Recent trends of human presence in the Arctic area (as exemplified by Murmansk region, Russia)

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Abstract. Arctic area is a particularly extreme territory in terms of natural and climatic conditions for life and human activities. The major reason for a significant part of the Arctic population to permanently reside here has always been and will probably be the economic practices of society associated with the use of the Arctic territorial resources. Over the past twenty years, the population of the Russian Arctic zone has decreased by half, despite the growing trend of this indicator worldwide. In this paper, the authors connect the population dynamics in the Arctic regions of the Russian Federation with the employment indicators, despite the measures currently taken to actualize the importance of human presence in the Arctic at the state level. Using the example of the Murmansk region, a constituent entity of the Russian Federation, fully located within the Arctic zone, the authors identified the leading trends in employment of the Arctic population as well as the “leading employers” of the Arctic labor market which define the parameters of regional employment. Based on the analysis of regional statistical data, the authors make a conclusion about the prospects for population changes in the Arctic zone of the Russian Federation.

1. Introduction
Current trends in the Arctic population size imply studying the ongoing processes at the level of employment, its dynamics in the contexts of technological development, transformation of the Arctic economy, and implementation of the state interests. This fact facilitates economic, research, creative, geopolitical and other rationale for the human presence in such a territory.

Traditionally, engaging people to explore and develop new territories, especially the remote and extreme ones, depended on the amount of remuneration and the cost of living.

The history of Russian High North and the Arctic lands’ development had several stages: XX century - large-scale industrial development and settlement of the Arctic regions; by the end of the XX century - decline of interest in the Arctic and an unprecedented process of population outflow. For example, the population of the Murmansk region in the period 1990-2000 decreased by more than 20% [1].

A new wave of interest in the Arctic in the 21st century was spurred on by the awareness of the strategic economic and political significance of this territory [1]. However, the outflow of population has not stopped, and today both the state and the regions are looking for solutions to consolidate the population in the territory.

In order to determine the objective trends in employment and population dynamics of the Russian Arctic based on assessing the relationship between the employment indicators and the structure of the
regional economy, it was decided to pick the Murmansk region as the subject of study due to its being the most urbanized Arctic area with a relatively high population density (more than 2 people per square km).

2. Problem statement
Today, there is a profound academic base of conducted studies devoted to the Arctic and High North economic problems of various historical periods and corresponding scientific paradigms.

Among the fundamental research publication devoted to northern problems are the works of G.Agranat, S.Baranov, A.Granberg, A.Pilyasov, T.Skufina, N.Zamyatina etc., while the issues of High North and Arctic labor force market were elaborated by E.Korchak, M.Rudakov, L.Shirokova and others [2, 3, 4]. Among the fundamental research publication devoted issues of Arctic economy transformation are the works of A.Petrov, A.Pilyasov, T.Skufina, A.Stepien, N.Zamyatina and others [2, 3, 5, 6].

However, at the moment we observe unprecedented processes of reducing local employment capacity in the traditional spheres of economy, despite their positions being preserved in the GRP structure. At the same time, Arctic tourism provides a synergistic effect for developing hospitality industry as a whole, thus stimulating employment. The implementation of large investment projects has provided a new wave of construction development in the region, which is, and it should be noted, limited in time by seasonality. On the other hand, a special interest in the Arctic territory and the possibility of using remote technologies make it possible to carry out activities here without a physical presence on the territory.

All of this has a serious impact on the regional employment pattern and the population statistics in the region.

3. Purpose of the study
The key objective of this study is to determine the major trends in the employment and population dynamics of the Murmansk region as a typical Arctic area of the Russian Federation in the context of the territorial Arctic economy transformation, technological development, and the state-formulated significance of the human presence in the territory.

4. Research methods
The methodological basis of the study is made up by institutional, systemic, and resource approaches, as well as other general scientific methods of cognizing social reality and economic processes.

The institutional approach makes it possible to determine the processes of the Arctic economy transformation and the formation of new Arctic regional economic image, taking into account global, state, public and individual interests.

The systemic approach allows us to consider the Arctic economy as a set of interrelated and interdependent components.

The resource approach allows us to consider the territory as endowed with certain resources and opportunities for the development of the regional economy and, therefore, the existing needs for labor resources facilitating successful development.

5. Results and discussion
The Arctic territory is an extremely uncomfortable region for living and limited for the implementation of human economic practices objectively. As a result the territory is characterized by extremely low number of population with the formation of small local settlements, the number of which in the Russian part of the Arctic is constantly decreasing every year, and has halved over the past twenty years.

The main limiting factors in the formation of the quantitative and qualitative composition of the employed population in the Arctic zone are: extreme natural and climatic living conditions, high level of specialization of the Arctic economy and the Arctic labor market, qualitative and quantitative
limitations of the local educational system, migration attitudes of the population, low attractiveness of the territory for migration from other regions [1].

The Arctic economy at its core is represented by large enterprises mostly dealing with extracting and primary processing of natural resources [3, 4]. As a result, economic activities in the Arctic, and consequently conditions and parameters of local population employment are determined by the development strategy of leading industrial enterprises. Taking into account the large-scale automation of production and extraction, the use of digital technologies for their control, the transition to rotational methods of engaging labor force, and, finally, the depletion of deposits objectively lead to a reduction in the number of people employed in the Arctic zone as a whole and particularly in the primary sector of the regional economy.

SMEs (small and medium enterprises) can hardly be considered the major employers in the Russian Arctic at the moment. In general, there is a noted skeptical attitude of experts to the formation of active and (or) effective small enterprises in the Russian Arctic, which can provide mass employment for the local populations [7]. Researchers have already identified the main restraining factors for the development of SME in the Arctic regions: northern price increases, small capacity of the territorial market and transport expenses.

However, the topic of Arctic entrepreneurship is still relevant and foreign experience of small business development in high-latitude territories (primarily American and canadian) clearly indicates other trends [5].

The specificity of employment and activities in the Arctic are also determined by contemporary information technologies. The use of digital and (or) remote technologies makes it possible to implement various types of activities in the Arctic without the physical presence of humans, which stimulates the interest in this territory, while the population of the Arctic zone does not increase.

The Arctic is a strategically important area for all countries in the world. The human presence and any kind of practice here are criteria for assessing the country's efficiency in the region and for actualizing claims for the Arctic resources. Therefore, providing employment in the Arctic regions is an important state strategy [5]. In addition, during the transition period, most industrial enterprises abandoned the maintenance of social infrastructure and transferred social facilities to the jurisdiction of regional and municipal authorities. Thus, the state can be considered as the major employer in the Arctic regions [4].

As a result, there is current organizational and economic transformation in the Arctic region, which determines the employment and population dynamics of this area.

The Murmansk region, constituent entity of the Russian Federation, lies fully within the borders of the Arctic zone of the Russian Federation.

The Arctic economy as a whole is characterized by the following traits: mono-profile nature of natural resources use, low added value as facilitated by poor processing of regional natural resources, high degree of dependence on the conjuncture of raw materials markets, high costs of living and economic activities in the territory, remoteness and high transport costs [2, 8]. Currently, the following fundamental trends in the Arctic economy development as a whole can be named: still high share of the Arctic industries for the extraction of natural resources determined by large enterprises; high dependence on state support and state transfers; low, but better saying, decreasing population.

The demographic situation in the region can be described as negative. The population of the Murmansk region has been declining for the past 30 years, which limits the potential territorial opportunities for the reproduction of labor resources. In 2019, the population as of January 1 was 748.1 thousand people, as of May 1, 2020 it was 739.7 thousand people. Only since the beginning of this year, the population decreased by 0.2%. In 2019-2021, according to the demographic forecast, the working-age population number continues to decline (by 2021, it will decrease by 2.5% and will make 419.2 thousand people). The rate of reduction has slightly decreased due to the increase in the retirement age, incl. for the northern territories. A decrease in the number of working-age population will lead to a further reduction in labor resources.

Statistical data on employment in the Murmansk region are presented in table 1.
Table 1. Average annual number of people employed in the Murmansk region economy

| Indicator                                                                 | 2018 report | 2019 assessment | 2021 forecast | 2022 forecast |
|---------------------------------------------------------------------------|-------------|-----------------|---------------|---------------|
| Average annual number of people employed in the Murmansk region economy, people | 363884      | 359800          | 353000        | 350200        |

The structure of regional employment by type of economic activity is also changing (Table 2).

Table 2. Major sectors of economy in the structure of the Murmansk region GRP

| Indicators                                                                 | 2017        | 2018         | % to total 2017 | % to total 2018 |
|---------------------------------------------------------------------------|-------------|--------------|-----------------|-----------------|
| Total                                                                     | 442609.6    | 482547.9     | 100             | 100             |
| agriculture, forestry, hunting, fishing, fish farming                     | 57564.0     | 69473.0      | 13.0            | 14.4            |
| extraction of mineral resources                                           | 59850.4     | 57891.4      | 13.6            | 12.0            |
| manufacturing                                                             | 43264.2     | 55451.8      | 9.8             | 11.5            |

According to the forecast indicators, the number of the employed population in the region will decrease by 4% for the period 2018-2022 (Table 1). Most likely these numbers are expected due to the measures taken at the level of industrial enterprises to rightsize the number of employees. As a result, the growing GRP by industry is stimulated by a smaller number of employed workers in this area, and the trends towards reduction in employment of the industry are predicted to continue in future.

At the same time, employment in these areas is especially actively declining according to the regional balance of labor resources (Table 3).

Table 3. Distribution of employed labor force by types of economic activity

| Indicators                                                                 | 2017 report | 2018 assessment | 2021 forecast |
|---------------------------------------------------------------------------|-------------|-----------------|---------------|
| Number of employed, people                                               | 367368      | 362200          | 351300        |
| agriculture, forestry, hunting, fishing, fish farming                    | 11562       | 11440           | 11185          |
| extraction of mineral resources                                           | 13709       | 13680           | 13330          |
| manufacturing                                                             | 39840       | 39790           | 39060          |

According to the preliminary forecasts of the local Employment Agency, an increase in the number of employed by 4% is expected only in construction business in connection with the implementation of large regional investment projects. But this is most likely a rotational method of engaging workers which will result in temporary growth for the period of the project implementation.

Growth in the hotel and restaurant business is forecast by 0.2% which could be possible due to the development of Arctic tourism naturally providing development and employment capacity of the related industries. As experts say, one working place in touristic sector creates ten jobs in other sectors. The Arctic tourism is changing the content of professional work and, in our opinion, can change the Arctic economy. In this case, if we extend the space of tourism development on the Arctic territories, the growth rate in the Arctic economy GRP can cover 5% [6, 9].

Adam Stepień defines key characteristics of the Arctic economy that can become alternative to the large scale resource exploitation. Among them is commercialization of the Arctic creativity, by which
he means that local northern practices, knowledge, culture and innovations can provide “the Arctic brand” with added value [6].

However, such figures will clearly change its value due to recent events with pandemic. Can the trends be changed by employment in the small business and public sector?

According to the data presented in Table 4, there is a positive tendency.

**Table 4. Average annual number of people employed in the Murmansk region economy**

| Indicators                                         | 2018 report | 2019 assessment | 2021 forecast | 2022 forecast |
|----------------------------------------------------|-------------|-----------------|---------------|---------------|
| Average annual number of people employed in the Murmansk region economy, people | 363884      | 359800          | 353000        | 350200        |
| in organizations – legal entities                  | 330438      | 325290          | 318160        | 314860        |
| in the sphere of entrepreneurship – without registering legal entity, including farms and households | 28545       | 29500           | 29880         | 30380         |

However, in the structural context of employment, it is important to note that this is only 8-9% of the people employed in the regional economy.

If we turn to the statistics of employment in the public sector, then we can notice decrease in the number of employed due to decrease in the size of the sector itself due to a shrinking population [10].

Summing up the employment prospects in the Murmansk region, it is important to note another particular trend of the last half of the year - remote employment. The Arctic, with its high potential for various types of activities against the background of extremely uncomfortable conditions can show a unique experience of regional employment without the physical presence of a person on the territory. Of course, the regional economy preserves the areas of activity that require the direct presence of a person, but the use of modern information and digital technologies allows a person to live in an area more favorable in terms of living conditions and a with lower cost of living, while maintaining a given job in the Arctic.

The emerging processes require a separate study to identify such areas, to solve the problem of static registration of population living in the region and involved in the economy, and to assess the results of economic activities in the territory performed remotely or by its residents [2].

As a result, the prospects for employment in the Arctic region are ambiguous, but most likely we are expecting a decrease in the number of people employed in traditional areas of the Arctic economy, which will inadvertently entail a decrease in the regional population in the near future for objective reasons [1, 10, 11, 12].

6. Conclusion

This paper seeks to estimate some aspects of employment and population indicators as well as opportunities for their development in the Arctic. The authors stress that in general, employment prospects in the Arctic region are determined by the activities of large regional enterprises and the territorial public sector. Small business turns out not to have large affect on the formation of active regional employment pattern in the Arctic regions of the Russian Federation. It is highlighted that the population of the Russian Arctic is declining, and this trend will continue in the near future. By this, authors conclude that forecasting employment in the Arctic, with respect to the strategic importance of the territory on a national scale, requires a separate methodological study and elaboration, taking into account the Arctic specificity.

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