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Need Analysis of College-Educated Labor Resources in the Russian Arctic

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Abstract. In the first half of the 20th century due to the changed economic conditions, growing interest of foreign countries and their corporate sector in the Arctic, the implementation of large-scale investment projects in mining and processing of minerals, the use of transport routes in the Russian Arctic, the issue of human resources provision is becoming more topical. The paper presents the requirement analysis of college-educated labor resources in the sub-federal units of the Russian Arctic in the current (until 2020) and medium-term (until 2022) perspective using sociological and analytical methods. Highly qualified personnel and their advanced technical solutions are considered as the main conditions for the adaptation of Arctic communities and economic systems to environmental changes and new requirements of world technological paradigms. The study results can be recommended for the federal and regional executive authorities for formulating policy in the academic space management, targeted college-educated personnel training for the real sector of economy of the Russian Arctic. The paper can be useful for enterprises operating in the Arctic macro-region, for developing a system for monitoring and evaluating staffing needs and introducing such a system into the management of the socio-economic development of the Arctic zone of Russia.

1. Introduction

Humanity has been actively developing the Arctic for the last 80 years. Several economic models (American, European, and Russian) were formed during this period. They are associated by the fact that almost a third of industry production is created in the materials sector. In 2016, Arctic GDP was about $ 300 million. Manufacturing and service industries in the Arctic region have never been significant. Examples include metalworking and mechanical engineering (shipbuilding and shiprepairing) and food industry. Food industry has been developed in populated places on the coast of the Arctic Ocean based on indigenous peoples' fishery and deer farming.

Russian Arctic in the early 21st century turns into an independent object of public policy and management. Several-trillion-dollar natural resources potential as well as technological and production potential, which participates in the production of 10–12 % of GDP and creates about 25 % of Russian export [1], are concentrated in this macro-region. In 2008–2013, the President of Russia approved the Basic Principles of State Policy of the Russian Federation in the Arctic for the period up to 2020 and further perspective and the Development Strategy of the Arctic Zone of the Russian Federation and national security protection for the period until 2020. In order to develop natural resources effectively, state efforts are focused on elements, the progressive use of which will provide a synergistic effect in the implementation of the full range of priorities for the development of the Arctic zone of the Russian Federation. One of the elements is labor resources with knowledge of trends of Arctic environmental, socio-ecological and socio-economic systems, which can effectively participate in investment (often international) projects on the natural resources and transport development (first of all, the Northern Sea Route, NSC) in the Arctic.

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2. Research methodology

Development of human resources in higher education and graduates staffing level in the Arctic economy branches are of great interest in the scientific community both in Russia and abroad at the state level. The specific features of labor resources of the Russian Arctic, such as nomadic life, mobility, rotational work, a higher number of people working in the natural resource service (environmental management) than in the southern and central regions of the country, single-industry towns with the only city-forming enterprise, a large proportion of people employed in state and municipal enterprises, gender differentiation of activities into ”male” and “female” are identified in the Development Strategy of the Arctic Zone of the Russian Federation. The most important challenge for the Arctic labor market in the long-term prospects (after 2025) will be the need for quantitative preservation and qualitative improvement of labor and human resources in the Arctic zone of Russia for benefit of increasing labor productivity, including among indigenous minorities. This raises the question of modernization of the education system as a supplier of highly qualified personnel. Obviously, the universities that will accumulate new knowledge about the Arctic natural and socio-economic systems will become the catalyst for these processes; the educational programs will be linked to the demands of enterprises and government bodies in the municipalities of the Arctic zone of Russia. Government efforts will be aimed at securing the population in the Far North and the Arctic zone, attracting young professionals, maintaining the system of social guarantees.

The factors influencing the population dynamics in the Arctic region, the specifics of manpower training, the direction of state policy modernization in relation to the population of the North, are updated in the works of specialists of the Kola Scientific Center of the Russian Academy of Sciences [2]. The issue is also described in publications of Heleniak T. [3], Semenova A. and Popelnitskaja I.M. [4], Povarich I.P. and Harchenko A.P. [5], Belonozhko M.L., Silin A.N. and Barbakov O.M. [6], Giltman M.A. [7], Gorokhov A., Zaikov K., Kondratov N., et al. [8]. Klyukina E.S. [9] analyzes the quality of the population (health and the educational level) on the example of the Murmansk Oblast to determine resource potential and to select regional development scenarios. Sinenko P.V. [10] notes that the socio-economic situation in the north of Russia has been characterized by destructive processes for a long time, which is reflected in a decrease in living standards of the population, an outflow of young qualified personnel, low labor productivity, poor state of infrastructure and housing and communal services. Ivanova M.V. and Klyukina E.S. [11] note that by 2018, the subjects of the Russian Arctic will begin to experience a shortage of labor resources. According to increasing mobility of population of the economically active age, new qualification requirements in “old” industries, growing struggle for personnel are the main problems in the labor market. Based on a sociological study and analysis of statistical information reflecting the state of housing and social infrastructure in the subjects of the Arctic zone of Russia, Pavlenko V.I. and Kutsenko S.Yu. form an idea of human life and activities in the Arctic macroregion and the consequent possibility of securing labor resources in areas with harsh climatic resources [12].

The demographic potential of a specific territory of the Arctic zone of the Russian Federation, most often in the Murmansk Oblast, is considered in publications. The works of scientists contain generalized data on the personnel potential of the subjects of the North; issues of labor requirement for enterprises and executive authorities, personnel training in the system of higher education of the Arctic zone of Russia are practically not covered [13, 14, 15].

In 2016, the Northern (Arctic) Federal University named after M.V. Lomonosov (NArFU, Arkhangelsk) studied the problem to provide valuable insights of labor resources of the Russian Arctic. The scientists assessed the current (currently observed) and medium-term (until 2020–2022) needs of employers engaged in economic activities in the subjects of the RF Arctic zone in the labor resources of various levels of higher education (Bachelor’s, specialist’s, Master’s programs and postgraduate education). Evaluation and forecast of labor requirement were carried out on the basis of data provided by 50 enterprises, including both great (over 5,000 employees) and large (from 1,000 to 5,000 people).

3. Results and discussion

The collected data demonstrate that the current requirement of college-educated labor resources in enterprises and organization in the Russian Arctic is 6,198 people, including specialists of a bachelor degree level – 3,680, Master's degree level – 1,145, specialist's degree level – 1,364, postgraduate education – 9 people. An idea current labor requirement is presented in Figure 1.

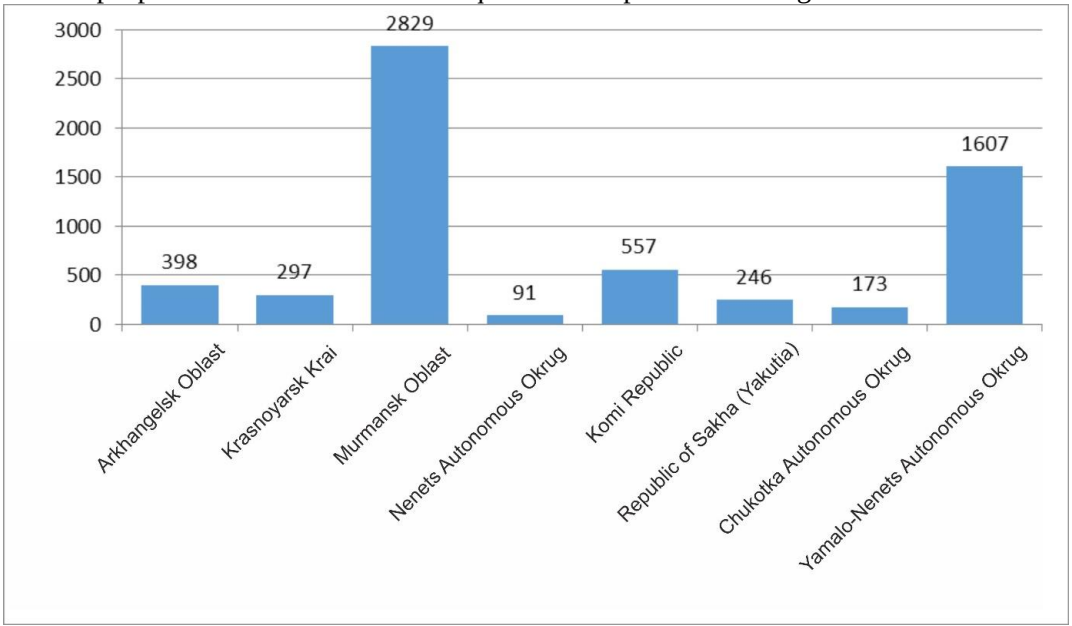


Figure 1. Current requirement of college-educated labor resources in the Russian Arctic

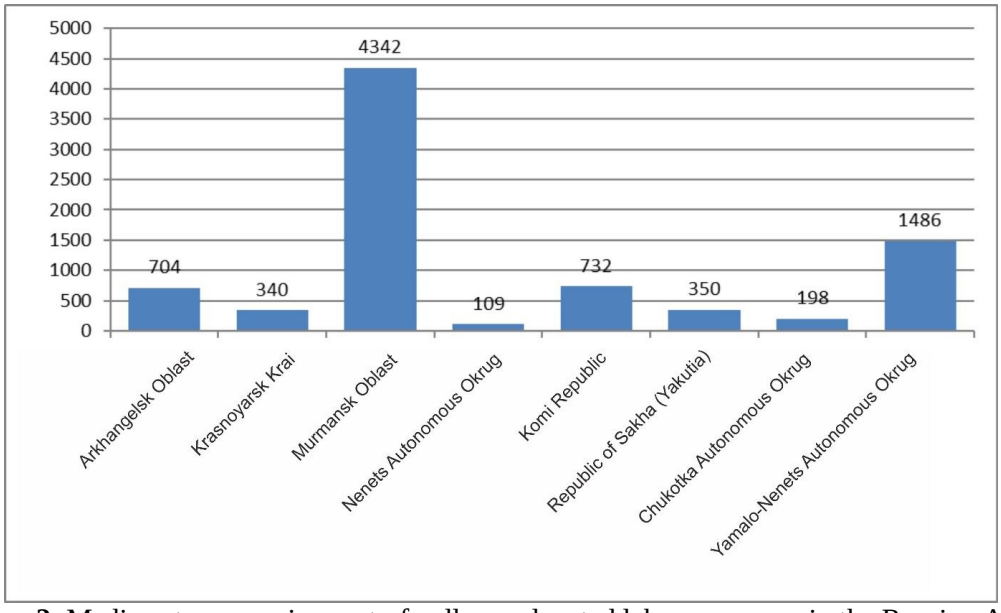


Figure 2. Medium-term requirement of college-educated labor resources in the Russian Arctic

Medium-term requirement of college-educated labor resources in the Russian Arctic subjects is 8,261 people, including specialists of a bachelor degree level – 4,658, Master's degree level – 1,753, specialist's degree level – 1,836, postgraduate education – 14 people. The idea of a medium-term need for labor resources is presented in Figure 2.

The greatest current and medium-term need for labor resources is observed in the Murmansk Oblast (2829 and 4342 respectively), the Yamalo-Nenets Autonomous Okrug (1607 and 1486) and the

urban district Vorkuta in the Komi Republic (557 and 732). The lowest figures are found in the Nenets Autonomous Okrug (9 and 109), the Republic of Sakha (Yakutia) (246 and 350) and the Chukotka Autonomous Okrug (173 and 198).

The greatest current recruitment needs are observed in the manufacturing industry, including mechanical engineering (1,100 people), social sphere (including education and health care) (2,184 people), and mining (592 people) (Figure 3).

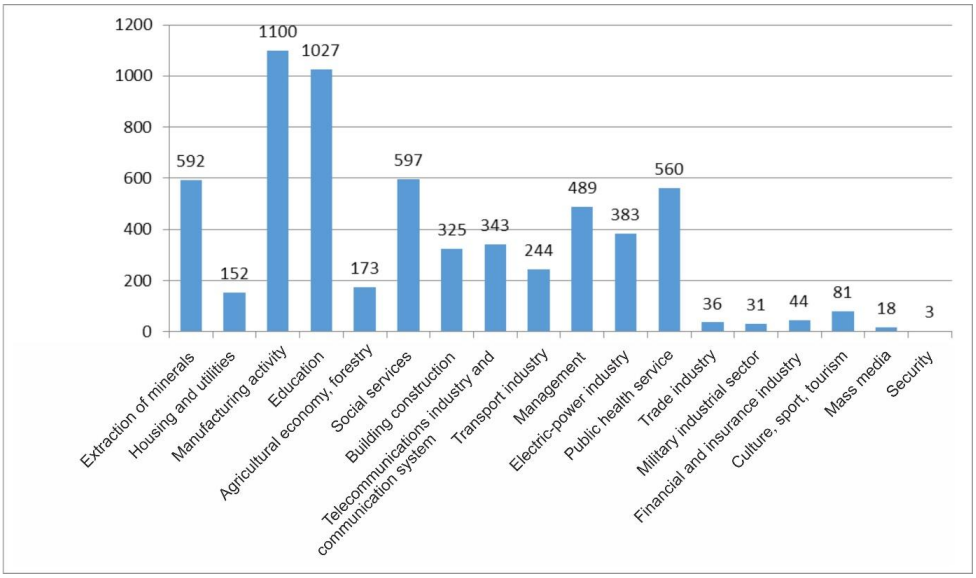


Figure 3. Current requirement of college-educated labor resources in the Russian Arctic by branches of the economy

High demand for labor resources not related to raw materials industries can be explained by the diversification of the sectoral structure of the economy in the most populated and economically developed regions of the Arctic zone – Murmansk and Arkhangelsk Oblasts. More than 1 million people live there, and conditions for large-scale investment projects for the extraction of minerals and transport infrastructure development in the Russian Arctic are created.

Analysis of the medium-term need for college-educated personnel demonstrates the growth of demand compared to the current one. The most popular will be specialties for the manufacturing and engineering industries (1800 people), mining (1280 people), communications (659), social sphere (1653 people) (Figure 4). The projected increase in staffing needs in the extractive industries and in the field of communication may be associated with the beginning of implementation of mining projects and modernization of the NSR after 2022.

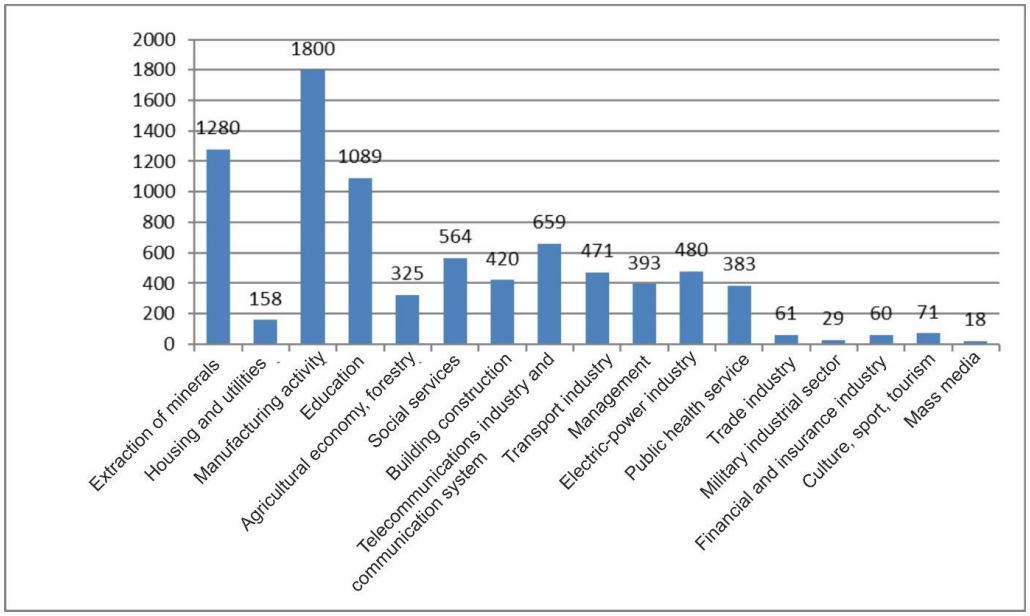


Figure 4. Medium-term requirement of college-educated labor resources in enterprises in the Russian Arctic by branches of the economy

4. Conclusion

In the course of the study, the current and medium-term need for college-educated labor resources for enterprises and organizations engaged in economic activities in the Arctic zone of the Russian Federation is identified. The greatest requirement of labor resources will be typical for manufacturing, metalworking and mechanical engineering, electric power industry, mining, communication and services (including education and health). This fact is discovered by using the sociological method. A significant impact on the formation of a medium-term requirement (until 2022) may have the beginning of the implementation of deferred projects for the natural resources development in the Russian Arctic and their delivery to the consumer.

The results of the study have scientific and practical value. The presented materials develop an understanding of needs for college-educated labor resources in enterprises and organizations located in the Arctic zone of the Russian Federation. Comparison of the results of this study with expert-analytical materials of the UArctic, the Arctic Council, the working group on education and science of the Barents Euro-Arctic Council can be carried out only in a meaningful context and on a structural basis. The research materials were tested at the All-Russian and international scientific conferences organized at NArFU in 2016–2018: “Monitoring and Assessment of the Development of the Arctic Zone”, “Training for the Arctic: from Problems to Finding Solutions”, “Arctic is a National Megaproject: Human Resourcing and Scientific Support”. The collected data allowed improving the information-analytical and methodological decision-making process for the development of state policy in the field of training and the development of education in the Arctic zone of the Russian Federation. Using the survey materials and their analysis, the portal of the National Arctic Research and Education Consortium (established in 2016 on the basis of NArFU) functions. This media displays universities and research and educational centers providing training in the Arctic zone of the Russian Federation, a list of educational programs implemented on their basis, data on the number of students, as well as employers in the region.

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