



Specifics and prospects of the Yamal–Nenets Autonomous Okrug labour market in the context of economic and demographic development trends

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Abstract

The paper studies peculiarities of formation and use of the Yamal–Nenets Autonomous Okrug labour potential. The purpose of the study is to identify the specifics of the situation in the regional labour market, its main determinants and development prospects, and to formulate proposals for employment policy corresponding to the peculiarities of the socio-demographic and economic situation. The paper is based on state labour statistics, municipal statistics, information of the Federal Register of Disabled Persons, and the Rosstat population surveys data. To solve the research tasks the author uses methods of descriptive statistical analysis, as well as clustering methods in application to data characterizing tensions in the labour market of the municipalities of the region. The results of the analysis indicate the high role of migration in the formation of the labour potential of the region. Among the structural features of employment of the Yamal–Nenets Autonomous Okrug are a significant share of shift labour and a high proportion of migrants in the labour force, significant disparities in the structure of employed by economic activity and occupational group, as well as a small proportion of self-employed and entrepreneurs. The author concludes that the problems of the labour market act as an obstacle to the sustainable development of the region.

Keywords

employment, Yamal–Nenets Autonomous Okrug, regional labour market, labour force surveys, problems of northern regions

JEL codes: J0, J2, J4

Introduction

One of the central problems of the Russian labour market is its significant diversity due to the specifics of regional economic and demographic development. The differentiated ap-

proach to the assessment of employment and unemployment processes enables both gaining a more objective understanding of the Russian situation and identifying the peculiarities of the situation in the labour market of the region, formulating proposals for effective employment policies.

The Yamal–Nenets Autonomous Okrug is one of the regions belonging to the Arctic zone. The current stage of the country's economic and regional development policy is characterized by the activation of socio-economic development of the Arctic zone of the Russian Federation. However, the specifics of its development are determined not only by geographical location. Attention to the Yamal–Nenets Autonomous Okrug is due to a number of circumstances. In the long-term, the importance of the region will increase: its resources form the basis of Russia's energy strategy, at the same time influencing the formation of the labour market of the region and its structure. The region is characterized by a fairly high level of economic well-being and income of the population. The significant pace and potential of economic growth contributes to increased demand for labour. However, an important aspect of the economic development of the region is the difficulties in the sphere of formation and use of labour potential, there are significant disparities in the structure of employment by type of economic activity, and intensive labour migration.

The purpose of this work is to identify the specifics of the labour market situation of the Yamal–Nenets Autonomous Okrug, its main determinants and prospects, and to formulate proposals for the development of employment policy appropriate to the socio-demographic and economic situation.

Problems of economic development of the Yamal–Nenets Autonomous Okrug as a subject of scientific discourse

The ways of development of the Arctic region in recent years have interested both domestic and foreign researchers (Kapyla, Mikkola 2016; Kinossian 2013; Nikitina 2018; Danko, Vyazovikova 2020; Zaikov, et al. 2020). The focus of such studies is the geographical and economic problems of the region in the conditions of climate change and discussion of the role of minerals in the development of national economies.

The Yamal–Nenets Autonomous Okrug attracts the attention of researchers in the context of ethnodemographic and biological and geographical studies, as well as in terms of assessment of its resource potential (Kontorovich, et al. 2017; Gladun, et al. 2020; Kuznetsov, et al. 2019; Silin, Kibenko 2016; Impact of global... 2008). These studies note the role of the region as a source of minerals and along with the importance of solving environmental problems in the interests of human well-being.

Problems of the labour market and employment of the population of the district are less likely to be the subject of scientific research. One of the directions of research of the Yamal–Nenets Autonomous Okrug in this context is the study of the economic activity of Aboriginal peoples in the conditions of intensive industrial development of the North and the influence of demographic and social development of the indigenous population of YANAO on the formation of labour potential in this context (Vasilkova, et al. 2011; Kvashnin 2012). The authors emphasize the need to preserve traditional lifestyles and activities of Aboriginal peoples. There is no quantification of such activities in these papers.

The specificity of the labour market of the region is largely determined by its climatic conditions (Kuznetsov, et al. 2019), which is reflected in scientific projects of different

directions. Researchers note that warming in the Arctic is happening much faster than in other regions. The consequences of the climatic changes affect economic activity and human life in the northern regions (AMAP 2017). Living conditions and working conditions are changing, which justifies needs for new types of economic activity.

The complication of economic and social life gives rise to attention to the formation of effective technologies for managing the development of the region, including the field of employment. Some of the existing studies concern the issue of forming the institute of socially responsible business, first of all, large corporations in the field of oil and gas production (Kovrigina, Kostko 2016) and non-profit organizations (Annual Report... 2018), including those operating in the field of ensuring the rights of various categories of employees or introducing new models of obtaining professional skills. Most studies consider isolated cases, which does not allow drawing general conclusions about expanding the range of subjects of social and labour policy and the main directions of their activities.

A special place in the context of regional development take studies devoted to the specifics of the economic and social situation of Arctic regions. Success and sustainability of their development are considered as the basis of economic security of the country (Smirnova, Atlygina 2017) — primarily because of the natural resources of the region. In assessing the prospects of the northern territories, researchers note the need to form an innovative way of their development (Zelinskaya, et al. 2019). However, the results of study of Arctic zone regions show that the structure of these territories has seen a decline in the share of agriculture, hunting and forestry, manufacturing, transport, communications and finance with a simultaneous increase in the share of mining (Gamukin 2019). As a result, environmental problems are exacerbated, and employment patterns continue to deform. However, these conclusions are based on the analysis of the gross regional product structure, without actually addressing employment problems.

The development of regional labour markets should be based on a set of measures including those concerning financial, human resources, investment, information and organizational aspects. Without this, it is impossible to solve the problems of reducing existing disproportions in the labour market (Vukovich 2011). Considering the development prospects of the northern territories, besides development of oil and gas resources, experts often emphasize tourism (Gutman, et al. 2016), marine shipping and fishing. An interesting example is the Finnish ski resort Ruka, which annually hosts about 400,000 vacationers (Dale, et al. 2018).

Trends in the regional development region determine the relevance of its labour potential studies, considering it as a leading factor of sustainable development (Kolesnik 2020). Researchers note the structural imbalance of supply and demand in the labour market, which requires constant involvement of migrants. Another important problem is the ageing of labour resources (Korchak 2018), and its lack in conditions of economic growth and migration outflow of the youth (Ivanova, Zaitsev 2016). Reduction of time spent by each employed person in the Arctic labour market leads to the need to compensate for these losses by increasing the number of employed in the economy (Ivanova, et al. 2017). Qualitative changes in the labour market are legitimately linked with the solution of social problems of the population and development of infrastructure (Elovenko 2016).

Integrated analysis of the Yamal–Nenets Autonomous Okrug labour market problems in the context of a long-term development strategy development, as well as of ongoing transformations in economic life and demographic situation rarely becomes a subject of research. One of the reasons for this is the difficulty of forming an information base for detailed analy-

sis: labour statistics have a wide range of sources, but data in the regional context are not always available. This aims at filling this gap and determining the specificity of characteristics of the region's labour market, as well as its development, accounting for the local opportunities, the interests of the employed population and the strategy for long-term development.

Sources and Methods

The paper is based on the results of the project, carried out in 2018–2020 within the framework of information, analytical, scientific, and methodical support of the *Strategy of social and economic development of the Yamal–Nenets Autonomous Okrug* implementation.

The author uses a number of information sources to guarantee objectivity of conclusions. One of the methodical difficulties in carrying out a comprehensive analysis of the situation in the field of employment in the Yamal–Nenets Autonomous Okrug was the formation of a statistical base, allowing, on the one hand, to obtain reliable assessments of the situation in the region, and, on the other hand, to carry out a correct interregional analysis. The paper is based on state labour statistics, municipal statistics, information of the Federal Register of Disabled Persons, and the Rosstat population surveys data conducted in monitoring mode, namely: Labour Force Surveys (formerly Population surveys on employment problems) for the period 2000–2019¹; Comprehensive Survey of Living Conditions, rounds of 2016 and 2018²; Household Survey on Migrant Labour Use in 2019³. In addition, the author uses the information of the State programme of the Yamal–Nenets Autonomous Okrug *Social support of citizens and labour protection for 2014–2021* (appr. by the Decree of the Government of the Yamal–Nenets Autonomous Okrug of 25.12.2013 No. 1128–P) and other open official sources (in particular, the websites of the Government of the Yamal–Nenets Autonomous Okrug, government departments, municipal authorities).

To obtain an objective picture of the population employment based on the data set, the author analyses the dynamics of the number and structure of the employed (by place of residence, activity, gender and age), the prevalence of small businesses and the extent of informal employment, the number of self-employed workers and entrepreneurs, unemployment rates and tensions in the labour market. Based on data from Labour Force Surveys and the Federal Register of Disabled Persons, the author assesses labour reserves. The results of the Comprehensive Survey of Living Conditions allowed to determine the specifics of the working conditions in the region.

To solve the research tasks the author uses methods of descriptive statistical analysis, as well as clustering methods in application to data characterizing tensions in the labour market of the municipalities of the region.

1 Quarterly (since 1999), then monthly (since 2009) sample survey of Rosstat. The population sample in the Yamal–Nenets Autonomous Okrug is 5,701 respondents (annual sample size). URL: https://rosstat.gov.ru/labour_force (in Russian)

2 A Comprehensive Survey of Living Conditions refers to the monitoring surveys of Rosstat, the sample size for Russia is 134,852 respondents, the sample set in the Yamal–Nenets autonomous okrug is 888 respondents. URL: https://gks.ru/free_doc/new_site/KOUZ18/index.html (in Russian)

3 In the context of the Household Survey on Migrant Labour Use in all regions of the Russian Federation, over 130,000 households (persons aged 15 years and over) were interviewed, the sample in the Yamal–Nenets Autonomous Okrug is 1,900 respondents. URL: http://gks.ru/free_doc/new_site/imigr18/index.html (in Russian)

Demographic factors of the labour market

The Yamal–Nenets Autonomous Okrug can be attributed to regions with labour deficit. The labour force in the district is determined by the dynamics of demographic (fertility in previous years and the rate of mortality in the working age) and migration processes. The analysis of population dynamics over several decades demonstrates that the main increase in the population of the Yamal–Nenets Autonomous Okrug occurred between the population censuses of 1979 and 1989, that is, in the 1980s. This is a period of intensive development of the region, the discovery of deposits — in fact, the formation of the extractive industry, which has affected and continues to affect the structure of employment.

Migration has a significant impact on the region's labour market. In recent years, the number of migrant workers in the Yamal–Nenets Autonomous Okrug has been comparable to the total number of personnel of enterprises and organizations of the region: 111.4 thousand people compared to 268.7 thousand in 2017 (according to Rosstat surveys). At the same time, the vast majority of people who came to work in the district were employed in mining (43.7% of all migrant workers) and construction (33.7%).

The analysis of the age composition of migrants shows rather intensive migration in young ages. On the one hand, there is a significant outflow among those aged 14–19: an average of about 30‰ per year (the youth travel to work or study in other regions of Russia). On the other hand, there is a positive migration balance among those aged 20–29. Over 40% of the arriving migrants are aged 20 to 34.

Young people leave to get their education outside the region. Many of them remain in their place of education without returning to the Yamal–Nenets Autonomous Okrug. The lack of labour resources at working age is reimbursed by labour migration to the okrug.

Employment in the Yamal–Nenets Autonomous Okrug: structural features

The size of the region's labour force has fluctuated over the past two decades (Table 1), and changes in this indicator do not allow to detect any solid trend. The dynamics of the number of employed is almost identical to the dynamics of the labour force (due to the low number of unemployed in the region). Certain fluctuations in the indicator are determined, apparently, by the peculiarities of the economic situation: in particular, the fall in the indicators *labour force* and *number of employed* can be seen in crisis years: in 2009 and in 2015 (2008 and 2014 marked the beginning of crisis in the country's economy). Note that the 2008 crisis had short-term nationwide consequences and mostly affected finance, and in the Yamal–Nenets Autonomous Okrug, due to the structure of the regional economy, the impact of the crisis lasted even shorter.

Labour migration plays a significant role in the formation of the labour market in the Yamal–Nenets Autonomous Okrug. The number of migrants (persons who arrived in the district within a year) is over 10% of the labour force and employed population (Household Survey... 2019).

According to the Labour Force Surveys, the number of employed who came from other regions of the country amounted to 68.1 thousand people in 2015, 84.8 thousand people in 2016, 111,4 thousand people in 2017, and 105.2 thousand people in 2018. At the same time, a very small part of the residents works on the territory of other regions of the Russian Federation (Table 2).

Table 1. Labour force and the number of employed in the Yamal–Nenets Autonomous Okrug, thousand people

Year	Labour force (15–72 years)	Number of employed
2000	299.9	274.0
2001	301.8	280.5
2002	308.0	287.2
2003	303.0	286.2
2004	305.3	286.0
2005	308.7	286.5
2006	309.0	292.1
2007	312.5	303.9
2008	329.9	310.5
2009	316.6	302.3
2010	321.0	301.0
2011	322.7	310.6
2012	334.0	321.6
2013	324.8	314.5
2014	328.2	318.0
2015	315.7	304.4
2016	321.4	312.9
2017	313.2	303.3
2018	314.9	308.4

Source: compiled by the author according to Rosstat data

Table 2. Number of residents working in the territory of the Yamal–Nenets Autonomous Okrug and outside of it, thousand people

Year	Number of employees working within the region of their residence — the Yamal–Nenets Autonomous Okrug	Number of employees working in other regions of the Russian Federation
2011	310.3	0.4
2012	321.2	0.4
2013	314.5	0.0
2014	317.4	0.5
2015	304.2	0.2
2016	312.6	0.3
2017	303.1	0.2
2018	308.3	0.1

Source: compiled by the author according to Rosstat data

One of the consequences of the current regional economy structure (a large share of the fuel and energy sector) and Arctic climatic conditions is a significant proportion of shift workers: according to the Labour Force Surveys data, their share was 17.5% in 2016 and 21.8% in 2017. This indicator is differentiated by type of economic activity (Fig. 1). The majority of shift workers are employed in the hotel industry, construction, finance, real estate, information industry, and mining.

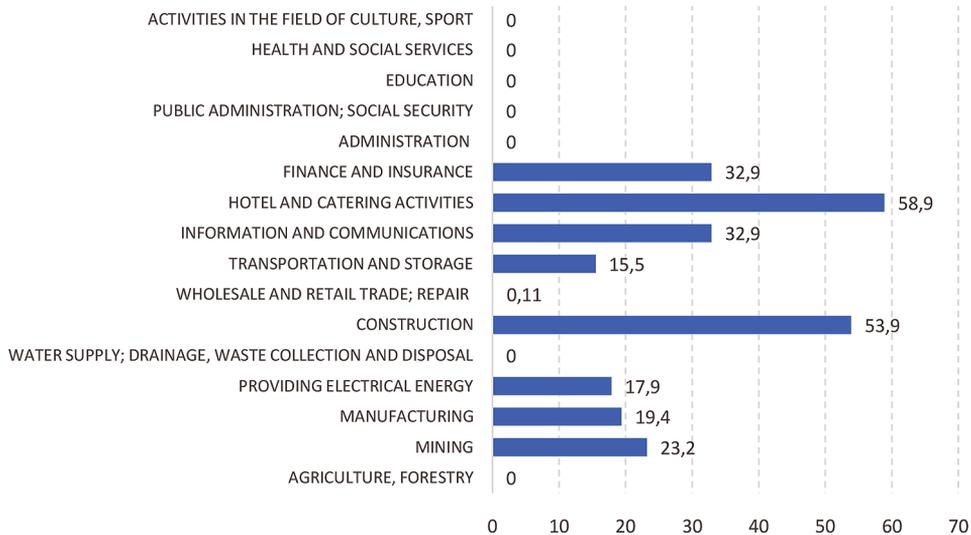


Figure 1. Share of shift migrant workers in the average number of personnel by type of economic activity, %, 2017. *Source:* compiled by the author according to Rosstat data

These areas of activity differ, among other things, in relation to the share of public and private enterprises. The share of migrants in the structure of the employed in the industry is related to the scale of attracting employees by private entrepreneurs, as well as stimulating the arrival of necessary specialists in the region by the executive bodies of the region. The involvement of specialists is related to the difficulties of operating the shift method in the extractive and manufacturing industries, as well as a shortage of skilled personnel in the scientific field, finance, insurance, information, and communications industries. Construction and named areas of the service sector are related to the fuel and energy sector — they serve the wellbeing of the industry and its employees.

The structure of the employed population in the Yamal–Nenets Autonomous Okrug has a number of features. Thus, the proportion of female workers in the labour force is 48%, and 48% of the employed population are female workers. However, in the structure of the average number of employees only 32.3% are female workers (in Russia as a whole — 53.6%). This situation is due to the fact that the average number is estimated for large and medium-sized enterprises, widely represented by mining, manufacturing and construction, where employees are predominantly male. The proportion of women is higher among those employed in small business as well as in the informal sector of the economy.

The shift work mode also affects men first and foremost: in 2017, 95.1% of shift workers were men, and in 2017 a third (32.7%) of all employed men worked via shift method, spending considerable time away from the family and their permanent place of residence. The

latter of these shares has always been high in the Yamal–Nenets Autonomous Okrug, but in recent years it has grown (in 2008 28.0% of men worked via shift method).

Most of the regional workforce is aged 30–49: in 2018, this age group accounted for 60.7%, that is, almost 2/3. This is more than in Russia as a whole (in 2018 — 52.6%). However, there has been gradual ageing of the workforce. While the average age of the workforce was 39.2 years in 2010, it had increased to 39.9 years by 2018.

In the structure of employees of large and medium-sized enterprises, the most significant place is occupied by workers — skilled workers of industry, construction, transport and related occupations (22.0%), plant and machine operators, assemblers and drivers (22.4%). The proportion of workers in the region is higher than in Russia on average. On the other hand, there is a lower proportion of managers and top-level professionals in the Yamal–Nenets Autonomous Okrug (Fig. 2).

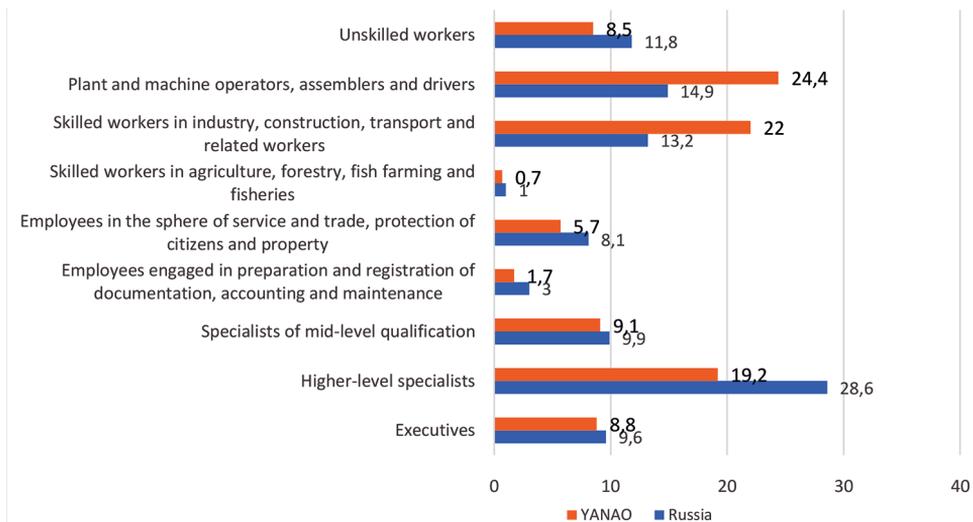


Figure 2. Structure of the number of employees, by groups of activity, October 2017, %. *Source:* compiled by the author according to Rosstat data

Mining, construction, transport and communications are most represented in the structure of employment in the Yamal–Nenets Autonomous Okrug (Table 3). These areas are followed by social security, education, real estate, rent and provision of services. Only a small share of the employed — compared to the nationwide Russian indicators — is observed in manufacturing, agriculture (including hunting and fishing), wholesale and retail trade.

Most part of the employed in the extractive industry are working in the field of oil and gas production (99% of the total number of employed in the extractive industry and 71% of those employed in the field of extractive industries); in general, one in five workers are employed in this area. At the same time, the share of those employed in the mining industry in the Yamal–Nenets Autonomous Okrug has increased since 2014 (however, the increase occurs in almost all regions represented in Table 3). The described situation indicates the significant role of the mining not only in the economy of the region, but also in ensuring the well-being of the population.

Table 3. Structure of employment by type of economic activity in regions with the largest share of employed in mining, 2018, %

	Russia	Nenets Autonomous Okrug	Khanty–Mansi Autonomous Okrug	Yamal–Nenets Autonomous Okrug	Tyumen oblast	Kemerovo oblast	Republic of Sakha (Yakutia)	Magadan Oblast	Chukotsky Autonomous Okrug
Agriculture, forestry, hunting, fishing and fish farming	6.9	4.5	1.3	1.5	6	2.4	7	3.1	5.0
Mining	1.6	26.5	21.4	19.9	1.1	10	9.8	13.5	18.1
Manufacturing	14.1	2.2	5.9	3.1	11.7	11.8	3.6	3.4	1.5
Provision of electric energy, gas and steam; air conditioning	2.3	6.2	3.5	4.8	2	3.4	6	6.6	12.6
Water supply; drainage, waste collection and disposal, pollution elimination activities	1.0	0.7	1	0.6	0.7	1.1	0.6	0.8	0.1
Construction	8.9	8.1	10.3	14.8	14	6.2	11	6.7	5.2
Wholesale and retail; repair of motor vehicles and motorcycles	19.1	5.5	12.4	7.6	18	15.4	12.1	14.2	10.0
Transportation and storage	7.5	10.1	10.1	13.5	8.1	8.6	8.9	8.3	8.1
Hotels and catering enterprises	2.4	1.1	2.2	2.5	3.2	2.2	1	2	1.1
Information and communications activities	2.0	1.4	1.6	1.7	1.8	1.6	2.1	2.2	1.7
Real estate	2.7	1.4	2.4	2.2	2.7	3.3	1.5	1.3	1.7
Education	7.6	10.1	6.8	6.5	6.8	8.6	12.5	7.6	9.0
Activities in the field of health care and social services	6.2	5.6	5.7	4.2	6.3	8	6.9	8.3	6.4
Other activities	17.7	16.7	15.3	17.0	17.6	17.3	17	22.1	19.5

Source: compiled by the author according to Rosstat data

When analyzing the dynamics of the number of personnel of the organizations of the Yamal–Nenets Autonomous Okrug by economic activity, one can see rather uneven dynamics in the number of employees of various fields of activity. Overall, the number of staff for 2009–2017 increased by 3%. However, the number of agricultural workers, including fisheries, has declined; the number of staff in manufacturing has also decreased, primarily in tex-

tiles and garments production, food production, rubber and plastic products, non-metallic mineral products, metallurgical production. Along with this, there has been an increase in the number of personnel in the field of mining, primarily fuel and energy minerals.

The increase in the number of employees also affected economic activities such as construction, wholesale and retail trade, repairs, real estate, and provision of services. And the reasons for such dynamics are rather contradictory. On the one hand, the nature of employment is changing, and the service sector is developing, especially in cities. On the other hand, changes due to the transformation (detailed breakdown) of the accounting of the employed by economic activity in connection with updated versions of the All-Russian Classifier of Economic Activities manifest themselves. For example, in some cases, the increase in the number of employees in the catering and restaurant business is due to the allocation into a separate statistical segment of the canteens at large fuel and energy enterprises.

In addition, the dynamics of indicators are influenced by undercounting employment in the field of individual entrepreneurship, small business and informal activities.

Small business and informal employment

In 2017, the total number of employed in the region amounted to 303.3 thousand people, and the average number of employees of large and medium-sized enterprises was 268.7 thousand people. Accordingly, the small sector and informal employment accounted for 34.6 thousand people.

The analysis of the employment structure by the status of the main job enables concluding that in the structure of the employed population of the Yamal–Nenets Autonomous Okrug there is a significant proportion of those working on a contract (98.5% in 2018), with a low share of entrepreneurs (0.8%) and the self-employed. The absolute number of individual entrepreneurs working in the district, according to the All-Russian Small Business Survey, reached 16,516 in 2015. The described structure of employment differs from the typical Russian average: in the country as whole the share of employed amounted to 93.2% in 2018, and the share of entrepreneurs was 1.4%.

The share of the average number of employees (without external secondary job employees) of small and medium-sized enterprises in the average number of employees of all enterprises and organizations in the Yamal–Nenets Autonomous Okrug is less than 10% (in 2017, according to the Rosstat survey — 9.44%). This is much less than the average for Russia (28.4%) or in other regions of the Arctic zone of Russia (Komi Republic — 20.2%, Nenets Autonomous Okrug — 11.4%, Republic of Sakha (Yakutia) — 15.4%).

Of particular interest is the analysis of the extent of informal employment in the region (employment for entrepreneurs who are not officially registered). While the availability of work, albeit informal, provides an income for the person and reduces labour market tensions, participants in the informal employment market are not subject to labour legislation and social guarantees, and they do not ensure the flow of taxes into the budget.

Against the background of the all-Russian level, the scale of informal employment in the region is insignificant: according to Rosstat estimates, 6.7% of the employed in the Yamal–Nenets Autonomous Okrug were involved in this sector of the economy in 2018 (see Table 4), while in the country as a whole this share grew up to 20.1%. At the same time, for almost all employed in the informal sector, this was the only form of employment.

Table 4. The employed in the informal sector in the Yamal–Nenets Autonomous Okrug aged 15 years and over by type of employment, thousands

Type of employment	2010	2015	2018
Total	16	23	21
<u>including those employed:</u>			
only in the informal sector	15	22	20
in the informal and formal sectors	0.6	1	0.3
<u>from the latter category:</u>			
with main employment in the informal sector	...	0.2	...
with additional employment (second job) in the informal sector	0.6	1	0.3
Those employed in the informal sector in % of the total employed population	5.1	7.6	6.7

Source: compiled by the author according to Rosstat data

Thus, there is almost no informal employment, self-employment or small business in the region. Micro and small businesses are mostly localized in trade and repairs. The expansion of small and individual entrepreneurship can contribute to the diversification of the labour activities, as well as the expansion of the services sector, which in turn can lead to greater population satisfaction with living conditions and quality of life.

Unemployment in Yamal–Nenets Autonomous Okrug

Official statistics show that the region has a high level of employment and a low prevalence of unemployment (Table 5). This indicator reached its maximum in 2010, and during the study period it was significantly lower than the all-Russian level; in 2018 the difference was more than twofold.

Table 5. Employment and unemployment rate in the Yamal–Nenets Autonomous Okrug, %

Year	Employment rate	Unemployment rate
2010	73.0	4.4
2011	75.4	3.5
2012	76.3	3.4
2013	74.6	3.2
2014	75.1	3.1
2015	72.6	3.6
2016	75.1	2.6
2017	74.2	3.2
2018	75.5	2.1

Source: compiled by the author according to Rosstat data

Currently, the unemployment rate for men and women is even. However, during periods of higher unemployment, the male unemployment rate rises higher. This is somewhat due to gender differences in the search for new jobs: women are more likely to apply to the State Employment Service, where there is more choice of places in the budget sector with relatively lower wages but stable guarantees in respect to labour rights. Men are more likely to seek employment in the private sector, with higher earnings and greater labour risks. These differences are particularly evident in a relatively more complex socio-economic situation (the consequences of the 2008 crisis and the problems of the Russian economy after 2014). Thus, in 2010, the unemployment rate for men was 4.8%, and for women — 3.8%.

Another possible explanation concerns the differences in the pattern of employment between men and women by economic activity. However, the coefficients of liquidation of enterprises by type of economic activity do not allow to confirm this hypothesis (Demographic Indicators... 2015). Data of the regional labour market tensions monitoring indicates that the most popular in the Yamal–Nenets Autonomous Okrug labour market are the worker professions and positions in the construction industry, where employees are predominantly men.

The duration of unemployment in addition to its overall rate is an important indicator of problems in the labour market. It is long-term unemployment that most adversely affects the psychological, social and material situation of a person. The duration of job search in the Yamal–Nenets Autonomous Okrug has increased in recent years, but it still remains below the Russian average: in 2018 it was 6.3 months (for Russia as a whole — 7.4 months), in 2015 — 6.1 months (7.3 months), in 2010 — 5.9 months (7.5 months).

The region moved from second to sixteenth place in the All-Russian ranking by the “average job-search time for the unemployed”, and in terms of the “proportion of unemployed people seeking work for 12 months or more” — from third to twenty-third place. The change of position in this ranking is not only due to the improvement of the situation in other regions but also due to the deterioration of the situation in the Yamal–Nenets Autonomous Okrug.

The average age of unemployed people in the Yamal–Nenets Autonomous Okrug is below the average Russian level: in 2010 — 32.7 years (35.1 years in Russia as a whole), in 2015 — 33.4 years (35.7 years), in 2018 — 32.5 years (36.1 years). 35.7% of the unemployed in 2018 had no work experience (27.3% in Russia as a whole).

According to the regional monitoring of the labour market, the demand for workers claimed by employers to the employment service was 51,828 units in 2018. The most popular professions are: car drivers, professions (positions) in the construction industry, as well as doctors of various specializations, middle and junior health care workers, and teachers.

Conducting cluster analysis (multidimensional grouping) on indicators of labour market tension in the municipalities of the Yamal–Nenets Autonomous Okrug for March 2019 by the Ward method enabled forming two clusters (Table 7).

Since the features are equally informative and significant for further analysis, the distance between objects was calculated by the basic Euclidean distance formula:

$$r_E(x_i, x_j) = \sqrt{\sum_{e=1}^k (x_{ie} - x_{je})^2},$$

where: x_{ie} , (x_{je}) is the value of the e -th component for the i -th (j -th) object ($e = 1, 2, \dots, k$), ($i, j = 1, 2, \dots, n$).

Table 6. Characteristics of the Yamal–Nenets Autonomous Okrug on selected indicators of labour market tension, estimated for population aged 15 years and older

	2010	2015	2018	
Employment rate, in %	71.4	72.6	74.5	
Unemployment rate, in %	4.4	3.6	2.1	
Average job-search time for the unemployed, months	5.9	6.1	6.3	
Proportion of unemployed seeking employment for 12 months or more, in %	18.4	19.1	24.5	
Position ¹⁾ by value of the indicator	Employment rate	3	4	2
	Unemployment rate	5	5	3
	Average job search time for the unemployed	2	11	16
	Proportion of unemployed people seeking work for 12 months or more	3	8	23

¹⁾ Note: the position of the subject of the Russian Federation is determined on the basis of ranking of the values of the “unemployment rate”, “the average time of job search for the unemployed” and “the proportion of unemployed seeking employment for 12 months or more” indicators in ascending order, and “employment rate” — in descending order.

Source: compiled by the author according to Rosstat data

Table 7. Average values of indicators in clusters; cluster analysis of the Yamal–Nenets Autonomous Okrug municipalities on indicators of labour market tension (March 2019)

Indicators	Cluster 1 (10 municipalities)	Cluster 2 (3 municipalities)
Number of declared vacancies, units	406	692
Level of labour market tension (ratio of vacancies and job seekers), units	0.70	0.59
Recorded unemployment rate, % of the population in working age	0.996	0.908

Source: author’s calculations

As the indicators under study are measured in different units, preliminary standardization of the data was carried out. The cluster analysis was conducted for 13 municipalities in the region.

The hypothesis of equality of variances within and between clusters is rejected for all variables at two and ten degrees of freedom. P-value, the probability of error when accepting the hypothesis about inequality of variances, is extremely low, not more than 0.001 (the F-criterion is significant for all variables at a level of at least 0.01). This allows stating that the hypothesis about inequality of variances is accepted and, accordingly, clusters are formed correctly.

Cluster 1 included the following municipalities: city of Salekhard, city of Labytnangi, Nadymy Municipal district, city of Muravlenco, Tazovsky municipal district, Krasnoselkupsky municipal district, Priuralsky municipal district, Shuryshkarsky municipal district, Yamal municipal district, city of Gubkinsky. Cluster 2 included the city of Noyabrsk, the city of Novy Urengoy and the Purovsky municipal district.

The most favourable situation is observed in the three municipalities of cluster 2. There is a slightly lower level of official unemployment here (at its overall low level), as well as more declared vacancies. As can be seen from Fig. 3, the worst situation is observed in Krasnoselkupsky, Priuralsky, and Shuryshkar municipal districts, and in the city of Muravlenco.

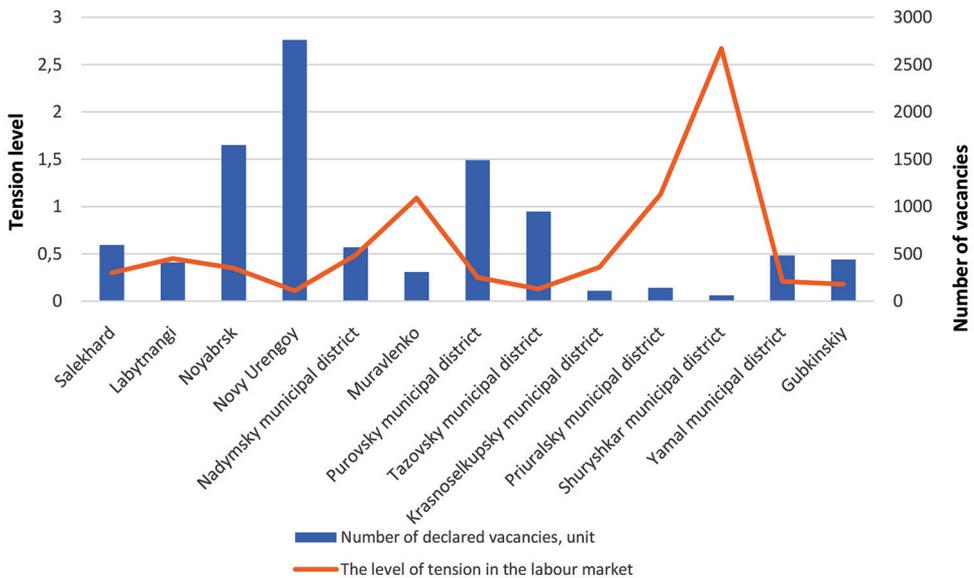


Figure 3. Indicators of labour market tension in the Yamal–Nenets Autonomous Okrug, March 2019. Source: author's calculations

The change in the structure of employment and the presence of a significant lag in the adaptation activities of the population in working age to employment in new conditions have a negative impact on the situation in municipalities.

In the city of Muravlenco there has been a decrease in employment in mining and manufacturing, as well as transport and communications; in the Krasnoselkupsky district — in construction and agriculture and forestry; in the Priuralsky district — in hospitality and finance; in Shuryshkar district — in trade, agriculture and forestry, fishing and finance. Availability of employment in the extractive industry (Krasnoselkupsky district and city of Muravlenco) is not a guarantee of the absence of labour market tension.

Possible labour reserves

The reserve for the labour market is represented by persons who are not part of the labour force — 99 thousand people. First of all, these are students of educational institutions (aged 15–29), as well as persons over 50 years old. In 2018, the proportion of persons in the older

age group increased in the structure of persons outside the labour force (not employed and not unemployed): only 49.1% are of working age. However, it should be noted that people who are not part of the labour force in the Yamal–Nenets Autonomous Okrug are relatively young — the average age even in 2018 was 40.6 years, while the average estimate for country as a whole reached 54.6 years.

21,000 people outside the labour force have not expressed a desire to work because they are currently students, are in retirement, or maintain a household. 23,000 people are willing to find a job but are not yet looking for it and are not ready to begin working. Finally, 2,000 people represent a potential labour force — they are ready to begin working.

Table 8. People of working age¹⁾ outside the labour force by category, thousand people

	2010	2015	2018
<i>Total</i> ²⁾	77	67	46
Of them:			
<u>Did not express desire to work</u>	<u>68</u>	<u>60</u>	<u>21</u>
including:			
full-time students	39	29	9
pensioners	13	13	6
persons managing the household	10	11	3
others	6	7	3
<u>Potential workforce</u>	<u>10</u>	<u>8</u>	<u>2.2</u>
including:			
looking for work but are not ready to proceed	1	1	0
looking for work but are not ready to begin working	8	6	2
have given up looking for a job	1	1	0.2
In addition, those who wish to work but are not looking for work and are not ready to begin working			23

¹⁾ The working-age is: 16–59 years for men, 16–54 years for women.

²⁾ The table shows slight discrepancies in the 2010 and 2015 bottom line due to the rounding of the data

Source: compiled by the author according to Rosstat data

According to the Comprehensive Survey of Living Conditions, in 2018 29.4% of pensioners continued to work as employees (this is 1.7 times more than in Russia as a whole). Early retirement also plays a role, but, in this case, we refer to all types of pensioners (including those receiving a disability pension). At the same time, the number of working pensioners significantly decreased after 2016 due to entry into force of Federal Law No. 385–FL of 29.12.2015 *On suspension of certain provisions of legislative acts of the Russian Federation, amendments to certain legislative acts of the Russian Federation and peculiarities of increase in insurance pension, fixed insurance pension and social pension payments*, according to which the pensions of working recipients should not be indexed. Nevertheless, the average number of work experience after a pension is granted in the Yamal–Nenets Autonomous Okrug reached 9.4 years in 2018.

As of the beginning of October 2020, according to the Federal Register of Disabled Persons, the number of disabled persons of working age in the Yamal–Nenets Autonomous Okrug amounted to 6,352 people, of which 2,145 people continued performing work activities. The share of disabled workers in the Yamal–Nenets Autonomous Okrug was 33.5% in 2020. The rate of employment of persons with disabilities in the region is higher than the average Russian level (26.6%), but the proportion of persons with disabilities in the district is only about 1.0%.

Among people with disabilities in the Yamal–Nenets Autonomous Okrug, 46.1% have a third disability group, and in a large part of the cases these people do not have serious employment restrictions. The cause of disability in 81.8% of disabled persons is general illness; 54.4% of adults with disabilities are between the ages of 18 and 60. With appropriate training, many persons with disabilities could find their place in the labour market. Therefore, it might be reasonable to carry out a large-scale information campaign among disabled people of working age about the availability of employment opportunities, taking into account their interests and health restrictions.

Working conditions in the Yamal–Nenets Autonomous Okrug

According to the Comprehensive Survey of Living Conditions, 97.4% of those employed in the Yamal–Nenets Autonomous Okrug work a full week; in Russia as a whole this figure is 89.1%. On the one hand, this demonstrates the extent of employment, the need and opportunity to make full use of the existing labour resources in the region's economy. On the other hand, the evidence shows the insignificance of the use of flexible labour regimes that are currently demanded by individual sociodemographic groups (parents with children, persons combining vocational activities and education), as well as in selected areas of activity. Thus, among job seekers, 9.6% would like to find part-time jobs.

The problem of the Russian labour market (and the field of vocational education) is the fact that a significant part of employees work in a field that does not correspond to the degree they received. In the Yamal–Nenets Autonomous Okrug, 38.1% of employees work in the position fully corresponding to their professional degree, another 23.4% are employed in a closely related degree field.

When considering different parameters of working conditions, first of all, residents of the region are satisfied with the work mode (“quite satisfied” — 85.7%), distance to work (84.0%), working conditions (80.5%), performed duties (78.9%), and reliability of work

Table 9. Main work correspondence to professional field (degree), %

Answer options	Russia	Yamal–Nenets Autonomous Okrug
Yes, this work fully corresponds with my professional degree	40.5	38.1
No, this job does not correspond with my professional degree	43.0	37.2
Yes, this job is related to my professional degree	15.7	23.4
I find it difficult to answer	0.7	1.3

Source: compiled by the author according to Rosstat data

(77.5%). The greatest advantage of positive answers (when comparing the situation in the Yamal–Nenets Autonomous Okrug with the all-Russian) is observed in the positions “job security”, “distance to work” and “working conditions”. Among the Yamal–Nenets Autonomous Okrug population there are also more of those who are quite satisfied with their wages (see Table 10). The residents of the region find themselves satisfied with their jobs professionally and derive moral satisfaction from the job somewhat less often than Russians on average.

Table 10. *Quite satisfied with working conditions, %*

Working conditions	Russia	Yamal–Nenets Autonomous Okrug
wages	37.4	47.2
job security	68.2	77.5
performed duties	75.5	78.9
work mode	82.7	85.7
working conditions	73.4	80.5
distance to work	71.0	84.0
professional satisfaction	64.9	61.1
moral satisfaction	67.6	59.1

Source: compiled by the author according to Rosstat data

A situation unfolds where the working conditions in the region satisfy most of the employed, but a substantial proportion of people do not work in their professional field, probably giving priority to higher earnings, which affects moral satisfaction.

Discussion of key results and conclusions

The conducted analysis has shown that the situation in the Yamal–Nenets Autonomous Okrug requires diversification of the employment structure taking into account the conditions and capabilities of the region. The region’s labour sphere has a number of features. So far, the structure of employment is such that the proportion of working specialties is higher than in Russia on average. At the same time, there is a shortage of top-level specialists in the Yamal–Nenets Autonomous Okrug. This indicates an unfavourable situation in the sphere of formation and use of the labour potential of the region. The regional labour market largely focuses on the demand for the extractive industry and construction products, without developing high-performance, intelligent jobs. A mono-oriented labour market is formed, which can adversely affect the situation in the region, taking into account existing economic and demographic trends.

Central to the employment structure of the population of the Yamal–Nenets Autonomous Okrug is the fuel and energy sector and construction. Difficult working conditions, on the one hand, and high earnings, on the other, cause the influx of migrants and the considerable scale of the employment regime. Trade and services remain underdeveloped. A low proportion of employment is also observed in agriculture, in part due to informal em-

ployment in the family sector and underaccounting of people engaged in deer grazing and fishing. In general, the dynamics of employment is uneven across various spheres of activity.

The region is considered labour deficient: as of 2018, the shortage of personnel, according to Rosstat surveys, is observed in a number of sectors of the economy, to the greatest extent in construction (36.2%), transportation and storage (11.7%), health care (7.6%), mining (6.3%), education (5.7%), social security, public administration and military security (5.1%).

Global economic trends and circumstances should be taken into account when shaping a long-term strategy for socio-economic and employment policies in the region. The most significant changes for the development of the Yamal–Nenets Autonomous Okrug are associated with reduction of global demand and prices for traditional energy. The volume of crude oil production in Russia in 2020 decreased by almost 9%, natural gas — by more than 6% (Oil production... 2021). The situation is due to the impact of factors having both relatively short-term (sanctions, supplier diversification, crisis associated with the COVID-19 pandemic) and long-term nature (search for alternative energy sources, formation of a “green economy” model, exhaustion of the oil fields).

In this context, and taking into account the results of statistical analysis, it is possible to identify promising areas of social policy in the region.

It is worth considering the experience of the countries of the Arctic region in diversifying the labour market, and some practical steps taken in this sphere. Thus, the experience of the Arctic countries (e.g., Finland) shows that the number of people working in the Arctic zone is increasing not only as a result of the growth of mining and energy, but also due to the development of the tourism industry (Finland’s Strategy... 2013).

The Arctic region offers a broad range of new opportunities that are attractive to many companies, including those operating in the field of marine technology. The competitive advantage of the territory lies in environmentally friendly solutions (Action Plan... 2017).

The integrity of nature, flora and fauna, clean air and water, and unique culture of the region are factors of attraction, which forms the basis of Arctic tourism. It is necessary to develop tourist destinations that are financially sound, client-oriented, as well as to create international centres that will be aimed at preserving the natural environment of the Arctic. For the development of tourism, ethnotourism in particular, it is necessary to create appropriate infrastructure envisaged by the tourism industry as a whole, which will also contribute to a change in the structure of employment. In 2013, the region adopted the state programme *Development of tourism, improving the effectiveness of implementation of youth policy, organization of recreation and rehabilitation of children and youth*, one of the subprogrammes of which is directly devoted to the development of tourism — *Development of tourism, improving the effectiveness of implementation of youth policy, organization of recreation and rehabilitation of children and youth for 2014–2024*. The subprogramme notes that the tourism sector is a factor in the diversification of the region’s economy, and the development of tourism infrastructure is an urgent need. Nevertheless, the activities within the subprogramme are aimed mainly at the implementation of measures focused on promoting tourism resources, including advertising and information tours. At the same time, it should be noted that the number of persons placed in collective means of accommodation increased to 208 thousand people in 2019 (79% growth compared to 2014; see Paid service... 2017; Statistical Bulletin... 2020). The number of people employed in the hospitality sector is also growing, but the tourism sector itself, according to official statistics, currently employs only 279 people (2019, EMISS data).

In recent years, international labour migration has played a significant role in building the labour potential of the Yamal–Nenets Autonomous Okrug. The composition of migrants is changing, and it seems that these changes are long-term. Migrants from Ukraine and Uzbekistan are replaced by citizens of the countries of the Eurasian Economic Union (EAEU) and China. It is important to carry out monitoring in order to assess changes in the professional structure of international labour migrants and the nature of their employment in connection with projects implemented within the framework of the EAEU.

According to Rosstat, between 2012 and 2018, the share of international migrants in the flow of arrivals amounted to about 20%. The number of people who arrived for the purpose of work far exceeds the number of persons who received patents. This suggests that a large proportion of migrant workers are most likely to be working illegally. Regional policy on patent value may have an impact not only on the attractiveness of the Yamal–Nenets Autonomous Okrug for migrant workers but also on the ratio of legal and illegal components of labour migration.

An important task of labour market policy is the formation of a set of measures that contribute to the consolidation of young professionals. In the Yamal–Nenets Autonomous Okrug there is a shortage of local qualified personnel for the economic development of the region, especially in the context of creation of new highly skilled jobs equipped with new technologies and in new technological complexes. This puts new requirements on the training system.

The higher education system in the region is represented by branches of universities. In the 2005/2006 academic year there were 31 branches in the district, and in the 2010/2011 academic year — 25, in the 2017/2018 — 6, and in the 2018/2019 — 5 (5 state, 1 non-state; see *Regions of Russia...* 2019). This leads to an outflow of youth seeking higher education outside the district. Thus, in 2010, 1,517 people with general secondary education left the district, which is 10% of the population aged 16–17 years. In 2018, the figure grew up to 4,789 people or 36.7% of the corresponding age group.

However, according to Rosstat surveys, 75.8% of parents having children under the age of 15 in the Yamal–Nenets Autonomous Okrug are focused on their continuation of education and, above all, obtaining higher education (65.8%). Thus, there is a demand for high quality educational services in the district.

There is also a need to develop vocational guidance programmes among young people taking into account the needs of the regional labour market and cooperation with firms and enterprises (Selninov 2019); reforming the training system and retraining highly-qualified specialists in the vocational education system. It is worth making use of the possibilities of distance training, designing contracts for targeted training of specialists with leading universities of the country (perhaps with training groups in the territory of the region).

Attention must be paid to the creation of favourable working conditions. High wages cannot compensate for harsh working conditions, the adverse atmosphere in the workplace resulting in “burnout” and an increased incidence of cardiovascular diseases. The problem of conformity of employment with the level of qualification and vocational training of employees requires resolution. Significant wage differentials sometimes lead to a flow of workers into extractive industries and construction, resulting in frustration and dissatisfaction. The lack of necessary professional skills is another influential factor. This once again confirms the need to form a system of professional retraining, continuing education to eliminate the inconsistency of the level of training and the needs of the economy.

The employment situation in the region is determined both by factors common to the economies of the world related to the impact of innovation and changing lifestyles, as well

as the specifics of the northern territories, including those that influence demographic processes. The resolution of the problem of the regional employment model transformation is closely linked to the formation of the regional economic development model, in which the role of the resource sector will no longer be dominant. Without changing approaches to the formation and use of labour potential, it is difficult to ensure the economic and social well-being of the region in the long term.

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