies, non-governmental organizations and social movements have been involved in the dialogue on the "strategic reserve". The transnational actors listed constitute the overall political picture of the Arctic region, transforming traditional inter-State relations and shaping the transnational environment of the Arctic region and their own Arctic policies (Kharlampyeva & Lagutina, 2011).

In modern conditions, the role of Arctic regions in the strategic aspect of Russia's national security and the effective integration of its national economy with the world economy is only increasing. In turn, increased attention to the Arctic by a number of states can be seen as a challenge to Russia's national security in the long term.

## 2. Literature review and research methods

At the meeting of the Security Council "On the Implementation of the State Policy of the Russian Federation in the Arctic in the Interests of National Security" on April 23, 2014, President Vladimir Putin noted that the Arctic "focuses almost all aspects of national security: military-political, economic, technological, environmental and resource" Vladimir Putin held an expanded meeting of the Security Council ("On the implementation of the state policy of the Russian Federation in the Arctic in the interests of national security", 2020).

As noted in the scientific and analytical report of the Institute of Economic Problems named after G.P. Luzina KNC RAS ("Challenges and threats to national security in the Russian Arctic. Scientific and analytical report", 2017), there is an increase in confrontation between Russia and Western countries.

In recent years, the United States and the leading countries of the North Atlantic Bloc (NATO) have intensified their efforts to strengthen their political, economic, and military presence in the Arctic. There has been a significant increase in interest in the natural resources of the area on the part of the People's Republic of China. First of all, it manifests itself in the increase of power and size of the fleet of ice breakers, which will allow the Black Sea to implement in practice the postulate of combined presence - a combination of economic development of the territory with the possibility of using naval force.

A serious threat to Russia's economic security is the sectoral sanctions policies of the United States, Canada, and the EU. This sanctions policy concerns a large part of the leading Russian resource corporations. Sectoral sanctions include a ban on the export to Russia of technologies, equipment and

innovative equipment, as well as on substantial restrictions on the provision of loans at the international level.

It is necessary to take into account in such a situation that dependence of the oil and gas industry of Russia on foreign technologies is at the level of 75-80%. The response to such a policy of sanctions is a policy of active import substitution and intensification of research and development. However, the period of overcoming the consequences of the sanctions policy of Western countries will be very long, taking into account the existence of significant restrictions in financial resources (Celine, 2015).

The demilitarization of the continental shelf limits of coastal Arctic countries in the Arctic Ocean (figure 1) poses serious national security challenges. In August 2016, the Russian Federation filed an application with the United Nations Commission regarding the division of the shelf. However, consideration of this application began in late 2016. The contents of this application include the results of complex investigations in the geographical and geological fields. If this application is satisfied, Russia can obtain an additional 1.2 million km<sup>2</sup> of Arctic shelf space (Kozmenko & Schegolkova, 2014).



**Figure 1.** Claims by the Arctic States for shelf delimitation in the Arctic (Source: <https://cco.ndu.edu/Media/Images/igphoto/2002060148/>)

In addition to the above-mentioned problems, trends in climate change in the Arctic region should be taken into account. The development of warming due to the greenhouse effect will affect the improvement of conditions for the wiring of ships along the entire route of the Northern Sea Route.

On the other hand, these processes intensify the melting of "permafrost" with possible catastrophic consequences for all infrastructure, including industrial, transport, social and other facilities.

Among a number of researchers, the view prevails that, from the point of view of internal processes in the economy, the separation of the Arctic zone from the northern territories is conditional and often unjustified (Selina et al., 2018). At the same time, the criteria for such a division have not yet been officially established.

If we approach this problem from the point of view of administrative territorial division, most of the Arctic territories are not separate, but act as an integral part of the northern constituent entities of the Russian Federation.

Another important issue is the area of regulation. In Arctic regions, so-called "northern" laws are applied. Therefore, if necessary, Arctic regions are considered with the isolation of the Arctic subsystem (Vasiliev, 2013).

In connection with the foregoing, it can be stated that in determining the strategic challenges and threats to economic security, as well as in developing policies for the economic development of the Arctic zone for the long term, Russia should be based on two corner principles (Celine & Zuckerman, 2008):

- globality - the Russian Arctic is an integral part of the global Arctic. Therefore, the processes developing in it should be investigated and analyzed with a focus on international trends and regulations, take into account the alignment of forces of influence in the region with the realization of all opportunities for beneficial cooperation with other states;

- sovereignty - the Russian Arctic is an integral part of the national socio-economic system. Therefore, regulatory measures in this area should have a strict focus on protecting the national economic and territorial interests of our country. This is especially important if we take into account the recent general increase in international tension.

In the National Security Strategy (Decree of the President of the Russian Federation of December 31, 2015 No. 683 "On the National Security Strategy of the Russian Federation", 2015), the main strategic risks and threats to national security in the economic sphere are:

- preservation of the export-raw model of development of the national economy;
- decreased competitiveness and high dependence of its most important areas on the external economic situation;
- loss of control over national resources;
- deterioration of the raw material base of industry, energy;
- lack of uniformity in the development of regions and accelerated growth of labor shortages;
- weak security of the national financial system;
- the existence of conditions for the development of corruption and the criminalization of economic and financial relations;
- illegal migration.

Obviously, maintaining the export-import orientation of the national economy is a certain threat.

All subjects of Russia, with the exception of the Nenets and Yamalo-Nenets Autonomous Okrugs, fell into the group with a low level of economic development. There is a high linear correlation between the diversity of the sectoral structure of gross value added calculated using the Shannon index and GRP per capita of the Arctic subjects of Russia (-0.828).

The less diversified the economy of the Arctic territory and the greater the share of mineral extraction in it (from 3.4% in the Arkhangelsk region to 67.5% in the Nenets Autonomous Okrug), the more product it produces per inhabitant. In those Arctic regions of Russia where mining is less than 15% of the value added, the per capita GRP is close to the world average.

At the same time, the Nenets Autonomous Okrug demonstrates the highest GRP in the World Arctic exceeding Karelia by 15.6 times. The high value of the indicator of industry diversity in the subjects of the Russian Arctic indicates the weak development of all their industries. There is no such gap in any other Arctic country. In Canada, the difference between the leader (Northwest Territories) and the most lagging

region is 2.2 times. In Norway, GRP differs slightly between regions (by less than a quarter). This is partly due to the fact that production on the continental shelf, according to statistics from Norway, does not apply to any populated region. Therefore, in the calculation methodology, its gross product was divided between all territories in proportion to their population.

Summarizing all of the above, we can draw the following conclusion. Russia leads in terms of population and GRP, but is inferior to Canada in terms of area in the Arctic zone. The United States ranks second in terms of population and GRP. The least economically developed Arctic territories in Canada and Denmark. The Scandinavian countries and Iceland, despite the small area, are comparable with the leaders in terms of contributions to the population and GRP.

“The development strategy of the Arctic zone of the Russian Federation for the period until 2020” (Decree of the President of the Russian Federation of 08.08.2013. “On the Development Strategy of the Arctic Zone of the Russian Federation and ensuring economic security for the period until 2020”, 2013) involves the implementation of a number of fundamental investment projects. The high costs of economic and economic activities in the Arctic determine the feasibility of deploying large-scale projects here that can most fully realize the effects of savings on the volume of operations. Among them, a number of projects are singled out that combine the Arctic with the developed regions and territories of the country, and another, whose projects are fully linked to the Arctic zone.

The first group includes the creation of new transport corridors. The transit function of the NSR will be strengthened gradually. First, transportation volumes in the western sector from the White, Barents and Pechora Seas will increase several times due to the implementation of the Arctic shelf development project. Then, with decreasing institutional risks and the formation of an effective satellite tracking system that meets all the norms of international maritime law on the safety of navigation, transit transportation of goods from Europe to Asia will be implemented.

The second group of projects for the development of the Arctic zone includes the development of the Timan-Pechora oil and gas province, as well as rich hydrocarbon deposits on the shelf of the Barents and Pechora Seas. In solving the tasks set, it is necessary to satisfy new requirements to ensure the safety of the population and the region from possible emergencies of a man-made nature.

In the process of developing the Arctic zone on its territory, it is planned to place facilities that could potentially serve as the culprits of technological emergencies. Such facilities include oil pipelines, gas pipelines, hydrocarbon production, processing and storage facilities, nuclear power plants, chemically hazardous facilities, fire hazardous facilities and communications.

Significant damage to the population and economy of the Arctic territories can be caused by unpredictable and dangerous hydrometeorological and natural processes and phenomena of destructive power. Such phenomena include heavy winds, severe frosts, spring-summer floods with ice jams on deep rivers. These phenomena manifest themselves against the background of global planetary warming, which in the polar regions is more destructive than the average level on the planet.

As part of the Strategy for Economic Development of the North, it is included in the general strategy of national development of the Russian Federation. This strategy takes into account specific factors inherent in the northern and Arctic regions - the heterogeneity of their space and the uneven dynamics of development. The strategic document on the basis of which the planning of ensuring economic security is

carried out, the identification of challenges, threats, goals and current tasks in this area is the Economic Security Strategy of the Russian Federation for the period up to 2030 (Decree of the President of the Russian Federation dated May 13, 2017 No. 208 “On the Economic Security Strategy of the Russian Federation for the period until 2030”, 2017).

Senchagov (2007) proposed the following definition: “Economic security is a state of the economy and institutions of power in which the protection of national interests, sufficient defense potential and socially oriented development of the country are ensured” (pp. 24-28). The interests of the state in the field of economics include, in his opinion, long-term and sustainable economic growth, increasing the competitiveness of the economic complex, and increasing the welfare of citizens.

Abalkin (1994) considered it necessary to consider economic security as a set of conditions and factors ensuring the independence of the national economy, its stability and sustainability, and the ability to constantly update and improve.

To analyze the current situation, a system of quantitative and qualitative criteria of economic security is used, which also serve as a basis for assessing damages and threats of their occurrence. Each criterion is evaluated by individual indicators of economic security. The economic security strategies of the Russian Federation for the period until 2030 formulated a comprehensive system of 40 indicators designed to assess the level of economic security. At the same time, the limiting (threshold) levels for the indicated range of indicators are not marked.

Institute of Economic Problems G.P. Luzin KSC RAS developed a system of indicators of economic security and their threshold values for the Arctic region - the Murmansk region, and assessed the level of economic security (Ulchenko, 2014).

When forming a system for ensuring economic security, it is necessary to proceed from the following principles:

1. Complexity - protecting the national economy from all possible internal and external threats. At the same time, not only the protection of the country's economy should be ensured, but also the conditions for its sustainable growth should be created.

2. Continuity - you cannot protect your interests in a certain period of time, the protection process must be continuous, protection models (measures, economic policy) can change.

3. Timeliness - prevention of potential and neutralization of existing threats to economic security. The effectiveness of the system of ensuring economic security at the national level, in many respects, depends on preventive measures.

4. Justification (appropriateness) - in view of limited resources, the cost of ensuring economic security should be scientifically justified (it is necessary to compare the amount of possible damage and the cost of ensuring security).

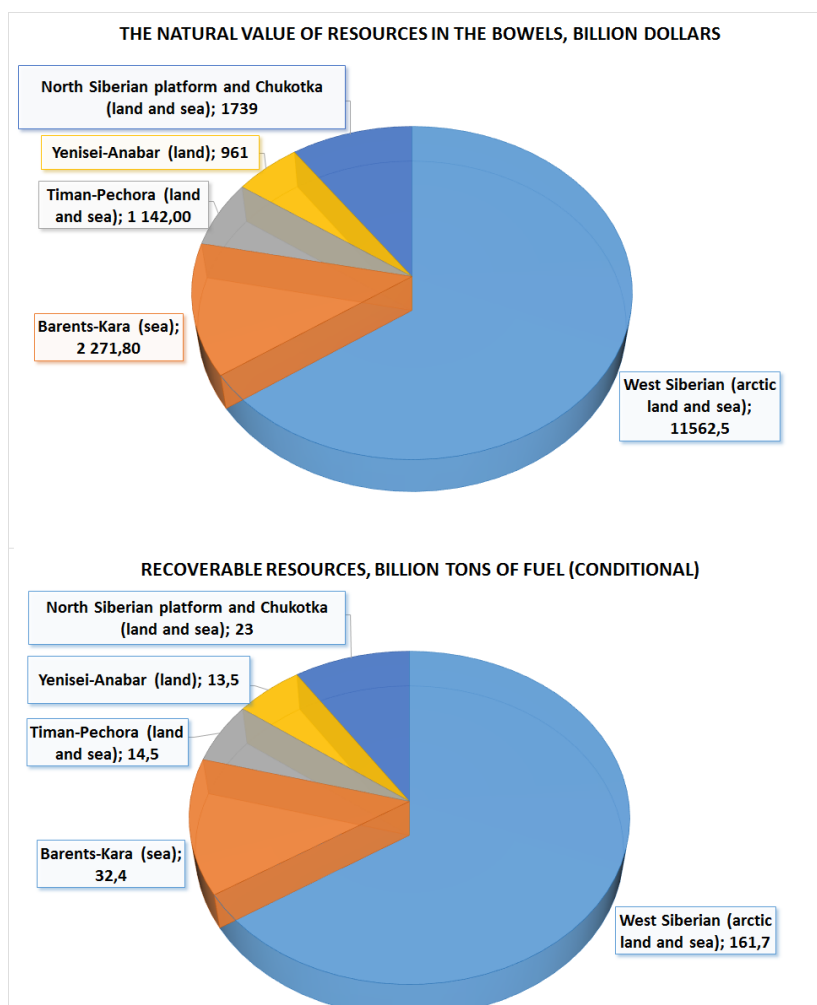
5. Elasticity - the ability and ability of authorities to quickly change measures aimed at eliminating and preventing threats to economic security, depending on the development of events and the nature of the danger.

6. Equal protection - all areas of economic security should have the same level of protection. Otherwise, it is impossible to assert a high level of protection of national economic security.

7. Improvements - as a whole, the system of economic security should always most quickly adapt to new conditions and effectively respond to changes.

Natural resources of the Russian Arctic - natural gas, are a strategic factor in ensuring regional and national economic security. From the standpoint of national economic security, as well as for the development of the economy of individual northern regions, oil and gas reserves are dominant. 43% of its continental land and 70% of the continental shelf are recognized as promising for the availability of oil and gas reserves.

The reserves of oil, natural gas and condensate that can be extracted from the bowels of the Russian Arctic zone in terms of standard fuel units are estimated at 245 billion tons, including reserves in the depths of the seabed at 94 billion tons. The volume of these fuel and energy resources stored while in the bowels, it is estimated at 18 trillion. dollars (Figure 2). The volume of explored resources at this time is 26% of the total resource component. The explored reserves are classified as follows: in the continental zone, approximately 40% of the reserves are explored, and in the water areas this value does not exceed 5%. In terms of fluid composition, free gas reserves prevail at the level of 77% in the bowels of the Arctic zones of Russia.



**Figure 2.** Natural value and volume of recoverable oil and gas resources in the bowels of the Arctic zone of Russia

### 3. Results and discussion

An analysis of existing forecasts shows that by 2030 the own production of natural gas in the European Union will decrease by at least 3 times to 60 billion m<sup>3</sup> (Norway, the Netherlands). However, import through the pipeline will remain almost at the same level - 220–230 billion m<sup>3</sup>. On the other hand, deliveries of liquefied natural gas should increase at an accelerated pace, which in this case is practically equal to “pipe” and reached 190-2000 billion m<sup>3</sup> (Rule, 2013).

The Russian Arctic zone has accumulated large hydrocarbon reserves. To develop these fields, most oil and gas projects in the northern territories require innovative technologies that guarantee linkage to imported equipment. Such technologies should be aimed at reducing the cost of hydrocarbon production and building infrastructure in harsh climatic conditions.

For the progressive development of northern fields, it is necessary to develop an entire innovative complex of technologies for the exploration, production and transportation of hydrocarbons. These geological exploration technologies should be economically justified, as well as guaranteed to ensure the preservation of the region’s natural ecosystem.

“The Yamal port of Sabetta, the youngest sea port in Russia - the Yamal-LNG project ocean export terminal, became the absolute leader in terms of cargo turnover growth among Russian seaports in 2017. Following the results of the year, the Sabetta port, which began export deliveries of liquefied natural gas in December, increased transshipment by 280.7% compared to 2016 (from 2.845 million tons to 7.987 million tons). The Arctic Port of Kandalaksha - 202.9% (from 801.5 thousand tons) entered the top five in terms of cargo turnover growth last year. tons up to 1,625 thousand tons), the small Far Eastern port of Zarubino - 172% (from 110 thousand tons to 189 thousand tons), Sakhalin ports Nevelsk - 163.8% (from 1,062 million tons to 1,740 million tons) and Shakhtersk - 155.6% (from 3.987 million tons to 6.202 million tons)”(Rule, 2013).

Gazpromneft on the Prirazlomnaya platform reached four millionth ton of ARCO oil. The shuttle tanker Sovcomflot (SKF) Kirill Lavrov with this anniversary ton of oil was the 60th since the start of industrial development of this Arctic field.

The global demand for ARCO oil is determined by its features. These features, first of all, include high density (about 906 kg / m<sup>3</sup>), high sulfur and bitumen content. The specified grade of oil has a low coke residue, a large number of fractions. This makes it especially popular for the production of various oils and lubricants.

The strategic priorities of the activities of the State Commission for the Development of the Arctic Zone of the Russian Federation include the observance of the national interests of the Russian Federation in this region, the improvement of the rational system of northern and Arctic communications, as well as the coordination of defense, production and economic activities in the Arctic with other states.

The Russian Arctic of the Russian Federation produces 12-15% of the country's GDP, which provides about a quarter of Russia's exports. In this region, there is a high share of added value for enterprises in the extractive industries - approximately 60%, while in other countries it is significantly lower (in Greenland, Norway, Sweden, Finland, Iceland no more than 15%; in Alaska and Canada about 30 %).



Currently, approximately 65% of the total wealth of the Arctic is created in Russia (“The main provisions of regional policy in the Russian Federation”, 1996).

In the draft Federal Law of the Russian Federation “On the Development of the Arctic Zone of the Russian Federation,” the support development zone in the Arctic (hereinafter referred to as the support zone) is defined as “a comprehensive project for planning and ensuring the socio-economic development of the Arctic zone, aimed at achieving strategic interests and ensuring national security in the Arctic providing for the simultaneous interconnected application of the existing tools of territorial and sectoral development and mechanisms for implementing investment projects, including on the principles of public-private partnership”(Draft Federal Law of the Russian Federation “On the Development of the Arctic Zone of the Russian Federation, 2020”). These zones are supposed to be created in order to create conditions for the development of natural resources. They will also be created to improve transport infrastructure, develop the Northern Sea Route and business.

#### 4. Conclusion

The inevitable stage of economic development has already begun - its digital transformation. In the Arctic, the introduction of digital technologies encounters difficulties in the region’s weak telecommunications infrastructure, difficult climatic conditions for the operation of the equipment (it is necessary to manufacture equipment according to a special northern option, designed for low ambient temperatures), as well as rather sharp differences in the economic level of the territories .

In conditions of intensive digitalization of the Russian economy, approaches to the implementation of large-scale Arctic projects are being modernized. In particular, the concept of “intellectual deposits” is being developed, artificial intelligence technologies are being introduced to increase the reliability of technological processes in oil and gas condensate fields of the Far North (“Problems and prospects of intellectual digitalization of the Arctic”, 2019).

At the same time, the need for digitalization of the Arctic regions is dictated by the opportunities that digitalization offers in terms of improving the quality of life, the functioning of government and the optimization of production processes.

Thus, ensuring the economic interests of Russia and international cooperation in the Arctic requires focused work on a number of issues: national security, digitalization of the region, economic and environmental transformation, the transport complex, critical infrastructure and shipping. Further development of communication, communication and management systems, including with the involvement of foreign partners, will ensure comprehensive security for large-scale projects implemented in the Arctic. This region may become a platform for cooperation, and may become a source of risk of military conflicts.

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