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The Population Settlement in Russia’s Arctic Zone: Facts and Trends

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Abstract. In the paper the authors present the study of facts and trends in population settlement in regions of Russian Arctic Zone. The relevance of the study lies in the fact that the location of the population in the Arctic Zone depends not only on the socio-economic development of the Arctic territories, but also on Russia’s geopolitical security. The authors considered population settlement from two interrelated positions: the process of a certain territory settling in the process of migration and the result of this process – the residents’ resettlement in regions. Some main indicators of the population settlement in regions completely or partially located in the Arctic were estimated. The authors proceeded from several hypotheses: firstly, socio-economic resource factors of population distribution become the most significant; secondly, Russia’s Arctic regions are poorly populated and their population continues to decline; thirdly, migration in Arctic regions is voluntary, it has an economic character and its direction changed depending on economic and social conditions; fourthly, Arctic settlements differ significantly from ones in other Russia’s territories; fifthly, problem-solving of the settlement population in the Arctic territories is the key to solving the problem of Russia’s development. The research made possible to confirm or disprove these hypotheses.

1. Introduction

The actuality of the research is determined by the following. The theory and practice of the Arctic Zone development and management show unprecedented mixture of meanings and conditions. So, these theory and practice includes, on the one hand, successful experience of the USSR. In the period of Soviet rule Russian Arctic territories turned from poorly populated, undeveloped suburbs into largest industrial Russia’s centers provided with scientific centers, palaces of culture, theaters, museums, etc. Modern Russia on the Arctic Zone territories enjoys all these achievements. But these are other country achievements, in other borders, other geopolitics and another social structure. The reproduction of this experience in modern and foreseeable reality is impossible.

On the other hand, foreign experience of Arctic regions management which certainly, should be considered in respect of territories arrangement according to balance of economic efficiency and social comfort criteria. However, the level of problems of Russia’s Arctic Zone territories development, their scale, complexity and importance for national economy as well have no analogues in foreign countries which have Arctic territories.

Thereupon, the fundamental study purpose is to re-veal the systemic and perspective question of population settlement in Russia’s Arctic Zone regions.



In order to achieve the study purpose it is necessary to solve a number of problems:

- analyze the retrospective dynamics of population settlement of the Russian Arctic;
- investigate and characterize the population settlement of Russia's Arctic Zone areas on the basis of complex indicators;
- identify the direction and nature of migration of the population of the Arctic in different time periods;
- identify socio-economic characteristics of settlements in the Arctic Zone.

In our study we proceeded from a number of hypotheses:

- firstly, at the present stage of the development of society, the socio-economic resource factors of population distribution become the most significant, while the climatic and environmental factors ones retreat into the background;
- secondly, Russia's Arctic Zone regions are poorly populated and the population continues to decline;
- thirdly, migration in the regions of the Arctic is voluntary; it has an economic character and its direction changed depending on economic and social conditions;
- fourthly, urban and rural settlements differ significantly from settlements in other Russia's territories in social and economic characteristics;
- fifthly, problem-solving of the settlement population in the territories of the Arctic Zone is the key to solving the problem of Russia's development.

2. Literature review

Natural-climatic and geographical features make the zone of the Arctic Zone the least attractive for life. Such situation is not unique to Russia [1]. A number of foreign researchers of the Arctic make mention of this fact. For example, M. Berman and L. Howe [2]; L. Michal et al. [3].

The problematic in the sphere of social and economic development of the Arctic territories of Russia are the following. The considerable political and economic activity in the problems of social and economic development of the Arctic regions is naturally displayed in sufficiently large number of research papers covering various public aspects of vital activity in the Arctic Zone [4, 5]. Various aspects of the problem were considered in the works of co-authors [6-8].

In some Arctic territories rich deposits of oil, gas, gold and other minerals have been found [9-11]. Fields development cannot meet requirements of nature management and "green economy". I. A. Ignatyeva [12]; M. K. Peshkova and D. Y. Savon [13]; D. Rodrik [14] point to it. The concept of the population settlement when mining operations is opposite to the concept of resettlement of resident population [14, 15]. The attaching of the population in a certain territory is not provided. Many deposits are developed with a "rotational" method, workers are recruited for quite a short period. Groups of workers do certain work as a rule within two months and then leave for rest. Another group of workers - another "watch" comes to change them. "Rotational" settlements have no developed social and cultural infrastructure owing to features of accommodation [16]. Thus, a continuous rotation of the population takes place. Such settlements are both in Russia, and in other countries, not only in Arctic territories, but also in other poorly populated and difficult of access ones which are of interest of business [17-21].

Despite noted similarity of population resettlement in Arctic regions in Russia and abroad, there are some differences in coverage of social and economic problems, policy and practice of population management of Arctic Zone areas.

Subjective factors are determined by the basic reason. The analysis of problems posed by intergovernmental Arctic organizations and research institutes of the different countries point out their closeness by implicitly. Among these problems are: problems of people's welfare living not in Arctic Zone territories; development of education; ensuring equality of northerners' access to goods and services; development of infrastructure for life quality improvement; native northern people' adaptation of social and economic life to current trends and normative legal requirements [22-26]. The

last problem solution is characterized by special discrepancy of native people's interests with economic, social, ethical requirements of modern social development.

In contrast to developed countries, settling and fastening of the population in Russia's Arctic Zone territories is not considered as one of the main problem of territorial policy. An obvious danger of such policy to the economy and national security produces specific character of papers in the field of population resettlement in Arctic Russian regions. In this research a number of researchers place the emphasis on theoretic and methodological bases of the Arctic development. They give arguments for insufficiency of modern policy and offer some possible versions of sustainable development of Arctic Zone territories [27-30].

3. Methodology

The term population is to be understood as a set of people living on the Globe (mankind) or within a concrete territory such as a continent, a country, an area etc. Such interpretation we can find in such researchers' works as T. J. Bartik [31], R. Capello [32], F. Todtling and M. Trippel [4]. Involving this concept in the problematics of Russia's Arctic Zone territories studying, it is necessary to decide on the necessity to attract some economic and territorial parameters to the definition of "population". In our case they are limited with a border of the studied regional system.

Under the resettlement of populations we understand distribution and redistribution of the population in the territory, resulting in the settlement. The population accommodation was considered by us from two interconnected positions: as a process of people's settling of a certain territory in the course of migration and as a result of this process, that is inhabitants' resettlement on regions and zones.

The study used traditional methods of studying population distribution. These methods can be divided into direct and indirect. Direct methods are in the study population in a certain area at a certain time. Thus examines the information about a particular population. Indirect methods to study the characteristic of the composition of the population in a certain area at a certain time. First of all, we were interested in the proportion of city dwellers and population density.

In the research the following indicators characterizing accommodation of the population of Russia's Arctic territories were considered:

- area is an area of a territorial subject of the Russian Federation as of 2018 (sq.km);
- number of cities is a number of the settlements having a city status as of 2018;
- part of citizens is calculated as the number of resident urban population to the total number of resident population of a territorial subject of the Russian Federation ratio as of 2018 (%);
- population density is calculated as the relation of number of resident population to the area of a territorial subject of the Russian Federation ratio as of 2018 (people / sq.km);
- population size is an average annual number of the resident population of Russian Federation subject was taken into account in 1928, 1958, 1978, 1988, 2008 and in 2018 (thousand people).

The objects of our study are regions of the Russian Federation, whose territories as of 2018 are completely or partially located in the Arctic Zone.

4. Key findings of the research

4.1. Indicators of population settling in the Russian Federation regions, completely or partially located in the Arctic Zone

First of all, let us estimate the statistical indicators of the population settling of the of Russian Federation subjects whose territories are completely or partially located in the Arctic Zone. The research is based on the data of the Federal State statistics service of the Russian Federation as of 2018 [33]. The results are presented in Table 1.

Table 1. Some statistical indicators of the population settling of the Russian Federation subjects, whose territories are completely or partially located in the Arctic Zone as of 2018 (According to the materials of Federal State statistics service of the Russian Federation [33]).

Subject of the Russian Federation	Area, sq. km	Number of cities	Percentage of townspeople, %	Population density, people / sq. km
<i>Subjects of the Russian Federation completely located in the Arctic Zone</i>				
Murmansk Region	144900	16	92,33	5,20
Nenets Autonomous Area	176810	1	72,84	0,25
Chukotka Autonomous Area	721481	3	70,51	0,07
Yamal-Nenets Autonomous Area	769250	8	83,82	0,70
<i>Subjects of the Russian Federation partially located in the Arctic Zone</i>				
The Republic of Karelia	180520	16	80,41	3,45
Arkhangelsk Region	589913	32	78,00	1,96
The Sakha Republic (Yakutia)	3103200	13	64,1	0,31
The Republic of Komi	416774	10	78,11	2,02
Krasnoyarsk Territory	2366797	23	77,39	1,22

The area of the Russian Federation territory is 17,125,191 sq. km as of 2018 [33]. At the same time, the total area of the Russian Federation subjects, referred to the Arctic Zone, is 1,812,441 sq. km or 10.58% of the country's territory. There are no such vast Arctic territories in any country in the world.

At the same time, the portion of the urban population in the Arctic Zone territories is usually high. The increased share of the urban population caused the industrial character of the Arctic development. The urban population in the Russian Federation is 74.43% as of 2018. In the Arctic territories it is an average of 79.88%. The highest indices in the industrially developed regions are in Murmansk Region (92.33% of the townspeople). Low indices are in the Chukotka Autonomous Area (70.51% of citizens) and the Nenets Autonomous Area (72.84% of citizens). In these regions the indigenous small peoples live who are mostly not traditional urban lifestyle.

4.2. Population density in the subjects of the Russian Federation completely or partially located in the Arctic Zone

The population density in the Russian Federation as of 2018 is 8.58 people per sq. km [33]. In the Arctic territories it is much lower and averages 1.56 per sq. km. The highest rates are in Murmansk region (5.20 per sq. km). However, this region is an exception. In other parts of the Arctic Zone, the population density is much lower. Currently, in the Arctic, large areas remain uninhabited: population density in 3 regions out of 4, completely located in the Arctic Zone, is less than 1 per sq. km.

In the territories partially referred to the Arctic Zone, the population density is higher and averages 1.79 per sq. km. The Republic of Karelia has the highest indicators (3.45 people / km²). In other regions partially located in the Arctic, population density is much lower on average for Russia but higher than population density in the territories completely located in the Arctic Zone.

4.3. The dynamics of the population of the Russia's Arctic territories

Let us consider the dynamics of the population of Russia's Arctic territories during the period from 1958 to 2018. The results are presented in Table 2.

Table 2. Dynamics of the population of Russia's Arctic Zone territories (according to the materials of Federal State statistics service of the Russian Federation [33])

Subject of the Russian Federation	Population, thousand people					
	1929 г.	1959 г.	1979 г.	1989 г.	2009 г.	2018 г.
<i>Subjects of the Russian Federation completely located in the Arctic Zone</i>						
Murmansk Region	24	568	965	1147	886	754
Nenets Autonomous Area	15	37	47	55	42	44
Chukotka Autonomous District	14	47	133	157	51	49
Yamal-Nenets Autonomous Area	32	62	158	482	543	539
<i>Subjects of the Russian Federation partially located in the Arctic Zone</i>						
The Republic of Karelia	247	651	736	791	690	622

Arkhangelsk Region	432	1230	1420	1555	1272	1155
The Sakha Republic (Yakutia)	280	487	820	1072	951	964
The Republic of Komi	n / a	815	1119	1261	1006	841
Krasnoyarsk Territory	n / a	2160	2637	2948	2908	2876

* n / a – No data

The study shows the population changing. The resettlement of the population in the Russian Arctic Zone has increased since 1930s. The causes of migration were mainly related to the industry development. At the same time, people were either moved by force in the course of mass deportations (it was forced migration) or were attracted by various benefits (raised wages, lowered retirement age, quick providing with accommodation, all family members' free pass to the resting place and back during the holidays, etc.). It was voluntary migration. Decision on voluntary migration, as opposed to forced migration, was adopted by the people themselves. The basis of this decision, are of an economic nature-high salaries and benefits to the population in the Arctic Zone. Therefore, we say that voluntary migration in the Arctic is of an economic nature.

Mass forced migration has practically ceased since 1960s. Voluntary migration greatly exceeded the forced one. The population of the Arctic regions was constantly growing. The analysis of Table 2 shows that the largest population in all regions was observed in 1989. The population explosion continued until the early 1990s and the Soviet Union collapse.

After the Soviet Union collapse, the population began to decline sharply. In a market economy, the state does not guarantee granting of northern privileges and high salaries. Many enterprises of the Arctic Zone were closed, unable to withstand competition with foreign and Russian enterprises with lower costs. High costs of Arctic enterprises are associated not only with climatic and geographical features, but with the need to pay high wages to employees as well. As a result, having lost guaranteed highly paid jobs and benefits, people began to move massively to other Russia's regions more comfortable for living. The analysis of Table 2 shows that over the 20 years from 1989 to 2009, the population in all regions has significantly decreased. The reason for migration is an economic one that is voluntary migration.

This situation persisted until recently. In recent years, the population has begun to return to some Arctic Zone territories. Thus, in 2018, compared with 2009, the population of Nenets Autonomous District and the Republic of Sakha has increased. All these regions are oil producing. The population is attracted with high wages which can be paid by oil producing enterprises. In other regions population has not reached 2009 values yet.

As of 2018, the population of the Russian Federation is 146.8 million people [33]. More than 1.4 million people live in the Arctic Zone, of which 70 thousand are representatives of the indigenous peoples of the Arctic, leading a traditional nomadic lifestyle.

Comparing these values with the area of the territories of the Russian Federation, wholly or partly located in the Arctic Zone, we can see that a minimum of population lives in the vast Arctic territories.

Obviously, further population migration from the Arctic territories actually undermines not only the economic potential of Russia, but also creates problems in the sphere of state geopolitical security. We will note that in other circumpolar countries, the state seeks to increase the flow of people to sparsely populated Arctic areas due to the fact that empty areas constitute a zone of potential risk. To solve this problem, the Arctic territories need to be developed and inhabited as well. Otherwise, Russia can lose both its labor resources in the Arctic Zone, and territories rich in minerals and other development resources.

4.4. Socio-economic characteristics of the Arctic Zone regions settlements

The number of cities and towns in the Arctic Zone territories is small. As can be seen from Table 1, at present there are 139 urban settlements in the regions completely located within the boundaries of the Arctic Zone. There are 127 urban settlements partially located in the Arctic regions. There are regions in which territory there is only one urban settlement. For example, Nenets Autonomous Area, completely located in the Arctic Zone territory with a total area of 177 thousand sq. km. The

Chukotka Autonomous Area (721 thousand sq. km) has only three cities despite the fact that its territory is sizeable.

At present most of Arctic towns are small. The mono-functionality of small towns and settlements of the Arctic Zone determines high unemployment rate in them. Population's purchasing power is low, the majority of the inhabitants of such settlements do not have any opportunity to move to more favorable areas for life that is to the center and to the south of Russia. In addition, the Arctic Zone regions are located above the isoline of sustainable crop cultivation and are unsuitable for reliable farming. All of this limits the abilities of farm management by the population as a widespread form of the unemployed population survival in other regions of the country. As a result, migration occurs in large Arctic cities whose population grows.

The feature of the majority of rural settlements in the Arctic territories is their non-agricultural functional orientation. Most often these are industrial settlements - builders, miners and drilling workers' settlements. In addition there are settlements that arose in connection with the military-industrial complex development: military "towns", frontier posts, armed forces personnel's service settlements etc. Agricultural settlements can be attributed only to the small villages and fishermen settlements of indigenous peoples, leading traditional nomadic way of life.

Another peculiarity of the population resettlement in the Arctic Zone is the existence of a specific group of closed settlements. They are associated as a rule with nuclear weapons production, large military bases and weapon testing ranges. In Murmansk Region there are 5 such settlements, 1 - in Arkhangelsk Region, 5 - in Krasnoyarsk Territory.

The negative feature of Arctic regions is their low diversification. Many Arctic municipalities are so-called monotowns. People who have been freed from dismissal from an enterprise do not have a chance to find employment somewhere else. An emerging problem of systemic unemployment inevitably leads to the decrease in business and economic activity of the whole region, whose balance in many respects depends on single-industry enterprises tax revenue. The multiplicative effect of monotown problems leads to problems increase in the region on the whole [30, 34-37]. There is a significant decrease in population standard of living and an increase in social instability on a regional scale.

5. Conclusion

Thus, oil producing regions are the most economically developed among the regions of the Arctic Zone. The same ones are the most attractive for population. At the present stage of the development of society, the socio-economic resource factors of population distribution become the most significant, while the climatic and environmental factors ones retreat into the background. Our first hypothesis proved to be correct.

The positive balance of migration and its voluntary nature, caused with economic reasons, makes it possible to classify the allocated regions as developing ones. The situation is not so good in the remaining Arctic regions, the balance of migration in most of them is negative in 2018. We have found that the population density in overwhelming majority of Russia's Arctic Zone regions is very low. Currently, in the Arctic Zone large areas remain uninhabited: the population density in 3 regions out of 4, completely located in the Arctic, is less than 1 per sq. km. Except for the oil producing regions, the population of the Arctic Zone is reduced. Thus, the second hypothesis, concerning the fact that Russia's Arctic Zone territories are poorly populated and continue to lose their population was confirmed for most regions.

It is obvious that population accommodation is largely influenced with the indicators of social and economic development. The region developed in social and economic terms is attractive for migrants. But as soon as the economic recession begins and population loses high wages and social preferences, an outflow of the population from the Arctic Zone takes place. Thus, the third hypothesis concerning the fact that that migration in the regions of the Arctic is voluntary, it has an economic character and its direction change depended on economic and social conditions, turned out to be correct.

Such socio-economic distinctive features of settlements of the Arctic regions as small population, mono-functionality, low diversification, etc. have been revealed. Thus, the fourth hypothesis concerning the fact that urban and rural settlements in the Arctic Zone differ significantly in social and economic characteristics from settlements in other Russia's territories has been completely confirmed.

If permanent residents of the Arctic Zone have work and stable high wages, they are not going to leave. Proficient labor resources provide social and economic development of Russia's Arctic Zone territories. The territories of the Arctic at present and in the foreseeable future are the resource base of Russian economy and it confirms the fifth hypothesis concerning the fact that the solution of the problem of the Arctic territories settlement is the key to solving the problem of Russia's development.

Obviously, further population migration from the Arctic Zone territories actually undermines not only the economic potential of Russia, but also creates problems in the sphere of state geopolitical security. We will note that in other circumpolar countries, the state seeks to increase the flow of people to sparsely populated Arctic Zone areas due to the fact that empty areas constitute a zone of potential risk. To solve this problem, the Arctic territories need to be developed and inhabited as well. Otherwise, Russia can lose both its labor resources in the Arctic Zone, and territories rich in minerals and other development resources.

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