

---

---

REGIONAL  
PROBLEMS

---

---

## The Russian North: Economic and Geographic Aspects of Development

V. N. Lazhentsev\*

*Institute of Social, Economic and Power Problems of the Northern Komi, Ural Branch, Russian Academy of Sciences,  
Syktyvkar, Komi Republic, Russia*

*\*e-mail: vnlazhentsev@iespn.komisc.ru*

Received March 22, 2018

**Abstract**—From the standpoint of socioeconomic geography, investigations into the challenges of the Russian North involve matching the structural and functional characteristics of its territorial economic systems formed in severe and extreme climatic conditions to their functionality. The territorial economic systems are presented as organizational forms of productive forces to address the main national economic problems whose solution is primarily associated with the modernization of production, social and infrastructure facilities established in the North.

DOI: 10.1134/S107570071805009X

The national regional policy of Russia has an essential shortcoming in that it underestimates the significance of the territorial economic systems established in the North and development of the natural resources. Academician N.P. Laverov rightfully believed that it is more difficult to explore the Arctic than it is to explore space [1]. The given thesis needs to be comprehended from an economic standpoint. The economic geographical approach to the North presumes dividing it into three zones, that is, the Arctic, the Far North, and the Near North (Table 1).

***Northern regions of Russia: circumpolar perspective.*** According to D.I. Mendeleev, “As no understanding can be gained of a person without knowing those around him/her and their mutual relationships, nations and countries alike can be somewhat understood only in their interaction with other countries and nations; therefore, coming to know Russia requires not only knowing it in itself, but also knowledge of other countries” [2, p. 3]. For this purpose, multiple authors employ a circumpolar perspective to position the Arctic zone (and sometimes other northern regions) of the Russian Federation in global geopolitics [3]. It is assumed that operating in the regions with extreme climate conditions requires the mobilization of scientific and technological potential from many countries and the establishment of a legal order (regulations) that would equally protect the interests of each country.

The Russian part of the Arctic is the most populated and developed one, i.e., as of 2015 there were 2428 thousand people, which accounts for approximately 55% of the world Arctic-zone population. Rus-

sia’s position ranks particularly high in the natural resources potential of the global Arctic, that is, 30% of hydrocarbon reserves. The contribution of the Arctic to the national economy is quite significant: nearly 80% of Russian gas, more than 90% of nickel and cobalt, 60% of copper, 96% of the platinum group elements, and 100% of barites. Fish and other marine bioresources play a vital role in the food supply of the population.

The Arctic is a special area of geopolitical relations oriented at a peaceful resolution of problems with respect to the development of its mineral and biological resources, as well as establishment of high-latitude transportation and communication routes using the northern sea route [4, 5]. For example, four regional organizations are currently operating, namely, an international forum, *the Arctic Council* (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States); *the Barents Euro-Arctic Council* (Denmark, Iceland, Norway, Russian Federation, Finland, and Sweden); *the Council of the Baltic Sea States* (Germany, Denmark, Latvia, Lithuania, Norway, Poland, Russia, Finland, Sweden, Estonia, and Iceland); and *the Nordic Council of Ministers* (Denmark, Iceland, Norway, Finland, and Sweden, along with three autonomous territories, that is, the Åland Islands, Greenland, and the Faroe Islands).

Contradictions related to resource utilization of the Arctic Ocean and the continental part of the Arctic are formalized between all of the listed countries [6]. This should not, however, be used to trigger military and political tension, but should rather be a subject of customary international relations. As shown by D.A. Dodin,

**Table 1.** Territorial area and population size of the Russian North and Northern natural economic zones\*

Zone	Area of the territory, thousand km <sup>2</sup>	Population size, thousand people				Dynamics, %		
		1990	2000	2010	2015	2015/2010	2015/2000	2015/1990
North of Russia	12654	12418	11011	10153	9954	98	90	80
Including:								
Arctic	4377	3231	2713	2483	2428	98	89	75
Far North	5095	2379	2035	1818	1771	97	87	75
Near North	3182	6808	6263	5852	5748	98	92	84

\* Estimated by the author based on data from municipal and district formations.

the circumpolar Arctic can be a targeted subject of the interstate programs for sustainable development [7]. Moreover, A.N. Pilyasov points out that a global cooperation, sharing common characteristics of economic behavior, will be formed in due course around the Arctic Ocean, similar to the one formed around the Mediterranean Sea [8]. The Arctic identity of the polar countries' nations as a factor of the economic order and social justice is in the sights of yet another author [9].

**Northern regions of Russia and the European Northern dimension.** Positive intentions regarding northern international cooperation are recorded in the Agreement on Partnership and Cooperation among the EU countries, Norway, Iceland, and Russia, which laid the foundation for the joint *Northern Dimensions policy initiated by Finland in 1997* [10]. *The joint strategy of the EU countries in relation to Russia and the Russian strategy towards the EU countries, augmenting each other, are aimed at peace, stability and security, bridging the socioeconomic gap, and setting a single normative approach to achieving the goals. The Northern Dimensions policy was intended to take advantage of the natural resource potential on the basis of the sustainable development, to create conditions for industrial and trade cooperation, upgrade power grids, develop transportation and telecommunication, provide human resources research, protect the environment, improve the level of health care and social security, as well as to solve other social issues.* The views of the EU countries on the Russian North were dominated by a natural resource component, which is reflected not only in general political documents but also in specific proposals and projects.

In view of the economic and geopolitical benefits, business partners from the Western countries limited their presence in the Russian European North, while taking the advantage of such measures as the “short-run money” effect, portfolio investments, securities market dealings, and often setting up brokerage firms with criminal functions by withdrawing capital to take abroad, while intentionally reinforcing the raw-export role of the Northern territories of Russia.

On the part of Russia, special attention was devoted to the human aspect, which was reflected in the word-

ing of the main objective of the Northern Dimension, i.e., to establish an extensive democratic space, where discrimination of persons based on ethnic, linguistic, or any other grounds shall not be tolerated. The Russian approach appears to ensure to a greater extent than the European an optimization of globalization and regionalization processes, both of which have their own benefits and shortcomings. However, the export of fuel and energy, as well as mineral raw material resources, is equally accentuated in the Russian practical economy as well; whereas the humanitarian aspect of the Northern Dimension has been overshadowed.

**Northern regions in the context of economic federalism and regional policy.** A certain interrelation between a territorial organization of a society and statehood was demonstrated on analyzing the challenges of economic federalism [11, 12]. As a base structure for an administrative territorial division of the country, there should have been a large economic district, with federal district status granted at the least, and more extended authority delegated compared to the current situation [13]. In this context, an important point is that no matter in what aspect of the regional policy the Northern and Arctic territories were considered, they would always remain a part of mesoeconomic and macroeconomic districts. It is exactly within the boundaries of large meridional systems where the issues most critical for the Arctic Zone of the Russian Federation (AZRF) need to be addressed using the accumulated industrial and human potential. Among others, the issues include establishing a foothold for the development of the Arctic resources, forming a manufacturing and social service “belt” of interregional significance on the developed territories of the European North, Siberia, and the Far East.

In the hierarchy of economic division into districts, a region on an oblast', krai, or republican level is rightfully deemed to hold a position of a subdistrict. The latter is the most stable unit of a state structure. Therefore, no matter what the economic division into districts and design of the Federation subjectness are, districts of an oblast' level need to be preserved. In addition, note that okrug-level and raion-level munic-

ipal formations occupy a position closer to the state rather than to the local self-government.

For the Northern and Arctic regions, the given judgment is not unimportant, inasmuch as there is still some doubt about their stability as administrative and political units and a relative balance of power between federal and regional administration. The regions have not yet realized their need “to transition from a centralized government regulation on a federal level to economic coordination, which is implemented primarily on a regional level” [14, p. 422] within the framework of the aforementioned centralization of power and financial resources. But scientific and public opinions incline to the view that the economic development of the country needs to be switched over towards an indicative (oriented) planning both on a federal and regional level in equal measure, which will stimulate a switchover from regulation to coordination, i.e., toward activity on a constitutional basis.

In the author’s opinion, the state policy conceptions with respect to districts of the North and the Arctic should be formulated in the following way: from the development of individual resources to territorial infrastructure; from draining a human and natural resource potential to their systematic replenishment; and from the government’s omnipresence in the economy to selective state entrepreneurship and coordination between the authorities and business. In this concept, the priority is shifted to the public interest and national security, equilibrium of revenue and spending by budget levels; combination of the state administration methods (aid, regulation, and coordination), employment of target-oriented programs when solving the urgent economic problems, and consideration of the “Northern” specifics in the Russian national legislation.

The role of the government in administering the North should be reduced as a minimum to a trigger device for generating and implementing the large industrial and social projects, primarily the infrastructural and scientific-technical. The maximum amount of government presence in the North could be put on record by reference to its three functions, namely, humanitarian (over the market), regulatory (beside the market), and planned–market (inside the market) functions. The first, humanitarian, function is aimed at preserving the languages and cultures of indigenous people of the North and the Arctic; protecting the environment and creating the conditions for environmental wellbeing; sustaining biological diversity; managing research on climate, the ionosphere, ice conditions, and other naturally occurring events; social assistance to local communities and migrants; and national security arrangements across the northern (Arctic) latitudes of Russia. The industrial and social spheres should be preferably designed and formed as a single territorial–economic system. The second, regulatory, function is intended for creation of

the Northern and Arctic legislation and governance; the formation and implementation of national development projects in the areas of transportation, optical fiber communication, and social infrastructure; and economic incentives to reindeer farms and other small forms of business structures. The third, planned–market, function necessitates the creation of government procurement orders for the execution of works with respect to deliveries of goods and social services to the North; development of the private–public partnership in implementing the large investment projects; transfer of housing and public utility infrastructure (*ZhKKh*) under the management of unitary enterprises controlled by organs of municipal administration; and development of forms of territorial economic management.

***Socioeconomic aspects of northern regional development.*** The initial preconditions for the socioeconomic development of the North to take off should be identified based on its position in the geographic division of labor. The natural resource preconditions are understood rather clearly, because a majority of the global fuel and energy, as well as mineral raw materials and resources are concentrated in the interior of the Northern land territories and aquatic areas. They are already fundamentally embraced by the systems of national and transnational economics. But what still needs to be defined is something that “pre-shapes” a specific activity, that is, principles of involvement of the Northern natural resources into the global economy. The highly developed countries strive to develop the resources of the Russian North on a basis of its colonization as a raw material appendage; as for the national and transitional companies, they would have preferred free trade. But the national interests of Russia lie above all in the formation of full-fledged structures of internal markets and trade in finished products, along with restrictions on the export of raw materials and fuel.

*The Northern region resources among the leading factors in the formation of the domestic market.* A peculiar tendency for our time to sell as much fuel as possible abroad (the export volume accounts for about a half of its output) for the sake of currency receipts is threatening for the country. A short-term effect due to the external trade earnings stack the odds against the national economy in that it continues to remain uncompetitive, whereas the underdeveloped domestic market is unable to compensate for the loss of export markets. Apart from this, revenues from the exports are rarely seen to become capital investments in the manufacturing and scientific and technical sectors of the economy.

A positive experience is illustrated by an example from the history of the European North, when its mineral raw materials and fuel and energy bases were first and foremost tied to demands of the internal market of Russia. This was due to the manufacturing and tech-

nological links embedded from the start into a structure of the Northern coal–metallurgical base (the Kola and Karelian iron ore, Pechora coking coal, Cherepovets steel, and mechanical engineering in St. Petersburg and Vologda); a unified power system embracing the entire zone of northwestern Russia; interrelation between the Pechora coal basin and the Urals; a balance between oil extraction in the Timan-Pechora basin and processing on refineries in Ukhta, Yaroslavl', and Kirishi; and a need to support the raw material bases of the Bogoslovskii and Ural aluminum smelters by developing Timan bauxites (Komi Republic) and strengthening the links between the Komi and Urals in terms of many different resources. As for an export of mineral raw materials and fuel and energy resources from the European North, it should continue to be determined residually at present. An exception to this can include oil and gas resources from sea shelves and the Arctic coastal zone that gravitate toward the Northern Sea Route.

It makes sense to include natural resources of the continental North first and foremost into the technological complexes of the Russian manufacturing industry; while the international projects in the area of fuel and energy resource development should be accomplished mainly in the Arctic. It is precisely the Arctic interest that to a large extent can be actualized through the joint activity of many countries. On geographic and geological scales, the Arctic is commensurate with the potential for large interstate bodies, e.g., countries of the Arctic Council.

Remote Russian out-of-the-way places rightfully attract considerable interest from geographical economists. In relation to this, note that *the Northern periphery represents a distinct socioeconomic reality with own economic structure and state of life* [15]. The main tenor of its study is the Earth, the people and self-organization of the local communities of people. A social stratification of the periphery can be described as negative, in other words, the poor without the rich, grooms without brides, children without parents at their grandmothers', sick people with no healthy people, etc. The local infrastructure is poorly designed. Municipalities and local communities could become a tangible force of the rural revival given the specific conditions, such as consolidation of territorial budgets, strengthening ties between urban and rural localities, and the creation of a fundamentally new network-based system of healthcare, education, culture, and tourism.

*Regional pay coefficients and increments for experience play an ambiguous role in the Northern policy.* They substantially add up in salaries of the public-sector employees but have lost their significance as a work incentive in market-oriented branches of the economy, where a wage fund limit is determined first and

then a part, corresponding to a Northern allowance, is formally embedded in its structure. If the allowance were not provided, the wage would remain the same, i.e., relevant to the size of the wage fund. But the problem in essence cannot be reduced to the Northern coefficients. It is not the allowance rates that drive the population exodus.

Migration processes can be more adequately understood and evaluated if considered in a natural and historical perspective. There were 12.5 million people residing in the extreme north and localities equivalent to it in 1990 and about 10 million in 2015, which is a decline of 2.5 million or 20%, including 27% in the European part, 17% in eastern Siberia, and 38% in the northern Far East. The population growth by 17% has occurred in the west Siberian North. The northeastern backwoods exhibit especially adverse trends. Thus, the population loss amounted to 28% in the Komi Republic, 62% in Magadan oblast, and 69% in Chukotka Autonomous Okrug. Pre-Northern districts also feature a negative net migration rate. This considerably diminishes the hope that they (as if by default) might be a pivot of Arctic development. Thus far, they have become a transit channel for the northerners migrating to the central and southern regions.

Our estimates revealed that since the 14th century natural demographic processes and voluntary migration (penetration, resettlement, and relocation) had provided for an increase up to nearly four million people in the population of the Northern Russian districts. This appears to be a quite natural (spontaneous) demographic process. The other 8.5 million people (from the maximum population figures recorded during the 1989 census) resulted from administrative actions, forced relocation, and industrial necessity, which altogether can denote a concept of colonization (economic intervention). Given a rational organization of territorial and resource development, closer interregional integration, as well as labor productivity matching the world level, colonization could have yielded approximately five million people in population growth.

We can make an inference that the current Northern trend of negative population migration is bearable so far but has been approaching a trigger point. The issue of an increase in labor productivity acquires a particular urgency. Indeed, a majority of job positions in the Northern regions (contrary to the reason for their development) are low-paid and not particularly productive. They lack systemic alignment in labor organization of primary production operations and the subsequent auxiliary and service operations. As far as modernization of the economy is concerned, it is feasible to consider its effect in the context of territorial economic systems so that all the chain links are brought up to date in sync.

The single-industry nature of the Northern settlements considerably hinders anticrisis management. Town and territories with the naturally prevailing niche specialization typical to the North are the most negatively affected by an economic crisis. A standard anticrisis measure to tackle unemployment is to create additional jobs through building new enterprises and expanding the existing production operations. This is ineffective because once the crisis is over, such enterprises and production operations again become uncompetitive. The general anticrisis course will include optimization of the number and quality of job positions in light of the scientific and technical progress in the natural resource industries of the economy and in the service sector. It is feasible to assign the Arctic towns, along with their FIFO and military camps, a role as base points in the networked structures of healthcare, education, culture, and travel [16].

*In solving socioeconomic problems, regionalization and localization is a kind of antidote to globalization, whereof a danger lies in the overstretched unification of lifestyles across various social environments without proper consideration for their diversity, including the Northern one.* The challenges of a life-sustaining system in northern conditions are largely associated with a search for methods to align the inherent principles of self-organization of local communities with their external functions that arise from the geographic division of labor and by establishing infrastructure in the developed territories. These issues can only be solved within a framework of stable political and economic, as well as legal, relations of local communities with the state and large production structures.

Analyzing domestic and foreign concepts for the development and provision of amenities and infrastructure to territories with severe and extreme natural conditions, revealed that the development of the Russian North needs to be forecasted largely based on the interests and demands of the local indigenous ethnic groups. Their culture, language, and economic traditions are inherently valuable and represent heritage assets of the entire world community. Russian, Karelians, Komi peoples, Yakuts, and native minorities have formed relatively stable historical and cultural nodes of life activities, the prospects for which are mainly predetermined by internal sources of development, such as self-organization, labor productivity, reproduction of human and natural resource potentials, and integration into the national and world economic systems. However, the national and regional policies are of no small importance. We must not let the successors of people inhabiting the North for ages be forced to abandon their native lands [17].

***The Arctic zone of the Russian Federation in a special focus of the state policy.*** This approach necessitates establishing clearly defined status positions in terms of

forms of governance, regulation of socioeconomic activity, especially for native minorities, and maintenance of an adequate quality of life. Thus far, it remains confined to the legislation of the Extreme North and areas equated with a status of the Extreme North districts. The Arctic in itself is positioned as a zone for development, which, in defiance of its natural characteristics, shrinks northward due to the economic and political factors [18].

The so-called base zones are outlined as unit fractions of the governance, namely, Karel'skaya, Kol'skaya, Nenetskaya, Vorkuninskaya, Yamalo-Nenetskaya, Arkhangel'skaya, Noril'skaya, Severo-Yakutskaya, and Chukotskaya. They differ from each other quantitatively and qualitatively and do not make additional contributions to Arctic study, while restating what has already been established by the administrative and territorial arrangement of AZRF.

A conundrum of the present situation lies in the fact that neither the entire AZRF, nor its base zones serve as the objectives of project or program governance consistent with a theory and practice of territorial planning. It is for a reason that the Government Program on Socioeconomic Development of the Arctic Zone of the Russian Federation for the Period of 2015–2020 and a Longer-Term Perspective frequently undergoes review along with a reduction in the number of projects and size of financing. The AZRF is erroneously viewed as a macro region, therefore, arranging the programs and projects for it is hampered not only by a low level of financing and scientific and technical support, but equally by the lack of a systemic foundation [19, 20]. As for the civil Arctic economy, a target-oriented program approach can be applied to the northern sea routes and individual territorial–economic complexes [21].

The question is whether an implementation of large new Arctic projects is able to facilitate a solution to the aforementioned socioeconomic problems. Or, first and foremost, we should proceed with a modernization of the existing economy provided the social well-being of the northerners only weakly depends on the financial results of core production companies due to their limited participation in the life sustenance of the territorial communities. Nevertheless, another standpoint exists and should be taken into account: “Major prospects for the AZRF development are primarily associated with the territorial resource potential and depend on production activity and successful project implementations by large industrial enterprises and corporations in the development of oil and gas resources of Nenetskii Autonomous Okrug, Chukotskii Autonomous Okrug, Yamalo-Nenetskii Autonomous Okrug, Murmansk oblast, and the Arctic territories of Krasnoyarsk krai and natural mineral

deposits in the Arctic territories of the Komi Republic" [22, p. 83].

***Future of the North rests upon the innovative development.*** The bottom line in the economic development of the North is a timely response to scientific and technical advancements and their deployment to optimize the location and development of production. The economy of the Northern and, in particular, the Arctic territories should feature a higher level of science intensity in that technologies employed in extraction and processing of raw materials increasingly rely on progressive science and technology advancements in the areas of electronics, mechanics, chemistry, microbiology, and other fields. Development of the territories with severe and extreme climate conditions is centered not only on the size of the population, labor resources, and GRP growth rates, but rather the vigorous efforts to master and employ novel knowledge and generate progressive technologies.

The monograph [23] illustrates the importance of high technology in the fuel and energy complex and integrated utilization of thermal and coking coals, the production of liquid fuels, adsorbents, carbon and graphite materials, and thermal graphite. It is important to evaluate in advance the possibility of transitioning to "cokeless" metallurgy, as well as a resultant need for broad-scale development in solid fuel chemistry. In the oil-and-gas sector, special attention is given to combined vertical and horizontal directional drilling, the creation of underground gas storage facilities, combating ultrahigh reservoir pressure, the switchover to novel technologies in petroleum refining processes, etc. The attractiveness of the Arctic projects (a large share of public funding) encourages the rapid departure of oil and gas companies for new places, which often leads to overwhelming losses on the "old" deposits. To reduce their level, it is desirable not only to introduce novel technological methods, but also approach the licensing of economic activity "statewise", in other words, taking into account the entire resource potential of a particular oil-and-gas-bearing province.

For the foreseeable future, an improvement in the indicators of mining and processing enterprises in the North is geared to the deployment of such fundamental innovations as mechanical hard rock shearers, remotely or automatically controlled equipment, wireless systems of communication and data transfer, geostatic pressure control, the creation of a geomechanical monitoring system, sorting and enrichment directly in situ, hydrometallurgical processing methods, nuclear physics methods in research, etc. Even greater significance is assigned to the introduction of innovative management methods and information technologies. In the future, sensing technologies conventionally used in geological survey, e.g., seismic monitoring, radiolocation, tomography, etc., are likely to be employed directly in ore mines, as well as

at sorting and enrichment facilities, and metallurgical plants. Transition to the ore/mine network communication system is to occur. Geographic information systems, three-dimensional graphical representation, and computer design will assist in achieving durable solutions. Application of various sensors (infrared and biometric), voice activated control, projection mapping of device readings, and more are expected to become the most promising technologies in the area of occupational safety and security in the future. Overall, the technological advancement of the mineral and raw materials sector is aimed at producing new types of materials, e.g., various ceramics, stone casting, basalt and optical fibers, artificial crystals, synthetics, etc.

High technologies find an equally effective application in the forest and agrarian sectors of the economy. The Russian North accounts for two-thirds of the country's forest raw material potential, nearly half of wood exports, and a third of the total lumber production, but has an extremely low level of forest resource efficiency. Therefore, prospects for forest industry production do not depend on the development of new forest stands alone, but rather on the replenishment of conifer plantations and novel methods for mechanical and chemical wood processing. This industrial sector will be based not upon the gigantic enterprises similar to Syktyvkar or Bratsk *LPK* (forest industrial complex), but rather upon enterprises, featuring medium to small capacities, capable of utilizing wood and secondary raw materials in an integrated manner, which will enhance the economic basis of out-of-the-way areas (peripheral districts). At present, the technologies exist that will allow for an integrated conversion of foliage into valuable biologically active substances and food supplements.

As for agriculture in the Northern territories, its advancement is associated with the introduction of domestic bed and belt technology of potato cultivation, Finnish technology of seed propagation and cabbage planting, as well as a storage technology for vegetables including ice application as construction material for warehouses for vegetable storage. New results have been delivered and practical knowledge accumulated in improving the productivity of livestock. In this relation, note that to include the Northern regions in the national agrarian project requires not only a concentration of resources on animal husbandry complexes, but also assistance measures in crop farming, game, and trades, together being an economic foundation for life-sustaining activities of the indigenous population.

Scientific and technical innovations are in essence the new starting points for the growth of productive forces in the Russian North and Arctic. They are closely associated with a resource-based economy, while making it more science intensive and, as a result, more competitive in internal and external markets. But what is more important is their relationship with an

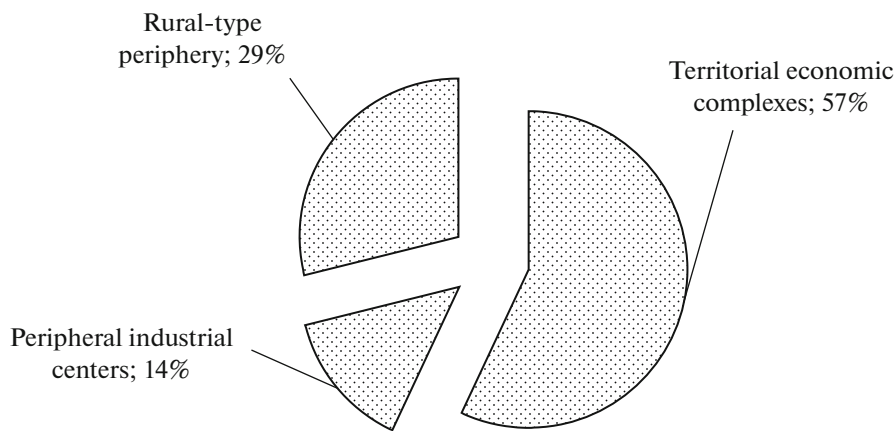


Fig. 1. Typology of the Russian North TES's based on location of productive forces.

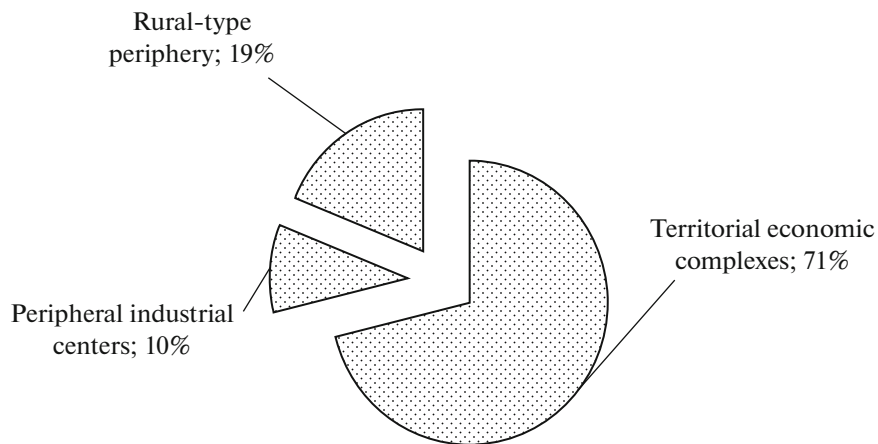


Fig. 2. Typology of the Arctic Zone TES's based on location of productive forces.

increase in the intellectual potential of the Northern population, which is of the utmost importance for their stable development.

**Territorial Economic Systems (TES).** The scientific and technical innovations listed above are correspondingly “bound” to specific TES's (Figs. 1 and 2)<sup>1</sup>.

In our opinion [24], political decisions regarding a territorial organization of productive forces in the North should, in the end, be concerned with the formation and improvement of three types of the territorial systems, namely, (1) territorial economic complexes, economic activity which can be relied upon by more than half of the population in the North overall and by 70% of the population in the Arctic; (2) industrial centers distant from them (industrial periphery) that rest upon the development of natural resources and services to infrastructure communications; and

(3) rural-type territories, including agricultural or forest industries and those characterized by a rural way of living.

Another approach to the typology is from the structural and functional standpoint (Table 2).

The economic geographical typology of the Northern, including Arctic, territories accentuates key challenges for their development. Among them are the following:

(1) Issues related to cyclic development of towns and raions that specialize in oil and gas and ore mining, by reason of their interrelation with deer farming and agriculture. As activity of oilfield and mining and processing enterprises diminishes, deer farmers and those employed in the service sector find themselves in a critical situation due to a decline in demand for their products and services.

(2) Instability in the development of towns and raions that specialize in the forest industry and agri-

<sup>1</sup> Share of a TES (%) in population size in 2015 is shown in Figs. 1 and 2

**Table 2.** Population size by economic types of okrug-level and raion-level municipal formations (MF) in the Russian North, thousand people

Economic type	Number of MF	2000	2015	2015/2000, %
1. Central towns of oblasts, krais, and republics, incl. in the Arctic	9 2	2113 739	2091 650	99 88
2. Central towns of okrugs incl. in the Arctic	4 3	105 67	182 87	173 129
3. Towns and raions specializing in oil and gas along with deer farming and/or agriculture, incl. in the Arctic	39 10	2058 447	2259 454	111 107
4. Towns and raions, specializing in mining along with deer farming and/or agriculture, incl. in the Arctic	46 11	1584 635	1226 504	77 79
5. Towns and raions specializing in forest industry and agriculture, incl. in the Arctic	101 8	2875 149	2420 158	84 106
6. Raions of deer farming (sheep and horse husbandry) not covered by the third and fourth economic types, incl. in the Arctic	45 11	543 119	497 119	92 97
7. Ports and fish farming specialization, incl. in the Arctic	26 5	455 104	301 81	66 78
8. Other MFs, including closed towns, incl. in the Arctic	13 9	709 453	489 376	69 83
9. Big cities (Bratsk and Komsomol'sk-na-Amure)	2	569	489	86
Total,	286	11011	9954	90
incl. in the Arctic	56	2713	2428	89

culture and are home to a quarter of the Northern population.

(3) Reindeer livestock often exceeds ecological load allowance, which leads to a significant reduction in the reproduction of mosses and lichens and impoverishes grazing reserves.

(4) A challenging situation has occurred in the fishing industry, on which the life of more than 300000 northerners depend.

\* \* \*

A new stage in the development of the Russian North, including the Arctic, can be defined as follows:

(i) Modernization and establishment of social and ecological infrastructure for the existing territorial economic complexes, individual industrial centers, and rural periphery.

(ii) Extension of life for currently operating trades, mines, and ore mining and processing integrated plants using the cutting-edge technologies of raw material extraction, sorting/enrichment, etc., and processing.

(iii) Sustainable use of northern marine and tundra bioresources.

(iv) Creation of scientific and technical infrastructure for the Northern Sea Route and enterprises in the Arctic.

(v) Local economy inclusion to meet the needs of defense facilities.

## REFERENCES

1. N. P. Laverov, "It is more difficult to master Arctic than space," *Redk. Zemli*, No. 3, 40–48 (2014).
2. D. Mendeleev, *Additions to Knowledge of St. Petersburg* (Izd. A. S. Suvorina, St. Petersburg, 1907) [in Russian].
3. *The Soviet Arctic (Seas and Islands of the Arctic Ocean)* (Nauka, Moscow, 1970) [in Russian].
4. *Arctic: Interests of Russia and International Conditions for Their Implementation* (Nauka, Moscow, 2002) [in Russian].
5. A. A. Moiseev, "The international right of Russia for the Arctic," *Sovrem. Proizvod. Sily*, No. 4, 111 (2013).
6. *The North and the Arctic in the Spatial Development of Russia: A Scientific and Analytical Report* (Izd. Kol'sk. Nauchn. Tsentra Ross. Akad. Nauk, Apatity, 2010) [in Russian].



7. D. A. Dodin, *Sustainable Development of the Arctic (Problems and Prospects)* (Nauka, St. Petersburg, 2005) [in Russian].
8. A. N. Pilyasov, "Arctic Mediterranean: The preconditions for the formation of a new macroregion," *EKO*, No. 12, 54–75 (2010).
9. Yu. F. Lukin, *The Russian Arctic in a Changing World* (Arkhangelsk, 2012) [in Russian]. [https://narfu.ru/aan/Russian\\_Arctic\\_Lukin/Russian\\_Arctic\\_Lukin.pdf](https://narfu.ru/aan/Russian_Arctic_Lukin/Russian_Arctic_Lukin.pdf). Accessed December 25, 2012.
10. *"The Northern Dimension:" Problems and Prospects for Cooperation* (OAO Komi respublikanskaya tipografiya, Syktyvkar, 2000) [in Russian].
11. *Russian Federalism. Economic and Legal Problems*, Ed. by S. D. Valentei (Aleteiya, St. Petersburg, 2008) [in Russian].
12. V. N. Leksin and A. N. Shvetsov, *Reforms and Regions: System Analysis of Reformation of Regional Economy and Formation of Federalism and Local Self-Governance* (LENAND, Moscow, 2012) [in Russian].
13. V. N. Lazhentsev, "On the practical use of socio-economic zoning in the system of public administration (examples of the European North of Russia)," *Probl. Razvit. Territ.*, No. 6, 29–41 (2016).
14. A. N. Pilyasov, "The new role of the state in the development of the economy of the northern regions," in *The North as an Object of Complex Regional Studies*, Ed. by V. N. Lazhentsev (Nauchn. Tsentr Ural. Otd. Ross. Akad. Nauk, Syktyvkar, 2005) [in Russian].
15. *The North: Problems of Peripheral Territories*, Ed. by V. N. Lazhentsev (Nauchn. Tsentr Ural. Otd. Ross. Akad. Nauk, Syktyvkar, 2007) [in Russian].
16. T. E. Dmitrieva and O. V. Buryi, "The concept of city self-sufficiency in the Arctic (example of Vorkuta)," *Reg. Issled.*, No. 2, 33–43 (2017).
17. N. Einarsson, J. Nymand Larsen, A. Nilsson, and O. R. Young, *Arctic Human Development Report* (Arctic Council, 2004; Salekhard–Yekaterinburg, 2007).
18. A. N. Pilyasov, "Russia's Arctic frontier: Paradoxes of development," *Reg. Res. Russ.* 6 (3), 227–239 (2015).
19. V. N. Leksin and B. N. Porfiryev, "Organizational issues of expert review and evaluation of macroregional development projects in Russia," *Stud. Russ. Econ. Dev.* 27 (6), 621–628 (2016).
20. V. V. Ivanter, V. N. Leksin, and B. N. Porfiryev, "Rethinking the Arctic as a megaproject. Problem statement," *Probl. Anal. Gos.-Upr. Proekt., Teor., Prakt., Metodol.* 7 (6) (2014). <http://rossiyanavsegda.ru/read/2760/>.
21. N. I. Komkov, V. S. Selin, V. A. Tsukerman, and V. S. Goryachevskaya, "Scenario forecast of the development of the Northern Sea Route," *Stud. Russ. Econ. Dev.* 27 (2), 180–188 (2016).
22. E. A. Korchak, *The Arctic Zone of Russia: Social Portrait of Regions* (Izd. Kol'sk. Nauchn. Tsentra Ross. Akad. Nauk, Apatity, 2017) [in Russian].
23. *The North: Science and Prospects for Innovative Development*, Ed. by V. N. Lazhentsev (Komi Nauchn. Tsentr Ural. Otd. Ross. Akad. Nauk, Syktyvkar, 2006) [in Russian].
24. V. N. Lazhentsev, *The North of Russia: Issues of Spatial and Territorial Development* (Komi Nauchn. Tsentr Ural. Otd. Ross. Akad. Nauk, Syktyvkar, 2015) [in Russian].

*Translated by E. Kuznetsova*