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ON THE CONTRIBUTION OF THE HIGHER EDUCATION SYSTEM TO ENSURING THE SOCIAL AND ECONOMIC DEVELOPMENT OF CATUS AND ONP REGIONS OF THE ARCTIC ZONE OF THE RUSSIAN FEDERATION

Abstract: *in the article, the authors examined the need to resolve issues of national security, economic and other strategic issues facing the Arctic zone and are of great importance for the whole of Russia, place increased demands on the quantitative and qualitative composition of the Arctic labor force, and explored the potential of universities located in the Arctic zone Russia, in the context of staffing strategic priorities for the development of the Arctic macroregion. The study is based on a comparative analysis of the forecast values of the need for personnel with higher education, calculated taking into account the established priorities for the development of the Arctic and the graduation rates of universities and their branches. Based on this, two methods assess the possibility of covering the needs of the economy through university graduates, both in general and in the context of specialties/areas of training. The impact of graduate migration on the human resources potential of the regions is taken into account. The importance of interregional cooperation with territories adjacent to the Arctic zone from the point of view of staffing is shown using the example of the Republic of Karelia. Based on the results of the study, disparities in the staffing of Arctic development priorities were identified in terms of the quantitative and qualitative composition of graduates. Conclusions and proposals for universities and executive authorities show specific ways to overcome the emerging structural imbalances in ensuring the strategic development of the Arctic with personnel with higher education. Issues of demand for university graduates and their employment prospects in the labor market have already been repeatedly covered in the pages of the magazine. However, an analysis of the potential of universities in the context of staffing the development priorities of the Russian Arctic zone is presented for the first time. The sources of data were documents on the strategic development of territories belonging to the Arctic zone of Russia, state statistical reporting*

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on the economy, the labor market and the higher education system, results of monitoring the employment of university graduates according to the Pension Fund of the Russian Federation, Rosobrnadzor and educational organizations.

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 crisis phenomena that have accompanied the socio-economic development of Russia in recent years are both negative and positive factors. Negative - because we are losing individual positions and achievements, positive - because we are getting rid of “weak links” and looking for new opportunities. One of these opportunities, undoubtedly, must be recognized as the decision of the President of Russia on the development and implementation of the “Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period until 2035.” The importance and timeliness of this decision is explained from the point of view of staffing using the example of the Republic of Karelia. Based on the results of the study, disparities in the staffing of Arctic development priorities were identified in terms of the quantitative and qualitative composition of graduates. Conclusions and proposals for universities and executive authorities show specific ways to overcome the emerging structural imbalances in ensuring the strategic development of the Arctic with personnel with higher education. Issues of demand for university graduates and their employment prospects in the labor market have already been repeatedly covered in the pages of the magazine. However, an analysis of the potential of universities in the context of staffing the development priorities of the Russian Arctic zone is presented for the first time. The sources of data were documents on the strategic development of territories belonging to the Arctic zone of Russia, state statistical reporting on the economy, the labor market and the higher education system, results of monitoring the employment of university graduates according to the Pension Fund of the Russian Federation, Rosobrnadzor and educational organizations. It turns out that the Arctic has enormous resources: here are the largest deposits of coal, gold, rare metals, as well as huge reserves of aquatic biological resources, hydropower, forestry, recreational and other natural resources. The Russian Arctic creates 12–15% of the country's GDP and provides about a quarter of exports. The country's unique hydrocarbon potential is concentrated here: a fifth of oil and 62% of gas

resources. It is obvious that such resources should become the basis for successful socio-economic development and prosperity of Russia. The effectiveness of regional scientific, technical and personnel policies largely depends on how correctly development guidelines are chosen, what are the mechanisms for selecting sectoral and personnel priorities, and what tools are used for their implementation. Under these conditions, the importance of personnel and scientific support for the socio-economic development of the Arctic zone of Russia increases. The main link in ensuring the development of the economy with personnel with higher education remains universities and their branches operating in the regions. Training in-demand specialists with the necessary competencies is the main task of educational organizations, especially in times of crisis. The purpose of the article is to analyze the potential of universities, located in the Arctic zone of the Russian Federation (AZRF), in terms of staffing the development priorities of the macroregion. Achieving the goal involves assessing the forecast values of the need for personnel with higher education in the Russian Arctic and considering the possibility of covering it with university graduates in quantitative and qualitative aspects, taking into account the impact of migration on the personnel composition of the regions, searching for possible ways to overcome the emerging imbalances in ensuring the implementation of Arctic development priorities by personnel with higher education. The issues of demand for university graduates and their employment prospects in the labor market have already been repeatedly covered in the press. However, an analysis of the potential of universities in the context of staffing the development of the Arctic zone of Russia and the established priorities is presented for the first time. According to the Decree of the President of the Russian Federation of 2020 No. 296 “On the land territories of the Arctic zone of the Russian Federation”, the territory of the Arctic zone includes 8 northern regions of the country, of which 4 regions are assigned entirely to the territories of the AZ of the Russian Federation (Murmansk region, Yamal-Nenets Autonomous Okrug, Nenets Autonomous Okrug, Chukotka JSC), and others - partially (Arkhangelsk Region, Krasnoyarsk Territory, the Komi Republic and the

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Republic of Sakha (Yakutia). The educational network of universities in the Arctic zone of Russia is quite extensive, since, taking into account branches, it includes: 34 state organizations of higher education and 24 non-state ones. With In this regard, it is important to note that training is carried out in 45 enlarged groups of specialties/directions (UGSN) out of a possible 55. Of the regions that are part of the Russian Arctic, the most extensive network of universities and branches is characterized by the Murmansk and Arkhangelsk regions, as well as the Yamalo-Nenets Autonomous Okrug. state organizations of higher education - Northern Arctic Federal University, Northern State Medical University, Norilsk Industrial Institute, Murmansk State Technical University, etc. Among the branches of the Russian Academy of Sciences is the largest - the Kola branch of Petrozavodsk State University, which in 2015 had 6 faculties and 19 departments, 2080 students, 120 educational programs. To analyze the educational potential of universities in the Arctic zone in the context of implementing the assigned state tasks, a forecast of the economy's need for personnel with higher education was formed. For this purpose, a combined approach was used, involving a

combination of macroeconomic forecasting techniques and surveys of employers. Due to the fact that surveys of leading employers in the Arctic in the fall of 2021 did not confirm the launch and implementation of numerous announced investment projects due to the financial crisis, the personnel forecast for most regions mainly takes into account the need only for "replacement" and "for growth", then there is no investment component. The need for "replacement" is associated with the inevitable natural age-related retirement of workers (retirement, loss of ability to work, etc.), the need for "growth" - with the growth/decline of current production with the corresponding opening/closing of jobs. An important feature of the methodology used is that the forecast values of the need for personnel with higher education are calculated in accordance with the current strategic development programs of each of the subjects included in the Arctic zone and the macroregion as a whole, and the development strategies of industries and industrial clusters are also taken into account. This indicates that the forecast takes into account the priorities of economic and social development of the regions (Table 1).

Table 1. Forecast of the annual additional need of the economy for personnel with higher education in the subjects of the Arctic zone of Russia

AZ RF subjects	2015	2018	2020	2025	2030	2035
Total for AZ RF:	13 520	13 475	13,565	13 470	13,645	13 620
Murmansk region	3 780	3 770	3,790	3 770	3 800	3 820
Yamalo-Nenets Autonomous Okrug*	4 230	4 230	4 280	4 310	4 360	4 400
The Republic of Sakha (Yakutia)	105	105	90	90	90	85
Komi Republic (Vorkuta)*	495	485	475	465	450	435
Krasnoyarsk region	1 630	1 620	1 660	1,590	1 630	1 620
Nenets Autonomous Okrug	245	250	245	255	265	270
Chukotka Autonomous Okrug	225	225	245	230	240	230
Arhangelsk region	2 810	2,790	2 780	2760	2 810	2 760

Thus, due to the fact that in a large number of regions the implementation of investment projects is not taken into account, the presented values of the forecast demand can be characterized as "moderate". When launching investment projects, the demand values will increase by the number of new jobs created. At the same time, to take into account the investment component it is necessary to overcome the following difficulties, namely:

— *investor employers are not interested in providing information about the need for personnel to implement investment projects;

— *the parent companies implementing individual investment projects for the RF AZ are located outside the RF AZ (Moscow, St. Petersburg);

— *lists of investment projects are constantly adjusted in connection with crisis phenomena in the Russian economy. Currently, a significant part is suspended.

Table 1 presents the forecast values of the need for personnel with higher education for the Arctic zone of Russia. As follows from the data presented in Table 1, the constituent entities of the Russian Federation, which have the most developed

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educational network of universities and their branches, as well as the largest population and employees, are characterized by the maximum values of the need for personnel with higher education. The leader in demand is the Yamalo-Nenets Autonomous Okrug, the following values are in the Murmansk and Arkhangelsk regions. The minimum requirements for the Republic of Sakha (Yakutia) are explained by the fact that only 5 of the 36 uluses of the republic belong to the Arctic zone. Having a forecast of the economy's need for personnel is important not in itself, but from the point of view of planning the development of a personnel training system, making management decisions about "who to train?", "how much?", "are the internal resources of the region sufficient to cover the need? "

It is important to note that there are two approaches to assessing the coverage of staffing needs through graduates, namely:

The first approach involves taking into account only full-time graduates, based on the assumption that all part-time students are already working. In this regard, it is difficult to consider the entry of "correspondence" graduates into the labor market as an additional source of labor;

the second approach takes into account the needs of all graduates when covering the needs, based on the assumption that working students, after receiving a diploma, will occupy other positions in the labor market.

In this regard, they will be able to fill empty vacancies at higher levels, but at the same time, often freeing up vacancies that do not require a higher education diploma. Taking into account the fact that there is no consensus on this issue, we will consider both options. The data presented in Figure 2 shows the role of universities and their branches located in the Arctic zone in covering the need for personnel with higher education through full-time graduates. Data for the Nenets Autonomous Okrug and the Republic of Sakha (Yakutia) are not presented in the figure due to the absence of higher education institutions in the

territories of these subjects belonging to the Russian Arctic. According to the data presented, the most favorable situation in terms of covering the need for personnel with higher education is in the Arkhangelsk region. The share of covering the need through full-time graduation is 80%, while in other regions of the Russian Arctic - from 5% (Yamalo-Nenets Autonomous Okrug) to 34% (Murmansk region). It should be noted: such indicators are explained by the fact that in the Arkhangelsk region the share of full-time education in the total output is 68%, while, for example, in the Yamal-Nenets Autonomous Okrug - 16.4%, in the Murmansk region - 42%. Thus, using the first option for assessing the coverage of needs - at the expense of full-time graduates, we find that the share of the needs of the economy by the higher education system in the territories of the AZ RF subjects is about 30%. Considering the second option - covering the need through graduation from all forms of education (Table 2) - we see a different picture. The share of covering the needs of the Arctic zone economy for personnel with higher education through university graduates is on average 65% for the macroregion. In terms of subjects, the Murmansk and Arkhangelsk regions (two of the three regions with the maximum need for personnel with higher education) cover it completely. For the Republic of Sakha (Yakutia), the absence of universities and their branches on the territory of 5 out of 36 uluses belonging to the Arctic zone is not critical, since in general Yakutia is a large educational center. Covering the need for personnel with higher education in the amount of 85–100 people in the indicated uluses is solved by training graduates in Yakutsk. For the Nenets Autonomous Okrug, which is both a separate subject of the Russian Federation and an integral part of the Arkhangelsk region, the annual need of the economy for personnel with higher education is 240–270 people. is ensured through training in universities of the Arkhangelsk region (Table 2).

Table 2. Covering the economy's need for personnel with higher education through university graduates (all forms of education) in the AZ RF subjects

AZ RF subjects	2015	2018	2020	2025	2030	2035
Total for AZ RF:	76%	73%	67%	63%	62%	62%
Murmansk region	100 %	96%	85%	84%	83%	82%
Yamalo-Nenets Autonomous Okrug	25%	25%	28%	22%	20 %	20 %
The Republic of Sakha (Yakutia)*	0%	0%	0%	0%	0%	0%
Komi Republic (Vorkuta)	33%	23%	24%	35%	34%	29%
Krasnoyarsk region	38%	37%	34%	31%	32%	32%

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Nenets Autonomous District*	0%	0%	0%	0%	0%	0%
Chukotka Autonomous Okrug	20 %	24%	27%	39%	33%	35%
Arhangelsk region	162%	159%	143%	131%	131%	135%

Thus, it is important to emphasize that the regional education system is not faced with the task of meeting 100% of the staffing needs. There are a number of objective reasons for this. This includes the presence of other sources - the unemployed, migrants, institutional population, etc., and the possibility of intersectoral flow of labor resources, etc. At the same time, the main source of covering the economy's need for personnel with higher education and ensuring the selected priorities for the socio-economic development of the Russian Arctic zone are graduates of the higher education system. Continuing to assess the coverage of the economy's needs for personnel in the Arctic zone, it is important to consider the migration flows of the population. Migration flows are an important tool for the rational distribution and use of the labor potential of the population with both higher and secondary vocational education. However, Russian and world practice indicate that migrants choose "better" conditions compared to their current place of stay. Considering the harsh climatic conditions and the specifics of the socio-economic development of the Arctic macroregion, one would expect a significant outflow of the population in general and graduates in particular to territories with more favorable living conditions. Data from state statistical reporting, containing general results of population migration in the regions of the Russian Arctic, indeed confirm the trends in population outflow - in 2021, there was a negative balance of migration at the level of 35 thousand people. Presumably, these trends are related to the fact that people of retirement age, after finishing their working career, leave the territories classified as the Arctic zone and move to places with more favorable climatic conditions. At the same time, statistical data on interregional labor migration indicate the opposite trend: the number of employed people moving to work in the AZ RF subjects exceeds the number of those leaving for work in other subjects, i.e. there is a positive balance of interregional labor migration in 2021 this figure was 118 thousand people. Moreover, considering the migration indicators of graduates with higher education, we see a positive balance of migration. For all seven regions that are part of the Russian Federation and for which information on migration flows is provided, the incoming flow of graduates is either equal to the outgoing flow (Arhangelsk region) or exceeds the outgoing flow (the other six regions). The undoubted leaders here are the Yamalo-Nenets Autonomous Okrug and the Chukotka Autonomous Okrug, where the arrival of

graduates from other regions significantly exceeds the departure. This indicates low motivation for graduates of the Arctic territories to move and good employment rates in their specialty. Moving from the aggregated values of the number of graduates - interregional migrants with higher education to the specialties they received, the following should be noted. For the Arctic regions there is no general pattern of "entry-exit" in relation to enlarged groups of specialties (UGSN). For example, in the Arkhangelsk region, graduates in the specialties "service and tourism", "fundamental medicine", "economics and management" had the greatest exit rates. From the Murmansk region, the first three values for departure are graduates with UGSN "mathematics and mechanics", "political sciences and regional studies", "industrial ecology and biotechnology". A similar situation arises with visiting graduates. If in the Arkhangelsk region the top three are graduates in the specialties "industrial ecology and biotechnology", "cultural studies and sociocultural projects", "information security", then in the Murmansk region these are "mechanical engineering", "cultural studies and sociocultural projects", "linguistics and literary studies" " Thus, at the level of integral values, the positive balance of interregional migration of graduates with higher education covers a significant part of the needs of the AZ regions of the Russian Federation. The integral values of the need for personnel with higher education in the Arctic zone of Russia and the possibility of covering them were presented above. An important issue is the qualitative and structural compliance of university output with needs. To solve this problem, an analysis of strategic development documents is required, as a result of which the main development priorities by industry are identified and compliance with the required specialties/areas of higher education is established. According to strategic development documents in the medium term, the priority directions for the development of the Arctic zone of the Russian Federation are: effective use and development of the resource base; modernization and development of infrastructure of Arctic transport systems; development of science and technology; creation of a modern information and telecommunications infrastructure; ensuring environmental and military security; international cooperation in the Arctic. In accordance with the identified priorities, promising projects in the Arctic Zone of the Russian Federation are diverse and cover a wide range of economic sectors that provide both the greatest increase in added value, as well as industries aimed at ensuring a high

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quality of life for the indigenous population and industries ensuring Russia’s military-strategic presence in the Arctic. Key among them are the mining industry, oil and gas industry, fisheries and agriculture (reindeer husbandry), electric power, civil and military shipbuilding, transport infrastructure, information and telecommunications infrastructure, industrial and civil construction, tourism, environmental protection and environmental improvement, healthcare, education, scientific activity. In this regard, the main documents of strategic development appeared in 2018–2020, An analysis was carried out of the structure of admission to educational organizations of higher education in the context of the State Educational Institution for 2021 for all forms of education for compliance with priority sectors of development (Table 2). As can be seen from the presented data, in the structure of admission to educational organizations of higher education in the context of the State University of Social Sciences for 2014, the largest contingent of university students in the AZ of the Russian Federation are in economics and legal specialties - the total graduation rate of universities in the corresponding groups of specialties was about 40%. However, it is worth noting that this problem is of a nationwide nature. According to government statistics, for many years the higher education system has been “re-graduating” specialists in economics and humanities, which persists due to the perception among applicants of a university diploma as a means of expanding opportunities in the labor market. At the same time, for such UGSNs as “18.00.00 - Chemical Technologies”, “43.00.00 Service and Tourism”, corresponding to the priority

areas of development of the Russian Arctic, the acceptance rate did not exceed 1%. Thus, due to significant inertia, the education system does not have time to quickly respond to changes in the external environment. The proclamation of priority directions for the development of the AZ RF did not have a significant impact on the admission structure of universities located in the AZ RF territories. From the point of view of a comprehensive assessment of the staffing potential, it is important not only to focus the personnel training system on the priority areas of development of the Russian Federation, but also to determine the sufficiency of staffing to implement these priorities. In connection with the above, of particular importance is the analysis of covering the needs of the economy of the Russian Arctic in personnel with higher education in the context of the State Educational Service, which makes it possible to assess how much the capabilities of the higher education system correspond to the needs of the economy of the macroregion in terms of providing the necessary number of specialists in a professionally qualified context. Due to the general insufficient coverage of the need by graduates of the higher education system as a whole in the Russian Federation, in detail for the majority of State Educational Institutions there will also be a shortage of university graduates. At the same time, UGSN are significantly differentiated in terms of the share of covering the needs of the economy of the Russian Arctic in personnel with higher education through university graduates who studied in all forms of education (Table 3).

Table 3. Grouping of the State Tax Service by the share of covering the needs of the economy of the Russian Arctic in personnel with higher education through university graduates, 2021.

Share of covering the needs of the Russian Arctic economy in personnel with HE at the expense of university graduates	Enlarged groups of specialties/directions preparation	including those providing training for priority areas
	37.00.00 - Psychological sciences, 39.00.00 - Sociology and social work, 40.00.00 - Jurisprudence, 38.00.00 - Economics and management, 42.00.00 - Mass media and information and librarianship	
More than 100%		

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		13.00.00 — Electrical and thermal power engineering
	45.00.00 - Linguistics and literary criticism,	
	49.00.00 – Physical education and sports,	06.00.00 - Biological sciences, 19.00.00 - Industrial ecology and biotechnology,
60–90%	33.00.00 – Pharmacy	34.00.00 - Nursing, 14.00.00 - Nuclear energy and technology, 43.00.00 - Service and tourism, 44.00.00 - Education and pedagogical sciences, 09.00 .00 – Informatics and computer technology, 31.00.00 – Clinical medicine
	29.00.00 - Light industry technologies, 54.00.00 - Fine and applied arts, 46.00.00 - History and archeology, 51.00.00 - Cultural studies and sociocultural projects	
	25.00.00 - Air navigation and operation of aviation and rocket and space technology, 04.00.00 - Chemistry, 32.00.00 - Health sciences and preventive medicine, 16.00.00 - Physical and technical sciences and technologies, 41.00.00 - Political sciences and regional studies ,,	26.00.00 - Engineering and technology of shipbuilding and water transport, 21.00.00 - Applied geology, mining, oil and gas engineering and geodesy, 05.00.00 - Geosciences, 23.00.00 - Engineering and technology of land transport, 35.00.00 - Agriculture , forestry and fisheries, 18.00.00 - Chemical technologies, 15.00.00 - Mechanical engineering, 20.00.00 - Technosphere safety and environmental management
30–60%	01.00.00 – Mathematics and mechanics	
	27.00.00 - Management in technical systems, 12.00.00 - Photonics, instrumentation, optical and biotechnical systems and technologies, 30.00.00 - Fundamental medicine, 28.00.00 - Nano technologies and nanomaterials, 22.00.00 - Materials technologies, 03.00. 00 - Physics and astronomy, 11.00.00 - Electronics, radio engineering and communication systems, 36.00.00 - Veterinary and animal science	08.00.00 – Construction equipment and technologies,
Less than 30%		02.00.00 – Computer and information sciences

The data in Table 3 indicates that 5 out of 46 State University of State Sciences, related to the social sciences and humanities, are characterized by an overabundance of graduates (the coverage rate is more than 100%). Taking into account the availability of other sources of covering staffing needs, for the State Tax Service with a coverage share of 60–90%, the situation is not critical and will not cause a serious shortage of personnel. For the rest of the State Tax Service, on the contrary, there is a significant lack of training of personnel with higher education. Thus, the analysis of covering the need for personnel in the context of the State Educational Service at the expense of university graduates once again confirms the fact that the higher education system is insufficiently focused on the priority areas of development of the Russian Arctic. The situation with the imbalance between staffing needs and the output of the higher education system according to the State University of Social Sciences in different regions of the Russian Arctic is different and is associated with the characteristics of their industrial potential and economic priorities. For example, in the Murmansk region, one of the most dynamically developing Arctic regions, as well as in the AZ of the Russian Federation as a whole, there is an oversupply of university

graduates in specialties/areas of training in the social, humanitarian and economic fields. The largest ice-free port in Russia is located on the territory of the Murmansk region, and the region accounts for 16.2% of all-Russian fish production. In this regard, in specialties related to the engineering and technology of shipbuilding and water transport, a stable shortage of personnel with higher education remains at the level of 30%. It is worth noting for a number of UGSN - “21.00.00 - Applied geology, mining, oil and gas engineering and geodesy”, “19.00.00 - Industrial ecology and biotechnology” - for the Murmansk region the share of covering the need exceeds 100%. This fact should be considered positive due to the fact that the Murmansk region is the largest educational center and trains personnel for the entire Arctic zone of Russia. At the same time, for a number of other significant UGSNs, universities in the Murmansk region do not train specialists with higher education at all, which causes a significant shortage of personnel in the region. Among these UGSN are specialties and areas of medical training that are widely in demand in the Murmansk region. In the current situation, the role of interregional cooperation with territories adjacent to the Murmansk region is increasing in terms of training to meet the need for medical workers with

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higher education. Thus, according to monitoring data on the employment of university graduates, the need for personnel in the State Educational Standards “31.00.00 - Clinical Medicine” and “33.00.00 - Pharmacy” is 30% met by graduates of Petrozavodsk State University - the largest university in the European North of Russia, located in the Republic of Karelia. In addition, the Kola branch of Petrozavodsk State University operates in the Murmansk region, which is the third largest university in the Murmansk region and provides training in areas and specialties that meet the needs of almost all sectors of the economy and production of the Murmansk region. The results of the analysis of the qualitative and structural compliance of university graduates with the needs of the economy indicate that for universities, first of all, it is necessary to resolve the issue of structural compliance of admission and graduation with the chosen priorities of economic development. Due to the insufficiency of graduates to cover the need in absolute terms for some regions of the Arctic, additional training and retraining of existing labor resources, including the unemployed, and motivating the unemployed population to work are of particular importance. In addition, there remains the possibility of attracting personnel from other regions as an additional source. The need to resolve issues of national security, economic and other strategic issues facing the Arctic zone and of great importance for the whole of Russia places increased demands on the quantitative and qualitative composition of the labor resources of the Arctic Zone of the Russian Federation. At the level of integral values, the potential of Arctic universities currently provides on average about 60% of the need for personnel with higher education. On average, another 10–20% is covered by the positive balance of interregional migration of graduates. A detailed analysis of covering the needs of the economy in the context of State Budgetary Educational Institutions showed a more complex situation: for some State Educational Institutions not directly related to priority sectors, there is an overtraining of university graduates. For other OGSN, for which training of specialists is necessary to implement the chosen path of strategic development of the Arctic, a lack of personnel training has been identified. In addition to the identified structural imbalances, there are added objective limitations to the development of the educational network of the Arctic: low population density, harsh climatic conditions, reduced demographic indicators, etc. In this regard, within the framework of university development programs, programs for the development of human resources in the regions to overcome, first of all, structural disproportions in the training of personnel of the AZ RF, it is advisable to implement the proposals considered.

Conclusion

Features of the development of the education system in CATUs and ONPs of the Arctic regions of the Russian Federation - consideration of this issue seems extremely relevant, since currently the issues of development of the Arctic regions and the Far East are coming to the fore and acquiring special importance. In his message to the Federal Assembly on January 15, 2020, President of the Russian Federation Vladimir Vladimirovich Putin voiced proposals for improving demographic policy, including the development of the social sphere and education. In particular, it was proposed to ensure a phased transition until 2023 to the organization of free healthy hot meals for primary school students; cover at least half of the country’s teachers with a professional development system; continue to create new places in nurseries; modernize the material base for additional education for children; annually increase the number of budget-funded places in universities, and also, as a priority, transfer budget-funded places to regional universities in those territories where there is a shortage of doctors, teachers, and engineers. This specifically applies to the Arctic territories, where the personnel requirement in the social sphere is somewhere around 25–30 percent. The set of proposed measures will make it possible to increase the availability of quality education, of course, in the Arctic and the Far East, and also to respond more flexibly to the needs of the labor market in this macro-region. However, in order to achieve the goals set—bringing the indicators of social development of the territories of the Arctic zone (this task, as you know, was set by the president) to and above the Russian average—requires serious consolidation of the efforts of both federal and regional authorities. This is why we have gathered today to discuss these issues; in the Arctic zone, the following problem is still acute - the migration outflow of the population: more than 300 thousand people in 15 years. Among the main characteristics it is necessary to mention the outdated material and technical base of educational institutions, many emergency schools, kindergartens - up to 30–40 percent, and in some regions even higher. The proportion of emergency and dilapidated housing is high - up to 40–50 percent. It is also necessary to mention the lack of an effective system for predictive assessment of personnel needs for specialists with higher and secondary vocational education - we specifically considered these issues at the council, and if you remember, very seriously. According to forecasts from the Ministry of the Arctic, by 2035 we must create 200 jobs there. But we do not have a unified system for assessing the quality of Arctic programs and a methodology for determining the professions that are necessary to work in the Arctic regions. In fact, the situation is as follows: 80 percent are mid-professional specialists, and only 20 percent are with higher education. This is also forecast data,

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but in reality it turns out the other way around: there are more personnel with higher education, and, unfortunately, there are more people with secondary and secondary vocational education.

Monitoring, analysis and decision-making for more precise “tuning” of the structure of admission to universities in accordance with the development priorities of both each region individually and the entire macro-region as a whole. Establishing close contacts with leading employers in the regions who could correctly transmit personnel orders by level of education and by areas/specialties of training. This information is important for setting up regional models for forecasting personnel needs and for assessing structural changes in the composition of the regions’ labor potential.

Development and coordination of a unified scenario for the development of the region to provide a unified information field for decision-making by executive authorities, educational organizations, employers, and citizens. Application of the concept of creating a “transparent information environment” aimed at timely informing all interested users (government, business, education, individuals) about the past, present and future of the labor market in an understandable and accessible form.

Using tools to visually inform applicants and graduates about in-demand professions in the region in the format of professional charts and “employment barometers.”

It should be noted that an important element in improving the staffing system of the economy is not only the formation of a scientifically based forecast of

the need for personnel, but also the creation of effective mechanisms for transmitting this information to all interested participants in the labor market of applicants and their parents, graduates, employers, representatives of executive authorities. One of the most effective ways to disseminate information nowadays is web systems. Examples of effective dissemination of information about the labor market in the public domain on the Internet on thematic federal web portals:

— “staffing for the development of the Arctic zone of the Russian Federation” at <http://arctic.labourmarket.ru/prognosis>;

- “my career” at <http://mycareer.karelia.ru/>

Development of similar studies to clarify the qualitative composition of the needs of the economy in accordance with the established priorities for the development of regions separately and the macroregion as a whole. An important and little-researched issue is the issue of forecasting structural changes in the economy, and as a consequence, the economy’s need for personnel with higher and professional education.

Thus, the educational network of the Arctic zone of Russia has the potential to resolve personnel issues through graduates of higher education. At the same time, given the significant inertia, the education system does not have time to quickly respond to changes in the external environment. The results of the analysis indicate that for universities, first of all, it is necessary to resolve the issue of structural compliance of admission and graduation with the chosen priorities of economic development.

References:

- (2020). *On the fundamentals of the state policy of the Russian Federation in the Arctic for the period until 2035: Decree of the President of the Russian Federation of March 5, 2020 No. 164* [Electronic resource]. Garant: reference book. right system, Electron. Dan, [Moscow], 2020 - Retrieved 07/02/2020 from <https://www.garant.ru/products/ipo/prime/doc/73606526/>
- (2020). *On approval of the foundations of the state youth policy of the Russian Federation for the period until 2025: Order of the Government of the Russian Federation of November 29, 2014 No. 2403-r* [Electronic resource]. Garant: reference book. right system, [Moscow], 2014 - Electronic. Dan, Retrieved 05/18/2020 from <https://base.garant.ru/70813498/>
- Stepus, I. S., & Simakova, A. V. (2020). *Migration flows of university graduates for work in the Arctic zone of Russia: quantitative and qualitative aspects* [Electronic resource]. Regional economics: theory and practice, 2018 - T. 16, Issue. 10, p. 1872-1887, Electron. Dan, Retrieved 05/18/2020 from <https://doi.org/10.24891/re.16.10.1872>
- (2020). *Population size by individual age groups: demographic forecast until 2035* [Electronic resource]. Federal State Statistics Service, Electron. Dan, Retrieved 06/10/2020 from <https://www.gks.ru/folder/12781>
- (2018). *Regions of Russia. Socio-economic indicators*. 2018: Stat. Sat. / Rosstat. M., 2018, 1162 p.
- Lipatova, L.N., & Gradusova, V.N. (2019). Main trends and problems in the development of human potential in Russia in the post-Soviet period. *Management consulting*. 2019 No. 6, pp. 102-114.

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7. Lipatova, L.N., & Gradusova, V.N. (2019). Development of human potential in Russia: main achievements and threats. *Regionology*. 2019 No. 2, pp. 310-330.
8. Mokrova, M. Yu., & Lipatova, L. N. (2019). Modern trends in the development of human potential in Russia. Russia: trends and development prospects. *Yearbook*. 2019 Issue. 14. Part 1, pp. 317-322.
9. Pruel, N. A., Gradusova, V. N., & Lipatova, L. N. (2019). *Statistical analysis of the development of human potential in modern Russia*. Statistics in the conditions of the formation of a digital economy: materials of the International scientific-practical conf. / Mordoviastat; Belstat; FSBEI HE "MSU named after. N.P. Ogareva." 2019 (pp.131-139). Saransk: publisher Afanasyev V.S.
10. Gurtov, V. A., & Pitukhin, E. A. (2017). Forecasting the needs of the economy for qualified personnel: a review of approaches and application practices. *University management: practice and analysis*, 2017 - T. 21, No. 4, pp. 130-155.
11. Zhukevich, G. V., et al. (2019). *Legislative framework for the formation of mechanisms for attracting young specialists to the Arctic and the Far East. Materials of the "round table"*. (p.128). Moscow: Publication of the State Duma.
12. Kozlov, D. V., Platanova, D. P., & Leshukov, O. V. (2017). *Where to study and where to work: interregional mobility of university students and graduates*. National Research University Higher School of Economics, Institute of Education. (p.32). Moscow: National Research University Higher School of Economics.
13. Serova, L. M., et al. (2015). *Personnel provision of the Arctic zone of the Russian Federation with mid-level specialists and workers*. Demand and supply in the labor market and the market of educational services in the regions of Russia: collection. reports based on the materials of the XII All-Russian Scientific and Practical Internet Conference (October 28-29, 2015). (pp.163-179). Petrozavodsk: PetrSU Publishing House, 2015 - Book. 1.
14. Simakova, A. V. (2019). Professional self-determination of schoolchildren in grades 8-10 in the Arctic and Far Eastern regions: sociological analysis. *Sociological science and social practice*, 2019 - No. 3, pp.72-91.
15. Govorova, N.V. (2020). Human capital is a key factor in the economic development of Arctic territories [Electronic resource]. *Arctic and North*, 2018 - No. 31, Electronic. Dan, http://www.arcticandnorth.ru/upload/iblock/501/04_Govorova.pdf