Problems of entrepreneurship development in the Russian Arctic Zone

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Abstract. Due to its unique challenges, the Arctic region imposes the requirement of close cooperation in areas of private- and public-sector development. In the present work, the author aims to find the optimal ratio between state regulation and market mechanisms for the successful development of the energy sector Arctic region of the Russian Federation alongside improvements in the overall economic structure. Due to the complex impact on the system of interrelations between the Arctic unique set of regional resources, it makes sense to base the entire Arctic economy on the management of its natural resource potential. This will allow resources to be used more efficiently at the same time as satisfying resource-based needs and maintaining or even increasing the resource potential of the region. Since small and medium-sized enterprises (SMEs) react more quickly to various changes in the situation as well as being more resistant to sanctions and other external economic threats, focusing on their development is the most rational approach to the integrated socio-economic development of the Arctic region. A model of enterprises showing the dependence of production volumes on the factors that create them within municipal territories is proposed. This model is then used to as the basis for strategic tools for the development of the Arctic Zone of the Russian Federation.

1. Introduction
Under the challenging conditions of the Arctic Zone of the Russian Federation, it is necessary for government to support the implementation of investment projects by business interests operating in the region. Despite its rich natural resources, the cost of the products produced in the region remains high due to the complexity of the climatic conditions. For example, the costs of electricity generated by diesel power plants is quite high leading to annual budgetary losses in compensation for these tariffs. High port charges may add 10% to the cost of transported goods. Although close cooperation between federal and regional authorities is necessary for the implementation of investment projects in the Arctic region, the development of mineral resources continues to be hindered due to a lack of state support.

As the Russian experience of the 1990s has shown, the limitation of the functions of the state does not ensure the full implementation of market principles. [1] However, the Russian state remains the largest shareholder in the gas and oil industrial sector and problems concerning interaction between the state and private business remain to be resolved. When determining the correlation between state regulation and market mechanisms to optimally develop the energy sector and improve the structure of the overall economy, different stages of economic development, democratisation and changes in the political system need to be taken into account.

2. Analysis of the problems of Arctic exploration
The economy of the Arctic Zone varies greatly between constituent territories. Industrial, transport and port infrastructure objects – as well as labour resources – are placed extremely unevenly across the territorial and geographical context. While the western part of this zone is relatively developed and provided with suitable primary production infrastructure, the economies of other territories are subject to one-sided development with an underdeveloped infrastructure and shortage of material and labour resources. At the same time, it is necessary to consider that the innovative potential of the majority of the northern territories have suffer from a lack of scientific and educational resources. In these cases, special development mechanisms to support innovative development are necessary.

Under the existing Russian tax regime, the development of offshore fields in the Arctic Zone has a negative profitability. Even when taking temporary mineral extraction tax privileges into account, intervention measures on the Arctic shelf are ineffective [2]. The tax regime has a pronounced fiscal character and is rigidly focused on replenishing the state budget at any cost. In failing to promote the attractiveness of Russian and foreign investments in the oil industry or support the development of hard-to-recover reserves, extraction from low-profitable and low-yield fields and wells, this approach represents a departure from the resource management model.

Due to a failure to fully conform to modern standards, special measures for efficiency increases in the existing development of subsurface extraction are necessary. For example, the lack of a comprehensive overall geological-geophysical study of the domestic Arctic shelf for estimating actual hydrocarbon resources impairs the exploration and development of its full potential resulting in the Arctic territories being classed as highly or extremely risky from an investment perspective. [3] There are no clear, understandable and mandatory rules of subterranean resource exploitation. A basic adherence to commonly understood principles of oil and gas business include: a predictable and transparent licensing system, open tenders, tax breaks for companies in order to promote favourable conditions for attracting investment, ensuring the sustainability of the mineral resource base, a combination of regional and central interests and public control. [4]

The development of a competitive environment and antimonopoly regulation system applicable to the development of the Arctic shelf is an important strategic direction. While state regulation of geological exploration and production contributes little to the development of business activity, state-controlled monopolies have certain advantages. A focus on short-term financial profit does not create incentives to improve techniques and technology, and, consequently, to increase productivity and reduce costs.

Nowadays, the position of the Arctic Zone of the Russian Federation in the system of the international division of labour is defined mainly by the export of raw materials and hydrocarbons. [5] The structure and composition of exports indicate the limited competitiveness of an economy supported primarily by its diversity of natural resources. A quantitative approach to resource extraction results in the narrow specialisation of regional economies with a mono-profile orientation. Increasing reliance on raw materials significantly reduces the quality of growth. In the context of systemic global financial instability, investment opportunities for state and private business sectors have significantly decreased. The financing of many projects related to the integrated development of the Arctic Zone of the Russian Federation has been suspended and the terms of their implementation postponed indefinitely. At the current stage of development of the macro-region the problem of paramount importance is how to ensure economic adaptation including specific projects aimed at compensating for the negative consequences of changes in the global financial environment. In this regard, a positive role can be played by various forms of support of innovation-oriented industries. For example, it is possible to promote scientific research and experimental development by reducing the tax burden on R&D activities, forming a network of technology parks, business incubators and venture capital funds. [6] The leitmotiv of Arctic development should not consist only of large projects and new Urengoy and Norilsk, but also the development of an innovation-oriented environment together with the appropriate forms of business organisation and financing schemes. Here, a business environment based on the development of small and medium-sized businesses in various sectors of the economy is key. Moreover, the new gas fields which are located on the territory of the Yamal Peninsula, on the shelf of the Kara Sea and in the Pechora
Sea are fewer and more expensive to develop than those currently in development. According to such price volatility, which is typical for the gas and oil market, they are at the margins of profitability of large companies. Large corporations are only needed for operating super-efficient large deposits; the rest may be transferred to small companies.

3. Selection of strategic tools
In the course of developing the Russian Arctic, it is necessary in the first place to select the appropriate strategic tools. The development of the Arctic cannot be made to happen by employing methods of storm but instead demands realistic financing and calculation of long-term results. Therefore, it is critically important for the Arctic to acquire strategic planning that is not tied to the short-term situation of economic cycles. It is necessary to form scientific and technical groundwork, pay serious attention to exploration of reserves and create a reliable infrastructure to ensure economic activity and livelihoods.

Secondly, taking into account the key value for prospects of the region of production of natural resources, it is necessary to seek not only for extraction from this production of profit and tax deductions. The social value of extracted raw materials should be put at the forefront in the implementation of Arctic projects. The development of fields has to become a basis for the development of all regions with formation on this basis of a system of settlements, infrastructure facilities and local industry. Moreover, the development of the Arctic should be linked to the development of adjacent territories: the Urals, Siberia and the Far East.

Thirdly, the high costs for the development of economic activities in the Arctic require the concentration of resources. However, this must not imply an inevitable monopolisation of this activity by a small circle of corporations. On the contrary, state policy should aim to attract all interested Russian companies with the necessary competencies for Arctic projects. In particular, it is necessary to attract small and medium-sized businesses to this region. [7] The Arctic should become a region favourable for the use of innovative technologies and the cultivation of domestic technology companies.

Fourthly, for all projects implemented in the Arctic, there must be multiple sources of resilience from the point of view of environmental and human safety. Here it is not just that the self-healing nature of the violated ecological balance is extremely slow, resulting in possible costs to the companies involved. Nowadays, large-scale environmental accidents can also have extremely negative consequences from the point of view of external threats. [8] Russia’s geopolitical rivals will certainly seek to use any such incidents to limit its sovereignty in the Arctic.

Fifthly, the scale and complexity of the problems associated with the development of the Arctic also requires a management system with appropriate complexity and diversity. On the one hand, an authoritative centre for the management of this region should be formed at the Federal level, having sufficient resources to address the large-scale tasks which are set before it. On the other hand, it is necessary to ensure a high degree of coordination between various agencies and regional authorities. In addition, territorial and sectoral management must be combined with project management.

There are high costs incurred in the Arctic Zone due to severe climatic conditions, remoteness, dependence on deliveries from other regions and increased salary expectations in connection with perceived northern privileges. However, in the specific severe economic conditions obtaining in the majority the Arctic regions, business revenues are lower than average across Russia of indicators. Table 1 presents revenue figures from the sale of goods (works, services – without VAT and excise duty) for SMEs on the territorial subjects of the Russian Federation (millions of rubles)\(^1\)

| Table 1 | Proceeds from sales of goods (works, services – without VAT or excise duty) |
|---------|--------------------------------------------------------------------------------|

\(^1\)Here and further the Republic of Komi is not included in our analysis for the reason that only the city of Vorkuta belongs to the Arctic territories. Similarly, the Krasnoyarsk Territory is not included in our sample, because the Arctic is one Taimyr Municipal District. In all other cases of a partial assignation of a subject of the Russian Federation to the Arctic zone (the Arkhangelsk Region, the Republic of Sakha (Yakutia), there is a reference to the polar regions of at least three to five municipalities.
Region | per small and medium-sized enterprise operating in 2016 | per small enterprise operating in 2016
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Chukotka Autonomous district | 52.9 | 34.9
The Yamalo-Nenets Autonomous District | 41.2 | 28.6
**Russian Federation** | **37.2** | **30.6**
Murmansk region | 33.2 | 27.4
Nenets Autonomous District | 36.5 | 23.9
The Republic of Sakha (Yakutia) | 26.4 | 21.4
Arkhangelsk region (excluding Nenets AD) | 26.7 | 21.3

Source: The results of the continuous Federal statistical monitoring of the activities of small and medium-sized businesses in 2016 “Small business big country”. M.: Rosstat. 2017.

4. **Model showing the dependence of productivity on the factors that create it**

Models of zero level are those applying to enterprises in the territory of municipal units. As a model of the enterprise, we will consider the production function. The production function is the economic-mathematical quantitative relationship between output quantities and production factors, such as resource costs, technology level.

One of the classic examples of the production function is Cobb-Douglas function, which shows the dependence of the volume of production (shipped products of the enterprise) on its factors of production—labour and capital costs (1).

\[ Q = A \cdot L^\gamma K^{1-\gamma} \]  

where \( Q \)- the volume of shipped goods by enterprises,  
\( A \)- technological coefficient (innovative development of the enterprise),  
\( L \)- the number of employees,  
\( K \)- capital,  
\( \gamma \)- coefficient of elasticity by labour / capital.

The peculiarity of the industry – for example, YANAO – is that the largest share (about 90%) in the structure of shipped goods, completed works and services falls on the type of activity “Mining of natural resources”. In the Autonomous region gas production is produced by 36 companies. The largest volume of the extracted gas is the share of subsidiaries of JSC Gazprom. Gas production is conducted by also small independent companies, such as LLC Novatek Tarkosaleneftegaz, LLC Yurkharovneftegaz, JSC LUKOIL-West Siberia.

Oil and gas condensate production was carried out by 38 enterprises. Thus, the main specifics of the region consists of oil and gas production, which occupies overwhelming percent in the industry of YaNAO.

Each enterprise can be expressed through the production function:

\[ Q = f * A, L, K \]  

where \( Q \)- the volume of the shipped production of the enterprise  
\( A \)- technological coefficient (innovative development of the enterprise),  
\( L \)- number of employees,  
\( K \)- capital.

This production function is common. Of course, as for the Cobb-Douglas function, the functions for two sectors of the economy with the same technological coefficients will not be identical. For each enterprise there will be features of elasticity of dependence, which will be reflected through elasticity coefficients. However, since the bulk of the enterprises are engaged in development of minerals, this function will adequately reflect dependence of the production of the separate enterprises. [9] Thus, the model is a system of production functions, compiled for each enterprise.
Corporations working in the Arctic region cannot solve the economic and social problems of the region in a complex way [10-14]. To develop small and medium-sized businesses is the most rational for the comprehensive socio-economic development of the Arctic region. Such enterprises react more quickly to various changes in the market situation, and many of them are more resistant to crisis and sanctions phenomena in the economy.

5. Conclusion
In the Arctic region, the state has to act as the initiator and organiser of diverse platforms of active communication between businessmen of the Arctic autonomous districts on a regular basis. The severe climatic and economic working conditions in the Arctic Zone necessitate a revaluation of the existing tax law. The question is “In what forms and using which specific instruments should this manoeuvre be realised?” Most respondents suggest a decrease in insurance premiums and reducing income tax of organisations operating in the Arctic to 10% as well as to reduce property tax. It is proposed that more active use of the compensation tool from the Federal, regional and local budgets be made for payments to social funds for employees of innovative small and medium-sized enterprises of the Arctic. In addition, it is proposed to make active use of special tax regimes for entrepreneurs of the Arctic and to simplify the transition to them.

The state decision to attract talented young people to the Russian Arctic is still lagging behind. Small business can solve this problem more quickly. Special measures for encouraging youth business in the Arctic Zone are necessary. The Federal Corporation for enterprise development could provide a special package of incentive measures in this direction. Through business there can be primary involvement of talented and vigorous Russian youth to the Arctic which will be able to strengthen further the corporate and budgetary structures. However, the first step in solving this state problem is to provide more support for local small businesses.

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