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Article



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## EDUCATION OF THE INDIGENOUS POPULATION IS A GUARANTEE OF SUSTAINABLE SOCIAL AND ECONOMIC DEVELOPMENT OF THE REGIONS OF THE ARCTIC ZONE

**Abstract:** *The article analyzes the situation of the indigenous population in the Arctic zone of the Russian Federation, in which representatives of nineteen indigenous peoples live and their heritage sites are located, which are of historical and cultural value of global significance. Since the problems of developing the education of indigenous peoples of the Arctic today acquire a special meaning, an important aspect is the training of local residents. This article will consider such a way to reduce unemployment and personnel shortages in the Arctic as the creation of a competent and effective education system in the Russian Arctic with fully modernized technical equipment. Each of the Arctic peoples has its own unique experience, its own language and culture, and an important factor determining the specifics of the Arctic region is its "multinational character, the presence of a fairly significant numerically indigenous population, represented by several peoples belonging to different linguistic families, distinguished by cultural originality, different from each other social organization and social structure." Therefore, a special nature of the education of indigenous peoples of the Arctic is necessary for an integrated, multidimensional approach to the process of transmitting culture through the education system. Getting an education lays the foundation for improving the socio-economic conditions of people's lives and plays a key role in ensuring the sustainable development of a culture of peace. Thus, SDG No. 4 (Sustainable Development Goal is one of 17 interrelated goals developed in 2015 by the UN General Assembly) "Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all" has such objectives, the implementation of which will affect to increase the number of young people and adults, especially in least developed countries and small island developing states, with in-demand skills for employment, decent work and entrepreneurship, namely, "by 2035, ensure that all children complete free education, equitable and high-quality primary and secondary education that*

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achieves relevant and effective learning outcomes.” According to the authors, when developing an education system for indigenous minorities, it is impossible not to take into account the specific form of organization of the educational process itself, the frequency of vacations and diet. The problems of developing the education of indigenous peoples of the Arctic today acquire a special meaning and scale, going beyond the scope of local problems relating to the life and social well-being of a small part of the Russian population. Therefore, it is necessary to train local residents and then improve their skills, as this is one of the ways to reduce the level of unemployment and personnel shortages in the Russian Arctic. To do this, it is necessary to create a competent and effective personnel training system on the territory of the Russian Arctic, completely modernized and with modern technical equipment. However, there are several problems that hinder the development of educational services and their receipt by children in the Arctic. One of the central problems in the education of the indigenous population of the Arctic is the direction of education. It should be focused both on the traditional activities of peoples, and on adaptation and acquisition of modern professions. In addition, there are other problems that need to be solved in the Russian Arctic.

**Key words:** Arctic zone of Russia, youth, vocational education system, region, humanitarian development, population, education, personnel training, university graduates, economic needs, strategy, structural compliance, in-demand specialties.

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## Introduction

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The shortage of qualified personnel, characteristic of Russia as a whole, will intensify during the forecast period. This means that for the sustainable development of the Arctic, there is no alternative to the need to train our own cadres of teachers, doctors, cultural workers, social workers, state and municipal employees, including representatives of indigenous peoples of the North (while maintaining strong ties with university centers in Russia).

There are fourteen single-profile cities located in the Arctic zone. According to the latest data, the socio-economic situation in them has deteriorated significantly. The most difficult situation has developed in the cities of Kirovsk, Onega, Kovdor and the village of Revda. The social, housing, communal and transport infrastructure here has deteriorated significantly. This area requires not only specialists in the development of urban areas with an “Arctic” bias, but also all specialists capable of ensuring a high social level: teachers, housing and communal services specialists, doctors and others. By the way, the healthcare sector faces special challenges: due to the higher incidence rate in the region, difficult living conditions, harsh climate, and difficult transport accessibility, it is necessary to build a new healthcare model in the Arctic. In particular, the key issues are the development of remote medicine, the development of air ambulance, the introduction of new approaches and medical technologies. For future medical workers, this may become especially interesting from the point of view of participation in “non-standard Arctic projects.”

Innovative technologies are the driver of socio-economic development of the polar macroregion. We need specialists who will create and implement innovative technologies from Russian developers for the needs of the Arctic, including in oil and gas projects. For example, several universities are training specialists in the bachelor’s program “Machinery and Equipment for Oil and Gas Fields.” A number of universities also offer an interesting bachelor’s program in Innovation Management in Industry. The introduction and active use of robotic technology is necessary due to harsh environmental conditions. Scientists are already working on samples of automated systems that can be used for underwater work on the Arctic shelf, environmental monitoring, and mineral exploration. The same applies to the development of unmanned technologies - they are necessary for scientists, the military, and representatives of mining companies.

Due to the active development of industry, the ancestral habitat of indigenous peoples in the Arctic is being negatively impacted, and this, in turn, leads to an aggravation of social problems and a crisis in traditional industries. In this regard, a special state policy is needed regarding their sustainable development and preservation of their original culture, crafts, language, and crafts. In-demand specialists include teachers of northern languages, translators of northern languages, philologists-researchers, animal engineers, livestock specialists, and reindeer herders. Among the interesting programs is the bachelor's program “Traditional Industries of the North.” During the training process, students gain competencies in the field of animal science in northern animal husbandry, breeding work, mechanization and automation in animal husbandry, skills and

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knowledge in the field of animal hygiene, the basics of veterinary medicine, and northern fisheries.

The education system of the Arctic territories will work for innovative development, effective modernization of the economy and social sphere of the Arctic zone. The priority directions of its development in the forecast period are increasing the innovativeness of the educational technologies used (creation of media libraries, introduction of multimedia computers, computer encyclopedias, e-books, reference books, etc. into the educational process), informatization of the educational process (including ensuring access of all educational institutions to global information resources, the development of distance education and other measures), improving the qualifications of teaching and management personnel, promoting the retraining of adults, integrating institutions of vocational education, science and business to maximize the compliance of the education system with the needs of the labor market for qualified personnel, the formation of effective economic relations in education. The catalyst for these processes in the entire educational system should be higher education (including the creation of federal state autonomous educational institutions of higher professional education "Northern (Arctic) Federal University" and "North-Eastern Federal University named after M.K. Ammosov"), new university scientific and educational complexes of modern technologies - search and exploration of mineral deposits; petrochemistry, coal chemistry; new building materials and technologies; for training certified specialists in information technology and network administration; biotechnology; biochemical-biophysical diagnostic, preventive and therapeutic medical technologies and other competencies. Vocational education in the Arctic will acquire the features of a flexible, open, developing system that can provide significant assistance to the socio-economic development of the region. A system for the production, promotion and commercialization of scientific knowledge will be created at Arctic universities.

There will be a connection between university programs and the needs of Arctic mega projects. New specialties will be developed that are adequate to the changing specialization of the Arctic economy - marine geology and geophysics, oil and gas business, marine biotechnology, biopharmaceuticals, information technology, tourism, land management, etc. The training of qualified personnel in technical specialties will be increased. The widespread dissemination of modular vocational training programs will facilitate the ability of students to build individual educational trajectories.

Access to high-quality higher and secondary vocational education for indigenous peoples of the North will improve. Local universities will contribute

to the active accumulation of new knowledge about natural resources and the characteristics of natural processes in the Arctic zone. They will be intensively involved in the process of forming the innovative infrastructure of the Arctic. The training of specialists - northern scientists with interdisciplinary competencies, scientific and traditional ecological knowledge of indigenous peoples will be revived, and state support will be provided to training programs for young polar researchers in Russia.

To an increasing extent, not only central and Arctic universities will solve the problems of retraining local personnel, preparing schoolchildren and youth for the requirements of employers (the majority of rural unemployed, as surveys show, are not ready to leave their villages and regions to improve their skills), but also local colleges, strengthened by a network of district and Russian partners from among universities and colleges. In the Arctic regions that do not have institutions of higher professional education, on the basis of co-financing from the federal and regional budgets, necessary and sufficient conditions must be created for the functioning of leading colleges of the Arctic subjects of the Russian Federation (resource centers), both as branches of institutions of higher professional education and as structures of applied bachelor's education. Institutions of primary and secondary vocational education will take on the format of a network structure, which, in addition to classical education, carries out dozens of types of economic activities and is present in many settlements of its region, is responsible not only for the vocational education of adolescents, but also for the training and retraining of residents of the region, both young and old. mature age. This format and functions of Arctic colleges are fully consistent with foreign practice, for example, the Arctic College in Nunavut, Canada, and Aurora College in the Northwest Territories of Canada.

New directions for training specialists in such colleges will include the profession of geological technician, mining engineer, ore-dresser - for the development of natural objects of the Polar Urals; municipal management specialists; There are few repairs for motor vehicles, motor boats and burans, and fishing equipment. Rural areas of the Arctic will require complex specialists who combine humanitarian, resource, and engineering competencies (from midwife to lawyer), without detailed specialization. In Arctic colleges, the training of such universal specialists (agricultural technicians) will be organized, who will combine a list of skills and abilities for a small rural economy. For the above-mentioned specialties, federal state educational standards for primary, secondary vocational education and higher vocational education, including applied bachelor's programs, should be developed. Each local rural community has its own unique training needs,

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and these will be correctly identified to tailor community college training and retraining programs to be as responsive as possible. This will bring the local education system more in line with rapid demographic and techno-economic changes. The role of the local community in the provision of educational services and management of the entire educational process and educational programs will increase significantly.

The forms and methods of delivering educational and other social services to villages will be much more diverse than today; and will draw more heavily on the cultural practices and traditions of local communities. It is through maximum adaptation of delivery forms and specific types of social services to the size and specific features of the local community (overall health status, level of education and competence); and a much more active influence of the local community on training and education programs, medical and cultural services than today, the availability of social services for the population of small and medium-sized villages in the Arctic will be ensured. The smaller the community, the greater the integration of various social facilities should be carried out (according to the type "school - kindergarten - rural community center - library - medical outpatient clinic").

A separate priority is the development of small schools in the Arctic. The "Rural Teacher" project will provide for the training and retraining of teachers in related specialties to work in small rural schools. Measures will be taken to retain university graduates in rural areas, using new methods and forms of advanced training for teachers in rural areas. To achieve the best standards, it is necessary to establish a review of best practices in primary and secondary education in the Arctic. In order to practically solve this problem, it is planned to make the necessary changes to the Standard Regulations on a General Educational Institution and the existing typology of general education institutions, aimed at legislative approval of these types and types of educational institutions. The existing sanitary, fire, technical, energy regulations, norms and rules will also be legally adapted to the existing realities of the Arctic zone. Along with new forms of education based on information and communication technologies, northern specific forms of delivering educational services to small remote villages should be preserved: school boarding schools for children whose parents are engaged in traditional crafts, small-class, nomadic, camp schools.

Nomadic kindergartens and schools will appear in at least five regions of Russia - these are the Yamalo-Nenets and Khanty-Mansi Autonomous Okrugs, the Komi and Sakha Republics, and the Arkhangelsk Region. At the Arctic Forum, which took place in Arkhangelsk, the authorities agreed to radically change the principle of teaching indigenous

children, so that teachers would move with chums along with reindeer herders across the endless tundra.

The "Children of the Arctic" project is the first in the field of education for children of indigenous peoples of the Arctic zone. In addition to the five Russian regions, Norway and Finland participate in it. It was decided that Yamal will become a pilot and will share with colleagues the experience of organizing nomadic education.

The "Nomadic School" project in the Yamal-Nenets Autonomous Okrug has been running for more than five years; currently, 22 educational organizations provide education in the tundra in the region: 17 "freaky" kindergartens and 5 schools. Over two hundred children study there. The teaching process is organized as follows: teachers either live with the reindeer herders in tents, constantly follow the herd across the tundra, or come several times a week on snowmobiles or all-terrain vehicles to the camp to conduct classes. Previously, children of reindeer herders and fishermen of indigenous minorities of the North (IMNS) had to leave their parents at the age of seven and were taken to boarding schools for nine months of the year.

Children of reindeer herders are taught basic subjects - Russian, mathematics, reading, fine arts, technology. The latter is the most unusual, but important item for the inhabitants of the tundra: kids learn how to dress skins, sew fur products, and learn the basics of fishing and hunting.

Only the primary grades were made nomads in Yamal, because it is difficult for children of this age to part with their parents. Every family has a choice: give their child a nomadic primary education or send them to a boarding school. The classrooms for classes are equipped with the latest technology.

For the first time, people started talking about nomadic education at the international level in May 2016. Then the presentation of schools with a national flavor took place at the UN. At the first stage, a network of national kindergartens was created in five regions, and only in 2019 "amazing" primary classes began to appear. The project is financed from regional education programs, but in the future it is planned to develop a federal program "Children of the Arctic" for additional education.

Interim results of the implementation of the "Nomadic School" project in Yamal show that this form of training significantly facilitates the adaptation of children when entering school and contributes to greater success of students. Children receive preschool education without losing communication skills in their native language, preserving the cultural and historical traditions and customs of the indigenous people. According to the Department of Education and Youth Policy of the Khanty-Mansi Autonomous Okrug-Yugra, since 2019, a pilot project "Language Nest" has been implemented in preschool educational organizations in the Berezovsky and Beloyarsky

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districts with the aim of early learning the native language for the indigenous peoples - Khanty and Mansi, but this is an additional education program. In Ugra, more than three thousand indigenous children attend different kindergartens; there are no specialized ones. Preschool education services cover 75% of the total number of indigenous children, and over three years the number of indigenous children attending kindergartens has increased by 18%.

There are no national schools or kindergartens in the Arkhangelsk region, but there are representatives of indigenous peoples. The Altai Republic is ready to share its experience in creating unusual national kindergartens. In the Kosh-Agach region, the “Nomad” project has been developed for preschool children and children of shepherds who are located in difficult-to-reach areas. According to the head of the private kindergarten, “Nomad” started in 2019, children are studying according to the Russian program “From birth to school.” The children will be given construction sets, pencils, paints and albums, workbooks - that is, those creative materials for development that are needed at that age. After the teachers leave, all materials will remain in the parking lot so that children can continue to study.

Nomadic teachers are professionals who not only know their native language, national customs and traditions, but also have the skills to drive snowmobiles, use satellite communication systems, and know the features of survival in extreme conditions. 32 teachers conduct training in the Yamal-Nenets Autonomous Okrug. Their preparation is approached responsibly: the Yamal Multidisciplinary College provides training in the specialty “Teaching in primary grades” with an additional specialization “Nomadic teacher”. As a rule, representatives of the local population – children of reindeer herders – go to tundra professions.

In the north of the Yamal Peninsula, family reindeer herding remains of paramount importance in the environmental management system, and is also a factor stabilizing ethnic identity and culture, influencing the preservation of tangible and intangible cultural heritage. Families of nomadic reindeer herders lead semi-subsistence farming, receiving cash income from the sale of venison, antlers and fish. In the conditions of the relatively closed way of life in the tundra, traditional beliefs and customs associated with the everyday side of life—the intrafamily division of labor—are preserved. Currently, there are about eighteen communities of indigenous peoples of the North in the Yamal district municipality. The largest of them are: “Kharp”, “Ilebts”, “Panaevskaya”, “Ya Erv”. Each family reindeer herding farm has its own permanent kaslani area. The direct impact of the Yamal LNG project on reindeer herding farms is expressed in the direct allocation of part of the pastures for the needs of the project with the subsequent cessation of access of reindeer herders to

their territory, as well as in the emergence of various unfavorable factors affecting food plants and the reindeer themselves: dusting of sand from the developed quarries causes diseases of deer and reduces their slaughter weight; industrial waste in the tundra leads to injury to deer and their disease with necrobacteriosis; An increased noise level disrupts the normal daily feeding and resting schedule of deer, leading to a decrease in slaughter weight, etc. The greatest impact from the implementation of the Yamal LNG project was felt by the reindeer herders of the Ilebts community, who grazed their herds in the immediate vicinity of the industrial site, within a radius of ten kilometers. To resolve the problems that arose for both parties, a meeting was held in Sabetta with the participation of representatives of Yamal LNG OJSC and the Ilebts community. As a result, a solution to the problem was found: a new trading post of the Ilebts community was organized 60 kilometers west of the previous location. The allocation of land for industrial needs and infrastructure development disrupts traditional reindeer migration routes and forces some reindeer herders to change their pastures, moving to new territories and pushing out other tundra dwellers, which leads to conflicts not only with companies, but also between communities.

The Yamal LNG company regularly informs the population about its current activities and upcoming work. Public hearings have become one of the tools for indigenous people to express their interests, including when defending their rights to protect their original habitat and economic activities. The participation of reindeer herders and fishermen in the discussion of future design work of industrial enterprises in nomadic areas helps to build a constructive dialogue to resolve the social and economic interests of the parties. It was at an offsite meeting, at a meeting of businessmen with reindeer herders, that it was decided to create reindeer crossings at the license area of the South Tambeyskoye field. The Yamal LNG company, together with representatives of communities, reindeer herding farms and the district administration, conducted a helicopter flight over the Yamal LNG license area and identified six places for reindeer crossings. Assistance was also provided in creating a winter road for personal transport of reindeer herders. During the consultations, the interests of 160 nomadic households were taken into account, including 95% of families actively managing natural resources in the area of direct impact of the Yamal LNG project (53 out of 56 families), as well as 107 nomadic families of northern Yamal. The management of the Yamal LNG company, together with the administrations of the Yamal-Nenets Autonomous Okrug and the Yamal region, are constantly looking for new ways to build partnerships with indigenous peoples living in the project area.

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Since 2017, nomadic teachers began to be trained to work with children of reindeer herders in St. Petersburg on the basis of the Russian State Pedagogical University named after A.I. Herzen (Institute of the Peoples of the North). The target group is selected during entrance examinations. It is planned that the number of nomadic teachers in Russia will increase sevenfold. Universities in Yakutia and Arkhangelsk expressed interest in creating departments at universities.

Wide diversification of sources of education financing, attraction of funds from sponsors and philanthropists will be ensured, the proportion of people receiving additional (postgraduate) education, participating in retraining and advanced training programs will be increased, and the institute of student teaching teams will be revived to retain young people in Arctic schools. Particular priority will be given to working with gifted children and talented youth. All educational institutions in the Arctic will have the opportunity to receive and receive information via high-speed channels.

### Main part

The Arctic regions of the Russian Federation, with a small population, play a vital role in the development of the country. The 2.5 million people living in them (only 1.8% of the population of the Russian Federation) produce about 15% of GDP and provide 25% of the country's exports. In almost all regions of the Arctic zone of the Russian Federation, GRP production per capita is significantly higher than the national average. But paradoxically, the level and quality of life of the people living here do not correspond to the high efficiency of their work and do not compensate for the impact of harsh climatic conditions. Indicators of living standards and real incomes in most Arctic regions are either lower or correspond to the Russian average. For example, the Murmansk region, where 62.5% of the population (523.2 thousand people) lives in the Arctic zone, in terms of per capita GRP production from year to year is included in the national top ten leading regions, and in terms of living standards it is only in the middle group regions of the Russian Federation; The poverty level of the region's population for many years was above the average for the Russian Federation and only recently began to correspond to it (12.9%). The main factor in the development of the Arctic zone of the Russian Federation (AZRF), its greatest wealth is people. The development of resources, the implementation of Russia's geo-economic interests in the Arctic, and maintaining the population of the Arctic territories (the country's most important strategic resource) are impossible without preserving and developing its unique human potential - people adapted to living and working in extreme climatic conditions, possessing invaluable knowledge and special "Arctic competencies" ", concerning life and

work in the harsh conditions of the Arctic. Therefore, one of the main objectives of state policy in the Russian Arctic should be the development and enhancement of its human potential, increasing the level and quality of life of the indigenous and non-indigenous population, and increasing the number of employed people. Today, many adopted and upcoming government documents on the development of the Russian Arctic place the main emphasis on the development of natural resources in the Arctic, on the implementation of industrial and transport projects. Social issues are assigned a secondary role, derived from economic tasks. This is evidenced by both the main ideas and the structure of the documents, where sections on problems of the level and quality of life of people in the Arctic, as a rule, are last in the list of issues under consideration. It is necessary that the new era of Arctic development, which is opening in Russia today, becomes an example of how the state and socially responsible resource corporations begin development not with new industrial facilities, but with a radical solution to the long-standing problems of people who have long lived and worked on the Arctic lands, with ensuring a decent life for those who will lead their further development. Therefore, both in strategic documents and in practice, it is necessary to put the quality of human life in the Arctic at the forefront, to make the policy for the development of the Arctic zone of the Russian Federation as socially oriented as possible.

The social situation in the Russian Arctic today is a complex of problems. The state of human potential is under threat, as evidenced by the difficult demographic situation with high levels of migration and natural decline, low levels of public health, and the difficult situation of the indigenous peoples of the North. The standard of living of the population is characterized by high levels of poverty, in almost all regions of the Russian Arctic exceeding the average for the Russian Federation, levels of child poverty above the average in the Russian Federation (if in the Russian Federation the percentage of children whose level of provision is below the subsistence level in their total number is about 19%, then in in Arctic regions it reaches 30-40%). Wage levels do not compensate for the costs required to live in the Arctic. Thus, the excess of the average salary in the Murmansk region, its average value in the Russian Federation by 30% (28.9 thousand rubles and 21.2 thousand rubles, respectively, 2010) does not cover the gap in the cost of living, which is 1.5 times higher than in the middle zone. The gap in wages between the public sector and industrial sectors is high (for example, in the Murmansk region it is 2-3 times). The system of northern guarantees and compensation, which has experienced a noticeable "compression" in the last period, does not correspond to the high level of living costs in the Arctic, and in the extra-budgetary sphere and in private business northern guarantees are

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almost not implemented. Social protection, due to insufficient funding, which poorly takes into account the specifics of life in high latitudes, does not provide the necessary level of protection for socially vulnerable segments of the population - for example, in the Murmansk region, the monthly child allowance for low-income families (384.2 rubles in 2011) provided only 5% subsistence minimum for a child (RUB 8,245, Q2 2011).

The Arctic is one of the unpredictable territories in the modern world, which attracts with its rich raw material base and huge development potential. The Arctic is one of the main factors influencing the planetary processes of climate formation and living conditions on Earth. The Arctic peoples have created unique, deeply interconnected and mutually adapted life-support cultures with Arctic ecosystems, the preservation and study of which is of great importance for understanding the prospects for further and increasingly intensive development of the Arctic. The Russian Arctic is home to representatives of such indigenous peoples as the Nenets, Chukchi, Khanty, Evens, Evenks, Selkups, Sami, Eskimos, Dolgans, Chuvans, Kets, Nganasans, Yukaghirs, Enets, Mansi, Vepsians, Koryaks, Itelmens. Some of them lead a nomadic or semi-nomadic lifestyle associated with traditional types of environmental management - reindeer herding, fishing, sea hunting, hunting, gathering, and the majority are sedentary residents living in towns and cities.

The “Strategy for the Development of the Arctic Zone of the Russian Federation and Ensuring National Security until 2035,” approved in October 2020, provides for the creation of 182 thousand new jobs in the region. Of these, 140 thousand will be created through new investment projects. 65.5 thousand new jobs will be created for workers with higher education in the Arctic.

The personnel needs of the economy of the Arctic zone of the Russian Federation were compiled as a result of a study of 3.4 thousand regional employers and initiators of investment projects based on macroeconomic forecasting techniques. The study was conducted by the Far East and Arctic Development Corporation during 2020. Based on its results, meetings were held with heads of universities in the Russian Arctic and representatives of relevant regional executive authorities. The Corporation has prepared recommendations for the Russian Ministry of Education and Science on increasing the volume of admission targets for the 2021–2022 and 2022–2023 academic years at 5 key universities in the Russian Arctic. They became the Northern (Arctic) Federal University named after M.V. Lomonosov, Murmansk Arctic State University, Murmansk State Technical University, Norilsk State Industrial Institute, Northern State Medical University. “The development strategy of the Arctic zone provides for the launch of new economic projects in the territory and the creation of

new jobs,” commented Gasan Gasanbalayev, director of the labor resources department of the Far East and Arctic Development Corporation. “Therefore, today we must work to ensure that the Russian Arctic has a sufficient number of specialists to meet the personnel needs of investors. We continue to work on adapting admission targets to the needs of the Russian Arctic economy, updating the material and technical base of secondary vocational education institutions in the region, and implementing joint career-oriented projects with vocational education organizations in the Arctic. Starting in 2021, the Arctic will require several tens of thousands of additional specialists every year. Of these, a third are workers with higher education. Almost half are mid-level specialists, including skilled workers and employees. At the same time, a shortage of personnel can be traced in all 74 Arctic municipalities. The number of budget places at the only university located in the Arctic zone of the Russian Federation has increased. This year, the Northern (Arctic) Federal University named after M.V. Lomonosov expects 3,855 applicants for programs at all levels of education. This is 460 more people than last year. Documents for bachelor's and specialty programs for full-time study can be submitted as early as July 2021, and acceptance of consents for enrollment in the general competition for full-time study ended on August 11.

According to Vyacheslav Parshin, executive secretary of the NArFU selection committee, engineering personnel are needed in the Arctic zone of the Russian Federation and in the country as a whole. More than a thousand budget places have been allocated for these areas. Most of them are in the areas of “Construction” and “Oil and Gas Business” - 110 and 105.

Humanitarian majors are also in great demand among applicants. Thus, the number of budget places in the areas of training “History”, “Jurisprudence”, “Journalism”, “Advertising and Public Relations” has increased.

This year, NArFU has established a quota of 512 places for targeted training. The most in demand are pedagogical education and areas related to shipbuilding.

NArFU also works closely with enterprises in the region, for example, in the field of training personnel in the pulp and paper industry. Cooperation is also reflected in training programs: they are updated to ensure that university graduates are in demand in the labor market and meet the needs of companies. In 2019 and 2021, employees of the ILIM branch in Koryazhma defended their final qualification theses at the university. Two practice-oriented educational programs at the master's level were developed for the enterprise; students studied both directly at the ILIM production base and at the laboratories of Northern Federal University. Last year, a master's program was prepared in the area of training energy and resource-

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saving processes in chemical technology, petrochemistry and biotechnology for employees of the Arkhangelsk Pulp and Paper Mill. In 2023, it is planned to implement the program within the framework of the master's program "Chemical technology of pulp and paper production".

The branch of NArFU in the city of Severodvinsk has preserved the integrated training system "Plant-VTUZ", providing students with guaranteed employment, obtaining a working profession and valuable practical knowledge and skills. The Institute of Shipbuilding and Arctic Marine Technology (Sevmashvtuz) is a center for multi-level engineering education. It trains specialists in areas related to shipbuilding and ocean engineering, mechanical engineering and technological equipment for production, automation of production processes and systems, IT technologies, and ensuring radiation safety. During their studies, students are employed at enterprises of the United Shipbuilding Corporation (USC).

NArFU students have a unique opportunity to visit the Arctic. Since 2021, the Northern (Arctic) Federal University and the Northern Administration for Hydrometeorology and Environmental Monitoring have been conducting joint expeditions. The goal of the "Arctic Floating University" is not only to obtain new knowledge about the state of the Arctic islands and archipelagos, but also to train young specialists in Arctic specialties, as well as to develop international scientific and educational cooperation. The Arctic Floating University helps students and researchers gain new knowledge about the state of the ecosystem of the coastal areas of the Arctic archipelagos of Franz Josef Land and Novaya Zemlya. And students of hydrometeorologists, oceanologists, ecologists, chemists, geographers, geologists and biologists have the opportunity to conduct their research in places where not all scientists can go. Career guidance work at the university is carried out all year round: olympiads, competitions, excursions, master classes, and lectures are organized for schoolchildren. NArFU employees also perform at educational institutions in the region and beyond. Live broadcasts are held on social networks, where not only representatives of the university administration and the leadership of higher schools and structural divisions of NArFU speak, but also student activists.

The House of Scientific Collaboration operates on the basis of NArFU, where schoolchildren study both as part of general education programs and in additional education programs. For example, in the next academic year there will be courses on robotics, programming, unmanned aerial vehicles, genetic engineering, and microbiology. The Museum of Geology and the Museum of Entertaining Sciences of NArFU also host classes and excursions for children and schoolchildren from 5 years old. As support for applicants admitted to NArFU who pass the Unified

State Exam with high scores, they are paid a "Freshman 5.0" scholarship, which ranges from 5 to 10 thousand rubles, probably it could be higher.

Irina Shadrina, rector of the flagship Arctic university - Murmansk Arctic State University - says that today MASU is implementing 115 disciplines with Arctic specifics. Among them are specialists for the modernization of road networks in the Arctic region, specialists in the development of urban areas with an "Arctic" bias, engineers for automated process control systems, Arctic logistics specialists, and remote medicine doctors. Upon admission, the main interaction between the applicant and the university will take place remotely using the MASU Electronic Admissions Committee and Online University Admission service," says Irina Shadrina. - Personal reception of applicants is also possible, but by appointment. The main changes in the admission rules affected the number of areas of training and specialties that an MASU applicant can choose. Applicants after graduating from college who have the results of the Unified State Exam and internal exams can indicate a higher result in the application. In addition, this year our applicants make their informed choice only once - enrollment at the university on a budget during the main period is planned only in "one wave." In the decisive struggle for a budget place, not only Unified State Exam scores, but also the results of individual achievements can help. The maximum number remains unchanged - 10 points. Starting from 2021, the applicant's gold, silver or bronze TRP insignia will be taken into account.

Irina Shadrina added that today MASU provides 47.27% of the total training of personnel with higher education and 48% with secondary vocational education in the Murmansk region. Today, the leading universities in the Arctic zone are:

### **Northern (Arctic) Federal University named after. M.V. Lomonosov, Arkhangelsk**

NArFU is the only federal university located in the Russian Arctic. More than 24 thousand people study at NArFU in 649 basic and additional educational programs. The university operates 136 Arctic programs, 73% of graduates are employed by Arctic enterprises. The draft NArFU development program for 2021-2035 has received approval from the Government of the Russian Federation. It provides for the modernization of the university's educational program portfolio in accordance with the Arctic's long-term need for personnel, expanding access to vocational education in remote areas (currently the share of those receiving online education is 3%), creating a career guidance system for schoolchildren and a system of continuing education. In 2020, a scientific and educational center (REC) "Russian Arctic: new materials, technologies and research methods" was created on the basis of NArFU. The REC includes 33 organizations from the Arkhangelsk region, Murmansk region, the Republic of Karelia, the



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Komi Republic, and the Nenets Autonomous Okrug. The network structure of the REC “Russian Arctic” can become a model solution for new scientific centers created in the Arctic.

### **Murmansk Arctic State University, Murmansk**

MAGU is a university of the second all-Russian group of flagship universities, has more than 4,200 students and has 2 branches - in Kirovsk and in Apatity. Provides training in 86 basic educational programs. This is a classic flagship university, providing, among other things, training in economics, natural sciences, engineering and technology. MAGU takes a leading position in training personnel for the main sectors of the Russian Arctic economy, with the exception of maritime specialties. In November 2020, MASU held a strategic session with the involvement of key customers of the personnel training system in the region. As a result of the session, the directions of development of the university and strategic documents for the development of the Arctic until 2035 were synchronized. The university should become a key partner in training and conducting research and development work in the interests of employers in the region.

### **Murmansk Technical State University, Murmansk**

Educational programs at MSTU are conducted in 32 areas of training and specialties; more than 2,200 students study at the university. The draft University Development Program for 2020–2028 is focused on three main areas. The first is the formation of an engineering and technical elite for the implementation of Arctic infrastructure projects. The second is the creation of a scientific center engaged in advanced research in the field of priority areas for the development of the Murmansk region and the Russian Arctic, and an innovation ecosystem that ensures the transfer of knowledge and technology. Third, the creation of a modern university complex, including the campus and university infrastructure. As a result of the implementation of the program, MASU should become an engineering and technical scientific and educational cluster, a center of Arctic competencies for training scientific, technical and engineering personnel for the implementation of projects related to the development of the Arctic.

### **Norilsk State Industrial Institute, Norilsk**

NGII trains civil engineers, specialists in the field of metallurgy, mining, applied computer science, electrical power engineering, and other technical specialties. More than 4,500 students study at the university in 11 main educational programs. The development of a university development strategy is being implemented on the joint initiative of NGII, the Norilsk Development Agency and the Norilsk Nickel company. Two-thirds of graduates are employed by Norilsk Nickel – this covers 25% of the company’s personnel needs.

Experts agree that training personnel to work in the Arctic territories deviates from the general principles of education, since it requires a special approach, and also that specialists working in the Arctic must have a number of universal – above professional – skills. As the rector of the Northern Arctic Federal University named after M.V. Lomonosov (NAFU, Arkhangelsk) Elena Kudryashova pointed out in an interview with a TASS correspondent, we are talking about such competencies as project management, systems thinking, intersectoral communication.

For this reason, TASS was told at the Murmansk Arctic State University (MASU) - the only Arctic university located directly beyond the Arctic Circle - the demand for employees with a set of universal competencies is growing. In the mining industry, these are engineers for technological support of the oil and gas field; in the transport sector, these are specialists in modernizing road networks in the Arctic region.

Director of the international center for the development of promising competencies Future Skills: NEFU of the North-Eastern Federal University (NEFU), Roman Gogolev, notes that the specifics of training specialists for the Arctic territories are also determined by the need to work in extreme weather conditions and the lack of convenient logistics. “Therefore, here they teach how to adapt spare parts from an old Soviet tractor to the newest Caterpillar <...> Low-skilled personnel are not needed in the Arctic; migrants with shovels will not solve the problem there,” Gogolev emphasizes.

He noted that the list of required professions appeared in the draft strategy for the development of the Arctic zone of the Russian Federation until 2035, which was developed by the end of 2019. According to the expert, specialists in the mining industry, ice-class marine shipbuilding, port and shipping infrastructure took a significant place in it. In the future, according to Gogolev, the strategy for the development of the Arctic zone will involve the Canadian version, where mining companies are equipped with high technologies, comply with environmental requirements and where not many people work, since production is significantly automated.

Experts are confident that, given the specifics of training personnel for the Arctic, the development of specialized departments in universities and centers of additional education focused on practical disciplines should be effective. Many universities are already implementing such mechanisms. NARFU, at the request of partner enterprises, develops and implements educational standards. MASU, in turn, forms a sustainable system of personnel training capable of self-development in accordance with the concept of LifeLongLearning (lifelong learning).

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According to the director of the Engineering School of the Far Eastern Federal University (FEFU), Alexander Bekker, specialists ready to work in the Arctic zone can be trained outside it. They are usually characterized by high social mobility, and graduates can simply leave for the Arctic after training. “Now I already have 10 graduates of the school with a degree in Hydraulic Engineering working in the Arctic latitudes. The Arctic, of course, needs all the specialists, but now the prevailing technology of development is exactly what these guys are doing. Although we can say that any engineering specialties in the development of the Arctic will be in demand, including electricians, builders, geologists and others,” Becker told TASS.

Specialists of the North-Western State Medical University named after Mechnikov (Northwestern State Medical University, St. Petersburg) at the end of March announced the development of a special state educational standard for training medical specialists specifically for work in the Arctic zone. The emphasis in medical training is on the prevention of cold injuries and early prevention of viral diseases. An important part of the modern system of training personnel for the Arctic is their focus on practice. Therefore, interaction between universities and enterprises where graduates will work is being strengthened. According to Kudryashova, NArFU has concluded more than 120 agreements on such cooperation. Among the partners are companies such as Gazprom, Rosneft, Lukoil, United Shipbuilding Corporation, and GLONASS Corporation. MASU, together with Russian Venture Company JSC, plans to introduce the discipline “Innovative Economics and Technological Entrepreneurship” into the curriculum.

As one of the key mechanisms for modernizing the secondary vocational education (SVE) system, the centers are intended to become a platform for training young personnel and retraining teachers. On their basis, it is expected to obtain specialties, including blue-collar jobs, that meet the needs of the national and regional economy and the directions of investment policy. It is expected to improve qualifications and acquire additional skills. Help is provided to schoolchildren in choosing a profession - the direction of the centers’ work, according to which young people become familiar with new professions in practice, which contributes to an informed choice of a future profession.

The key principles of the work of advanced training centers are: compliance of secondary vocational education programs with personnel needs and the geography of the region, focus on the investment strategy, ensuring collective access to advanced production technologies, creating conditions for the formation of a comprehensively developed personality and ensuring objectivity in assessing the competencies of graduates of the secondary specialized education system, namely,

compliance of vocational education programs with personnel needs.

The centers ensure that VET programs meet staffing needs, including the content and number of students. Based on the national economic development strategy, which is closely related to the strategy of regional development and attracting investors, the personnel needs of enterprises determine the requirements for vocational education organizations, training programs and the results of the activities of colleges and technical schools, which correspond to the goals and objectives of the geography of the regions

The system of working with personnel in the centers is focused on personnel demand, which is formed by the economy of a particular region. The development of center programs and their material and technical base for training, taking into account the economic, investment and industry specifics of specific regions, makes it possible to train in-demand specialists whose level of knowledge and skills meets the current needs of enterprises, focusing on the investment strategy of consumer development.

Modernization of open source software takes into account the strategy of regional development, the specifics of investment projects and the strategy of economic development of the state as a whole. In this system, centers are an effective platform for communication between enterprises, investors and businesses. Systemic cooperation makes it possible to provide personnel training that meets the needs of enterprises, investors and the region, due to their provision of students with collective access to advanced production technologies.

An important function of advanced training centers is to provide specialists with access to advanced technologies, equipment and a modern production base. The sites are designed to concentrate the latest equipment for collective use, creating conditions for the formation of a comprehensively developed personality.

“We must forever abandon the stereotype: finished school, got a profession - and that’s it. (...) it is necessary that colleges and technical schools (...) provide a strong, comprehensive education, including in natural sciences and humanities, programming, and a foreign language. And of course, the so-called soft skills - the ability to work in a team, solve creative, non-standard problems,” noted President Vladimir Putin in Yekaterinburg in March 2022 at a meeting on the development of the free software system. The centers are designed to provide the opportunity to receive continuous professional education, to assist specialists who have a secondary vocational education and have decided to change their specialty, to grow professionally and in practice to master new flexible skills for comfortable communication in a team and effective work, providing an objective assessment of

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the competencies of graduates of the secondary vocational education system.

It is planned to conduct demonstration exams at the centers. Graduates of technical schools and colleges will be able to demonstrate their skills in practice and receive an objective assessment using a transparent system.

Centers of advanced prof. training - the concept of an extensive network of open areas in the regions for advanced training, training and retraining of citizens on advanced equipment. The centers are designed to promote systematic interaction between enterprises, businesses and investors, and an objective assessment of existing and acquired competencies. Obtaining up-to-date knowledge and skills in in-demand professions in the context of regional development economics and investment strategy is the cornerstone of the concept.

### Conclusion

Thus, the education of indigenous sparsely populated peoples of the North (SIPN) is one of the most important conditions for the development of the Russian Arctic. It is necessary to create new educational organizations for representatives of the indigenous peoples, taking into account the ethnic characteristics of the indigenous peoples in the educational space of Russia to improve the standard of living of the population. Such organizations should be located as close as possible to the places where indigenous minorities live, but ensure that they receive high-quality education. Issues of development of all levels of the education system for indigenous peoples continue to remain important topics, which is associated with the need to adapt these peoples to modern conditions while maintaining their cultural identity, therefore, conducting traditional types of economic activities for indigenous peoples in modern conditions requires new knowledge, which is designed to facilitate work and make it more efficient. In the labor markets of the Russian Arctic, there are high levels of unemployment, usually exceeding the national average (for example, in the Murmansk region in 2018, the overall unemployment rate was 8.9%, while the Russian average was 7.5%). The situation is especially difficult in rural remote settlements, where unemployment is 2-3 times higher than the regional average. In single-industry towns, the state of labor markets is unstable and extremely dependent on the situation in resource markets, the policies of industrial groups and corporations. The processes of diversification of economic activity, including the development of small businesses, are proceeding slowly, which is associated, among other things, with the "northern rise in prices", i.e. increased level of costs for the development of new types of activities. There is an outflow of the most qualified and enterprising personnel; new incentives are needed to attract young qualified workers to the Arctic.

A problem that needs to be solved immediately is the state of the social infrastructure of Arctic cities and towns. In most of them, the level of its development not only lags behind the Russian average, it most often does not meet even minimum social standards, and, according to foreign experts, we are 40-50 years behind the foreign Arctic in this area. Healthcare and housing and communal services require priority attention. If in regional centers the provision of infrastructure and personnel is comparable to the levels achieved in the populated regions of the Russian Federation, then in remote settlements, ZATOs, and places where indigenous peoples live, the situation is many times worse. Thus, in the Lovozero district of the Murmansk region, where the Kola Sami live, the provision of paramedical personnel is 1.5 times lower, and the supply of doctors is almost 3 times lower than the regional average (21.2 doctors per 10,000 inhabitants, compared to 54.6 on average for the region, 2019).

We are convinced that in Arctic regions, especially remote ones, general approaches to optimizing healthcare are unacceptable. They do not have enough hospitals, first aid stations, and outpatient clinics, the material and technical base of which meets modern sanitary standards. With poor transport accessibility, isolated villages, a reduction in the number of rural district hospitals, paramedic stations, the elimination or lack of mobile forms of service make medical care inaccessible to local residents. The development of air ambulance is a necessary measure, but not sufficient to radically improve the situation. Moreover, as experience shows, given the high cost of this type of transport, the decision to use it is made only in extreme cases, when it is often difficult to help the patient. In relation to Arctic settlements, the criteria for sectoral efficiency (closing of rural schools and hospitals due to the high costs of their maintenance) should give way to criteria for spatial efficiency. This means we must remember that the opportunity to receive the most important social services at the place of residence is the most important condition for maintaining the viability of local communities, maintaining the level of population in the Russian Arctic - the most important factor in Russia's success on the global Arctic stage.

Today we should not be talking about "reaching" the social infrastructure of the Arctic to the average Russian level. The increased costs of people's health must be compensated by higher social and infrastructural standards. At the highest latitudes, where it is impossible to create a full range of services, the approach may be to minimize the presence of people based on innovative technologies (remote, mobile services, etc.). But inhabited areas (like, for example, the Murmansk region) or those in need of settlement in the Arctic should become an area of increased social and infrastructural security, the highest possible comfort of living, at the level of the

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best standards. Only this approach will allow us to talk about truly sustainable development of the Russian Arctic, the possibility of realizing the national interests of the Russian Federation here.

Another problem is the mobility of the population of the Arctic zone. It has two components - the problem of emigration of persons wishing to leave the Arctic regions, and the issue of creating conditions for attracting and retaining qualified personnel. It is well known that the implementation of the resettlement program is hampered by insufficient government funding. Measures are needed to develop multilateral partnership mechanisms for the implementation of resettlement programs (the government of a constituent entity of the Russian Federation, the Ministry of Regional Development, city administrations, management of industrial companies), which are effectively used today, for example, in Norilsk.

It is also known that the level of return migration to the North of people who left it at retirement age is growing from year to year, and the main motive is the desire to live with relatives in a multi-generational family where most of their lives are lived - in the North. Other examples show that when the older generation receives an apartment in another region, the younger generation of the family also leaves. All these examples indicate that it is necessary to pay attention not only to improving state and non-state financing of programs for relocating disabled people from the Arctic regions, but also to creating better conditions for labor spatial mobility of Arctic residents in young and middle ages. Life in the North, in the Arctic, should be the result of a person's conscious choice of the best life for himself, and not a forced decision of a hostage to circumstances.

The basic reason for the current situation in the social sphere of the Russian Arctic is the lack of fair tax and non-tax mechanisms for the distribution of income generated during the development of Arctic resources. Economic activity in the Arctic today benefits regions outside the Arctic more than the Arctic itself. The Arctic regions, while producing a significant share of GDP, in the process of redistribution are deprived of a vital part of the income generated, which could be used to improve the level and quality of life of their population. Taking into account the above, we propose to the Government of the Russian Federation, namely:

1. Adopt a package of documents and laws of the Russian Federation that provide the basis for state policy in the Arctic zone of the Russian Federation:

strategy for the socio-economic development of the Far North and Arctic regions for the period until 2035;

strategy for the development of the Arctic zone of the Russian Federation for the period until 2025, laws "On the fundamentals of state socio-economic policy in the regions of the North and the Arctic", "On

the zoning of the North of the Russian Federation", "On guarantees and compensation for persons working and living in the regions of the North of the Russian Federation";

legally establish boundaries and a clear list of territories of the Russian Arctic.

2. Complete the development of the state program "Economic and social development of the Arctic zone of the Russian Federation for 2018-2035", ensuring a socially oriented approach to its formation. Include in it as priority programs for the development of human potential, increasing the level and quality of life of the population, the formation and modernization of social infrastructure in the Russian Arctic.

3. Develop measures aimed at transforming the Arctic zone of the Russian Federation into an area of high living comfort and increased social and infrastructural security. Strengthen government protectionism measures for the development of Arctic social infrastructure. Ensure the development and implementation of targeted programs for the rapid modernization of social infrastructure in the Arctic zone, aimed at maximizing the quality and accessibility of social services (health care, housing and communal services, etc.).

4. Develop and implement measures of state subsidy support that ensure a qualitatively new state of the social infrastructure of remote Arctic settlements. When developing standard indicators of personnel and infrastructure provision, especially in healthcare, take into account the need to apply increased standards due to the low transport accessibility of these settlements.

5. Ensure clear regulatory regulation of the process of developing public-private partnerships in the social sphere, creating new mechanisms for interaction between resource corporations and local communities to resolve social issues. Stimulate the development of a network of social services provided by non-profit organizations.

6. Bring the system of northern guarantees and compensations into line with the high level of costs of living in the Arctic; implement the return of unreasonably curtailed northern guarantees; eliminate the referential nature of certain articles of the Law of the Russian Federation No. 4520-1 of February 19, 1993 "On state guarantees and compensation for persons working and living in the regions of the Far North and equivalent areas", Ch. 50 Labor Code of the Russian Federation No. 197-FZ.

7. Together with the constituent entities of the Russian Federation, develop measures to ensure the provision of northern guarantees and compensation in the same amount to all those working in the Arctic, regardless of their affiliation with the public sector or private business. Strengthen the responsibility of employers in private business for establishing minimum wages and implementing northern

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guarantees; stimulate the development of a social partnership system to ensure the full scope of northern guarantees for employees of the extra-budgetary sector. Establish a minimum official salary in the public sector equal to the subsistence level.

8. Improve government funding for resettlement programs for the disabled population, create incentives for the participation of industrial corporations operating in the Arctic in regional and local resettlement programs; expand the use of insurance mechanisms for these purposes. Develop measures to improve conditions for labor spatial mobility of Arctic residents in young and middle ages.

9. In order to attract young personnel, ensure that natives of the North receive all “polar” percentage bonuses from the first day of work in the Arctic zone, provide a system of incentives for businesses that attract young people from other Russian regions to work in the Arctic, and for employers implementing

training programs and retraining of personnel to work in the Russian Arctic. Establish additional measures to support young families - benefits for maintaining a child in preschool institutions and paying for housing and communal services. Develop programs for financial support for youth education in universities with the condition of subsequent work for at least three years in the Russian Arctic.

10. Take measures to create more equitable tax and non-tax mechanisms for the distribution of income generated during the development of the resources of the Russian Arctic, to improve interbudgetary relations between the federal center and the regional and local levels of government in the Russian Arctic in order to increase the amount of funds remaining at the regional and local level for improving the level and quality of life of the population of the Arctic zone of the Russian Federation.

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