Impact of social and economic factors over past decade on economic development of Russian’s Arctic zone

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Abstract. The socio-economic development of the regions of the Arctic zone differs from the general dynamics of the development of the Russian regions. These territories are more economically advanced and have significant resource potential. The competitive advantage of most regions of the Arctic zone also is access to the oceans. The study of the dynamics of the development of Arctic regions will allow to assess the level of their socio-economic development and form the main strategic directions of growth. The object of the study are the regions belonging to the Arctic zone. The subject is the process of their socio-economic development. The methodological basis of the research work is an interdisciplinary direction, which involves an analysis of the combination of economic, social and political factors. The comparative analysis will allow to compare the dynamics of socio-economic development of the regions of the Arctic zone and assess the impact of international economic sanctions. The statistical data of Rosstat, the results of the Russian’s Census, as well as normative and legal documentation were used as an information base for research works. As a result of the implementation of the goals set in the study, analytical works were carried out on the dynamics of the development of the Arctic regions. It has been revealed that the territories of the Arctic zone exceed the average Russian values by certain economic indicators.

1. Introduction.
Over the past decade, many factors have been influenced the improvement of socio-economic development of the Arctic macroregion: updating of the state policy on the development of Arctic zone, territorial expansion of land borders, implementation of economic development model of Russian’s Arctic zone on the basis of “stronghold areas”, implementation of transport and logistics infrastructure state projects development [1]. Nevertheless, there is still a huge number of problems which is difficult to solve in this macroregion, the surest way of help in solving them is highly qualified specialists with specific knowledge and skills. The success of exploration and economic development of Russian’s Arctic zone depends on exactly human capacity building among the "new Arctic" specialists.

Scientists in their studies of Arctic pay special attention to the issues of territorial development aimed at the rational placement of productive forces, the territorial organization of the economy and of human settlement [2], the balanced and effective use of human, natural resources and logistical capacities within the borders of this macroregion [3]. Main objective factors of influence on economic development of regions are: GRP per capita, productive potential [4], human capital [5], structure of resource potential, development of the banking sector and others. Subjective factors may include economic and geographical location. At one point, the geographical factor determines indicators of economic
development, opportunities of production, human potential [6]. From another point, it takes into account the nature and climatic component, which determines the restrictions on the development of certain spheres of the economy, as well as assesses the impact of dynamic migrant flows and their implications for labour markets [7].

The study considers regions which municipal territories are fully or partially included into Arctic Zone of the Russian Federation: Republic of Komi, Republic of Sakha (Yakutia), Krasnoyarsk Krai, Archangelsk and Murmansk regions, Nenets Autonomous Okrug, Yamalo-Nenets Autonomous Okrug, Chukotka Autonomous Okrug (and the Republic of Karelia since 2017). According to some researchers, it is important to note, that the socio-economic space of Russian’s Arctic Zone is not uniform yet. It could be characterized by some specific features, conditions and reasons, which affect the implementation of priorities in state programs of complex development in the nearest future.

The influence of the environmental and climatic factor is a one of the limitations that reduce the dynamics of territorial growth. Therefore, the special interest of the study is related to the feature of the regions, which are fully integrated into the Arctic zone geographically - Murmansk Region, Nenets Autonomous Okrug, Yamalo-Nenets Autonomous Okrug, Chukotka Autonomous Okrug and 5 regions of Russian Federation, which municipal territories are partially related to the Arctic zone: Republic of Sakha (Yakutia), Krasnoyarsk Krai, Archangelsk Region, Republic of Karelia, Republic of Komi [9].

The purpose of the article is to analyze the social and economic indicators of the development of Arctic Zone regions of the RF over the last decade. In this regard, the research goal has several directions, which determine the format of the ongoing analysis. Firstly, the Arctic territories have a variety of nature’s potential, mineral raw materials and biological resources, which determines the dynamics of economic growth of these territories. Secondly, study of Arctic regions includes social and demographic indicators. Most researchers noted the high rate of migration outflow of the population, which is observed for most territorial entities of the Arctic Zone of the Russian Federation.

2. Results

On the basis of the federal law, the Arctic zone was defined as a part of the Arctic, where jurisdiction of Russia extends. One of the main indicators of regional development is GRP. Based on the values of this indicator, it is possible to judge the dynamics and level of development of the territory. It is worth noting that the regions of Arctic zone mostly are territories with resource specialization economies, which ensures the pace of economic development. The study of GRP per capita will assess the situation resulting from the comparative analysis of Arctic zone regions. Within this direction, the level of GRP per capita of Russian’s Arctic Zone territories is considered in comparison with the level of all Russian’s regions (tabl.1).

The results of a per capita study of GRP showed that the regions of the Arctic Zone were characterized by high rates of economic development. The assessment shows that the distance from the main economic centers of the country is not an obstacle to economic development. Most regions of the Arctic zone have a value higher than the Russian average in terms of GRP per capita in 2017. The exception is the Republic of Karelia, because only some of its areas are in the Arctic Zone. A possible reason for the high development of these territories is the significant resource potential, which provides Arctic territories the development potential. The access to maritime borders is very important, because it ensures the development of foreign economic cooperation.

The implementation of state programmes and projects for the complex development of the Arctic declared in the last decade should be provided not only with the personnel of working professions, but also with highly qualified specialists and university graduates. According to experts, the need for personnel of the highest level of training in 2016 in Arctic Zone of the RF regions was more than 6 thousand people, and according to forecasts by 2021 it will increase to 8.3 thousand people. The problem of ensuring the values of the forecast of personnel needs remains not sufficiently investigated. There is the wide range of publications on the educational structure of employment of the population, the impact of the migration movement of the population in the Arctic zone of the Russian Federation on the preservation and development of personnel potential in the last decade [10], but still it does not allow to
understand the specifics and choose the correct guidelines for the development of the training system of this unique macroregion.

Table 1. GRP per capita of Arctic zone regions, millions of rubles

| Regions                        | 2011  | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|--------------------------------|-------|--------|--------|--------|--------|--------|--------|
| Russian Federation             | 317,515,3 | 348,641,5 | 377,006,0 | 405,147,7 | 449,097,9 | 472,161,9 | 510,253,1 |
| Republic of Karelia            | 241,688,0 | 251,981,4 | 281,021,6 | 301,818,1 | 335,944,5 | 371,452,0 | 404,487,6 |
| Republic of Komi Arkhangelsk region | 487,363,5 | 541,155,3 | 550,386,2 | 557,641,3 | 613,975,0 | 640,622,9 | 679,162,6 |
| Murmansk region                | 360,165,9 | 391,146,2 | 417,776,4 | 456,985,8 | 532,533,7 | 584,111,3 | 640,787,5 |
| Krasnoyarsk Krai Sakha Republic Chukotka | 333,511,6 | 361,968,4 | 395,213,7 | 427,090,7 | 525,475,7 | 560,380,2 | 589,996,9 |
| Chukotka Autonomous Okrug      | 413,172,4 | 416,272,7 | 441,084,9 | 493,985,7 | 582,345,8 | 615,803,9 | 654,513,9 |
| Yamal-Nenets Autonomous Okrug  | 508,674,4 | 566,387,0 | 597,037,4 | 688,540,1 | 780,139,8 | 903,611,1 | 951,220,2 |
| Sakha Republic Chukotka        | 883,368,7 | 896,822,1 | 877,612,8 | 1,142 | 1,226 | 1,323 | 1,386 |
| Autonomous Nenets Okrug       | 3,913 | 3,685 | 4,035 | 4,329 | 5,210 | 5,821 | 6,288 |
| Autonomous Yamal-Nenets Okrug | 588,7 | 897,1 | 943,2 | 931,1 | 143,9 | 559,8 | 467,9 |

* Data of Rosstat, compiled by author

In order to analyse the human resources potential and consider the possibilities of meeting the forecast values of the need for personnel with higher education, we will refer to the data of the assessment of the educational potential of young generations of the population formed during the 2000s.

One of the important features of Arctic settlement in the past is that the population of the regions has been formed to a large extent "according to the needs" of the region being developed. Today, in general, the northern territories and Arctic zone are characterized by low population density, a high degree of urbanization and a specific labour market, which is characterized by a high level of labour migration and a rotational work [11]. The situation is exacerbated by the natural and mechanical loss of indigenous populations in the regions. According to the statistics of Rosstat, the number of employed population in sectors of the economy in the regions, wholly or partially belonging to the Arctic Zone of the Russian Federation, has decreased by more than 400 thousand people over the last 10 years. At the same time, it is important to note the differences in the process of migration outflow of the population for each Arctic region.

Younger generations show the greatest migration activity out of the northern regions [12]. One of the reasons for this phenomenon is the growing interest of the new generation in obtaining education in the central active zones of the country and the growth of opportunities for spatial mobility.
The results of the assessment of the educational potential of young generations of the region from the point of view of the accumulated level of education on the basis of Russian Population Census in 2002 and 2010 data showed the initial conditions for the formation of personnel potential of different generation-age groups of young people. Three generation-age groups of young people were identified for the study: from 15-24 years of age, from 25-34 years of age and from 35-44 years of age. According to the age structure, data on the level of education achieved by the representatives of these young generations were collected. Taking into account the year of birth of the young man, the representative of the generation, the data of population censuses in Russia in 2002 and 2010, were related to the Theory of generations of N. Hove and W. Strauss. Thus, it was determined that in 2002 young people of generation "15-24 years" in the bulk are representatives of generation "X" and only partially "Y", generations "25-34 years" - representatives of generation "X," and "35-44 years" - representatives of generation "Baby boomers." By 2010, the age structure had changed, so "X-s" were replaced by "Y-s" in the first generation-age group "15-24 years," and "25-34 years" and "35-44 years" were replaced by young people of generation "X." Such a socio-demographic characteristic of young generations is information on the quantitative composition of young groups, their level of education and, importantly, on the psychological characteristics of generations of young people, and their motivation for work and self-development.

Of the 9 regions of the Russian Federation, fully or partially assigned to the Arctic Zone of the Russian Federation, the Republic of Komi, the Archangel Region, Nenet Autonomous Okrug, Yamalo-Nenets Autonomous Okrug, Chukot Autonomous Okrug the Republic of Sakha (Yakutia) showed a general increasing trend of the higher education level in all three groups of young generations. The figure in Figure 1 shows that the largest increasing in the number of young people with higher education by 2010 occurred in the age group from 24-35 years and the regions - leaders in accumulation of educational potential in this age group of young people became Nenets and Yamalo-Nenets regions. The growth was 134% and 98%, respectively, to the level of 2002. The increasing in the proportion of young people with higher education at the age of 15-24 is observed in all 9 regions, but the largest (97% to the level of 2002) is found in the Republic of Saha (Yakutia).

The most interesting situation is the accumulation of educational potential, developing for the generation "35-44 years," which graduate from "Soviet" school, received education in one economic system, but to live and work to them presented in another – market economy. According to the results of the assessment of this generation, only 5 out of 9 regions have a small increasing in the share of young people with higher education (up to 40% in Nenets and Yamalo-Nenets regions).

![Figure 1](image-url)
Development of the education system of the Arctic Territories, as a social factor in the provision of labour resources to the economy in the future, is aimed at innovations, effective modernization and integration of educational institutions, science and business to meet the needs of the education system of the labour market in qualified personnel, formation of effective economic relations in education. The last decade analysis of the education system’s financial support in Arctic regions shows that there is an increasing in the differentiation of the expenditures volume of consolidated budget between the regions of the EP of the Russian Federation (fig. 2). In recent years, that difference has increased, so obvious leaders in increasing the share of spending on education are the Republic of Saha (Yakutia), Yamalo-Nenets Autonomous Okrug and Krasnoyarsk Krai.

![Figure 2. Assessment of volume of consolidated educational expenditure in regions of the Arctic Zone of the Russian Federation, in % by 2010.](image)

It is clear that public expenditure on education significantly creates conditions for improving the quality of educational services and should help to improve quality of education and strengthen motivation of youth to stay living in these regions. In view of the special importance of the task of ensuring the socio-economic development of regions of Arctic zone of Russia with highly qualified personnel, we will pay attention to indicators of network development of higher education organizations of Arctic zone of Russia. According to the analytical portal "Personnel Support for the Development of the Arctic Zone of Russia," currently the total number of state (5 and 12 branches) and non-state (3 and 3 branches) universities is 23 organizations, where training is carried out in 45 enlarged types of specialties out of 54 possible. The most extensive network of educational services has Murmansk and Archangel regions, Yamalo-Nenets Autonomous Okrug.

However, according to the Rosstat statistics, assessing the dynamics of the number of students in the educational higher education programs - bachelor degree, specialization, master degree, by 10,000 people, there is a general trend for all regions of Arctic zone to reduce their number. The total number of students is simultaneously influenced by many social, economic, institutional and other factors, but the most significant, according to many researchers, is the irrecoverable migration outflow of skilled personnel and young people, their lack of demand in the labour market (tabl.2).
Table 2. Number of students attending higher education programs in the Arctic zone of the Russian Federation

|                      | Republic of Karelia | Republic of Komi | Arkhangelsk Region | Murmansk Region | Nenets AO | Yamalo-Nenets AO | Krasnoyarsk Krai | Chukotka AO | Republic of Sakha (Yakutia) |
|----------------------|---------------------|------------------|--------------------|----------------|-----------|-----------------|-----------------|------------|----------------------------|
| Number of HE students per 10,000 | 367                 | 355              | 345                | 312            | 327       | 376             | 406             | -          | 492                        |
| 2010                 | 345                 | 345              | 311                | 270            | -         | 222             | 394             | -          | 431                        |
| 2011                 | 306                 | 345              | 283                | 270            | -         | 194             | 394             | -          | 437                        |
| 2012                 | 270                 | 345              | 249                | 270            | -         | 157             | 387             | -          | 397                        |
| 2013                 | 262                 | 311              | 225                | 281            | -         | 134             | 360             | -          | 397                        |
| 2014                 | 227                 | 283              | 201                | 266            | -         | 104             | 336             | -          | 367                        |
| 2015                 | 192                 | 239              | 170                | 202            | -         | 49              | 313             | -          | 318                        |
| 2016                 | 187                 | 201              | 171                | 192            | -         | -               | 282             | -          | 280                        |
| 2017                 | 187                 | 195              | 162                | 129            | -         | -               | 267             | -          | 253                        |
| 2018                 | -                   | -                | -                  | -              | -         | -               | 257             | -          | 248                        |

In 2017-2018, several state universities opened a number of new educational programs for training of specialists, which were formed by taking into account the "Arctic" specifics, in cooperation with the employer. These measures are aimed at increasing the attractiveness of universities and developing the practical-oriented approach to student education.

According to experts, the demand of universities graduates share in Arctic zone to cover the need of the economy for personnel with higher education is on average 65%. A significant increasing in the proportion of employed with higher education (above 10%) is recorded in the structure of employed population with the higher vocational education level in all regions of the Arctic zone. The largest growth in the last 10 years was noted in Nenets Autonomous Okrug, in 2010 - 16.3%, and in 2018 - 29.5% of the employed population number in the economy. The only region in which the share of employment with higher education is more than 30% over the last 10 years and increases to 45% in 2018 is Yamalo-Nenets Autonomous Okrug.

Thus, at first glance, it may seem that there is a positive trend in the influence of the role of universities on the increase in the employed workers with the level of higher education number. But it should not be forgotten that during the whole analyzed period the overall dynamics of the structure of the Arctic regions employed in the economy was determined to a large extent by the involvement of already trained personnel from other regions of Russia and the CIS republics. According to the expert data, 14% of all employees of organizations work by watch method, in Yamalo-Nenets Autonomous Okrug their number reaches 46%, in Nenets Autonomous Okrug - 25%, in the Republic of Sakha (Yakutia) - 20%. As a result, on average, the need for Arctic zone personnel is covered by 30% by daytime workers.

3. Conclusion
Basing on the analysis of social and economic indicators of development of Arctic zone over the past decade, it is possible to formulate the most important priorities of the unified policy of all federal, regional and local authorities for the effective implementation of the Strategy for Development of Arctic zone of the Russian Federation for the coming years:

- Interregional cooperation and support for Arctic zone investment projects implementation, including the sectoral areas of scientific, technical, extractive and manufacturing industries;
- Allocation of targeted financial resources for development of the traditional northern agricultural sectors;
• Stabilization of the population and creation of social and economic conditions for the consolidation of young people by equalizing the level of social and economic development and increasing the investment attractiveness of the Arctic regions.
• Implementation of programs to develop human resources potential of regions in cooperation with leading employers and active public participation in the development of a uniform professional standard for Arctic workers.

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