INTEGRATION PROCESSES IN THE ECONOMIC SPACE OF RUSSIA'S NORTHERN REGIONS

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Abstract

The article reveals the essence, provision factors, and development stages of the spatial integration of regional economies on the basis of a critical analysis of the scientific literature. The author studies the features of integration/disintegration processes in the economic space of Russia's European North in the post-Soviet period. The paper shows that cooperative relations of the region with other entities of the Russian Federation, which have been preserved since the USSR, can become an objective basis for the development of integration processes. However, they are constrained by a significant export orientation of the Northern region's economy, negative demographic and migration processes that limit the integration development in the region's labor market, and a decline in the level of spatial transport connectivity. The author substantiates conceptual areas, priorities, and tools for ensuring the spatial integration of the Northern region's economy at the intra- and interregional levels.

Keywords: economic space, spatial integration, disintegration, connectivity of space, European North of Russia.

JEL classification: R12

1. Introduction

The country's economy during the USSR period could be characterized by a high development level of interregional economic cooperation and integration of its constituent regions. In particular, according to statistics, the share of inter-republican exchange in exports in most USSR republics exceeded 90% in 1989, and imports – 70% of the total volume of products (including exports and imports, except the RSFSR where these figures were 68.5 and 49%, respectively).

At the same time, the collapse of the Soviet Union and "shock" market transformations of the 1990s led to a significant disruption of existing interregional technological, cooperative, social, and other ties, as well as to an increase in disintegration processes in the national economic space. Thus, the share of interregional turnover in the GDP, as a key indicator of the country's economic space integration, significantly decreased during market transformations: from 22% in 1990 to 12% in 1999. Even during the recovery and growth period of the Russian economy in the 2000s, this indicator did not grow significantly (2009 – 13%, 2016 – 13.2%) (Granberg, 1999; Gusev, 2011, etc.). As a result, once-stable spatial systems, such as economic regions formed on the basis of the national division of labor and cooperation, lost their positions significantly (Minakir, 2002).

In this situation, certain macro-regions of the country are more integrated into the world economy, rather than the national economic space (due to a small capacity of the domestic market too). At the same time, in the post-Soviet period, the Russian economy has further strengthened its export bias, focused on the supply of mineral resources to international markets (Rastvortseva N.S., Chentsova S.A., 2015). Thus, in 1995, mineral products accounted for 42% of Russia's exports, while they accounted for 63% in 2019. This was caused, first, by an accelerated growth of crude oil exports (by 1.8 times), petroleum products (by 2.3 times), and natural gas (by 1.13 times). The focus on the export of mineral resources has led to stagnation and crisis in the manufacturing industry. The focus on mineral resources export led to stagnation and crisis in the manufacturing industry's sectors.

These processes had a negative impact on the country's socio-economic and spatial development. It led to locational compression of the economic space, degradation of elements of the settlement and production framework outside of cities and large industrial centers. Its

ultimate consequence was an increase in disintegration processes and actualization of objectives to involve these territories in national technological value-added chains.

Russia is a northern country (nearly 65% of its area belongs to the Northern zone and its equated localities). The Northern regions that have a huge natural-resource, transit, and geostrategic potential, in accordance with the current legislation, include:

– *13 RF entities* that belong to the regions of the Far North and its equated localities (Karelia, Komi, Yakutia, Tuva republics; Arkhangelsk, Murmansk, Magadan, Sakhalin oblasts; Nenets, Khanty-Mansiysk, Yamalo-Nenets, Chukotka AO; Kamchatka krai);

– *11 entities* that partially belong to the regions of the Far North and its equated localities (Altai, Buryatia republics; Amur, Irkutsk, Tomsk, Tyumen oblasts, Zabaykalsky, Krasnoyarsk, Perm, Primorsky, Khabarovsk krais).

Researchers usually consider the Vologda Oblast a part of the Northern territories of European Russia, because, historically, it belonged to the North within the system of the USSR economic zoning (for example, it was a part of the Northern Krai (1929–1936), the Northern Economic Region (1982–present)).

The object of this study is the territories of *European North of Russia (ENR),* which is one of the largest regions of the country's European part (1,466 thousand square kilometers). The importance of this region for the country's spatial development is explained by the fact that Arctic municipalities of Russia's European North, according to the Spatial Development Strategy of the Russian Federation until 2025, are geostrategic territories, and the region itself is a buffer zone where trade and other cooperation with European countries (Germany, Finland, Sweden, Norway, etc.) take place (Kozhevnikov S., 2020). Here (from the Kara Strait), the Northern Sea Route originates. It is one of the major international sea transport arteries, which will become even more important in the future (*Fig. 1*).

Figure 1. Territories of European North of Russia (*ENR*) *

*ENR includes Vologda, Arkhangelsk, Murmansk oblasts, Republic of Karelia, Komi Republic, and Nenets Autonomous Okrug

In the Soviet period, the Northern territories were a separate and strategically important object of the state administration. Thus, several strategic and program documents were approved and implemented for its development, and special administration structures were established (for example, GOELRO plan (the state plan for electrification of Soviet Russia after the October Revolution of 1917); a joint resolution of the Council of People's Commissars of the USSR and the Central Committee of the Communist Party "On measures to develop the Northern Sea Route and the Northern economy"; a List of regions of the Far North and its equated localities was approved; Regulation on the Commission for Arctic and Antarctic Affairs under the Cabinet of Ministers of the USSR and personal composition of this Commission, etc.), organizational, financial instruments and infrastructure were created that helped to develop and "settle in" the Northern territories (including "northern" wage allowances, longer holidays for employees; housing, social, and transport infrastructure facilities were actively constructed with the participation of the government, etc.).

However, in the 1990s, the state's role in the development of these territories significantly decreased. Many compensatory mechanisms began to lose their scale and efficiency. Negative trends in the economic space of Russia's Northern territories were growing, and they were mostly noticeable in its polarization and the activation of all disintegration processes;

increasing level of differentiation of these territories in terms of potential and development level.

Thus, researchers (Baburin, Tikunov, et al., 2018) used the method of microgeographic analysis of potential density characteristics to propose a classification of the Russian Arctic territories (5 types), which significantly differ in terms of socio-economic potential, opportunities, and prospects for development. It requires the strengthening of the state's role in ensuring sustainable development of these territories.

The government's interest in the Northern territories emerged again only in the mid-2000s. However, currently, its focus is on the development of the Arctic zone of the Russian Federation – not an entire territory of the North (including nearby and middle zones). In this regard, a relevant scientific and practical task is to assess consequences of the spatial transformation of Russia's European North in the post-Soviet period and to develop tools to improve its internal connectivity and integration into the economic space of the country by using specialization and cooperation advantages.

The purpose of the work is to assess the state and substantiate the tools for improving inter- and intraregional integration of the Northern region's economic space.

Achievement of this purpose includes the solution of the following objectives:

1. To study theoretical approaches to understanding the essence, prerequisites, and factors for ensuring the regional economy's spatial integration.
2. To explore the features of integration and disintegration processes in the economic space of Russia's European North in the post-Soviet period.
3. To substantiate priorities and tools for ensuring spatial integration of the economy of the Northern region at the intra- and interregional levels.

In our opinion, natural-resource, human, and production potential of these territories will be efficiently used for solving Russia's national economic problems only if the role of the state in the management of these territories increases together with the modernization of territorial and economic systems of the North, which developed in the Soviet period, key sectors of its economy develop on the innovative basis, and the search for new areas of specialization occurs. It, however, requires adjusting the priorities of the country's spatial development, finding new growth sources not only for cities, but also, first, for medium and small towns, as well as rural areas.

2. Literature Review

After the period of disintegration and acute competition of Russian regions for attracting financial, personnel, investment, and other resources in the 1990s, it gradually became clear that such relations do not contribute to a successful solution of regional problems, because they lead to enclavization and isolation of these territories' economic systems.

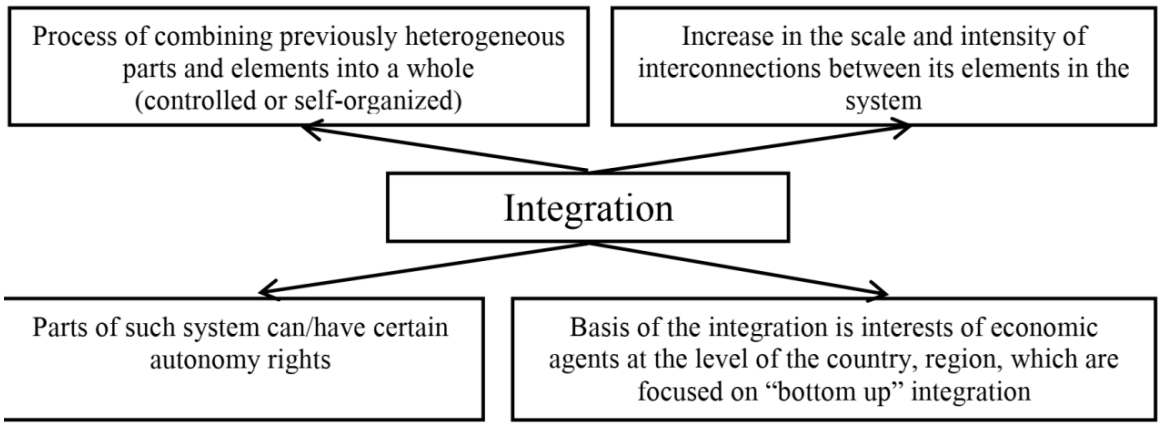
According to researchers (Polterovich, 2015; Knyazev, 2018), unlimited competition entails high costs and, as a rule, it is inefficient in modern conditions. At the same time, the competition itself gradually evolved and the role of cooperation elements, which is characterized by the coordination of parties' efforts, significantly increased. This type of cooperation leads to the saving of participants' financial and other resources; acceleration and expansion of innovative transformations; combination of efforts and means of countering competitive attacks from other territories that do not participate in specific cooperative interactions (Vazhenin, Vazhenina, 2020).

Thus, the economic science more often embraces an opinion (Abalkin, 2002; Baklanov, 2002; Minakir, 2004; Lazhentsev, 2010; Deutsch, 2012; Uszkai, 2015 et al.) that it is necessary to focus not just on a competition, but on a cooperation and coordination of regions' efforts to develop and integrate as socio-economic spatial systems. These circumstances indicate that one of the current key tasks of federal and regional authorities is to ensure the spatial integration of the RF regions' economy. It should be noted that this task is difficult because, in the Russian spatial science, there is a rather low level of the development of the theory and methodology of regional integration in market conditions; so far, there is no unified interpretation of the essence of this category and factors that ensure a practical spatial integration. We will try to answer these questions in this article.

The "integration" category is currently broadly studied in social sciences. It is understood in philosophy as the development related to the merging of heterogeneous parts and elements into a whole. These processes can occur within an existing system and lead to an increase in the level of its integrity and organization; or within the formation of a new system from previously unrelated elements.

The main "generic" features of the "integration" category, identified by the analysis of scientific literature and practice, are presented in figure 2.

Figure 2. The main "generic" features of the "integration" category



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As noted by classic authors of studies on these processes (for example, Balassa, 1961), practical integration means all phenomena that lead to the strengthening of economic ties or between territories' economies in a way that the result is a harmonious whole. In other words, it is usually considered a process that helps a single economic structure to form because of changes in real and regulatory spheres (integration processes in the real sphere are associated with a free flow of commodities and services, factors of production, and information; in the regulatory sphere – adjustment of institutions, structures, and applicable legal norms in individual markets).

According to H. Marcuse (1997), the integration reflects "the creation and maintenance of intensive and diverse interaction patterns" mostly by removing barriers to free mobility and establishing positive and non-hierarchical relationships. Spatial integration allows using all advantages of a territorial division of labor and cooperation (sharing resources, pooling capital, creating favorable conditions for economic activity (Arent A., Bojar M., et al., 2015).

At the same time, according to the researchers (De Boe et al., 1999), there are two main approaches to the analysis of integration:

– integration between different spheres (industries) in a territory;

– integration between different territories in a sphere (industry).

These approaches were recorded in the EU policy documents. However, they do not explicitly mention spatial integration, but instead use the concept of "territorial cohesion".

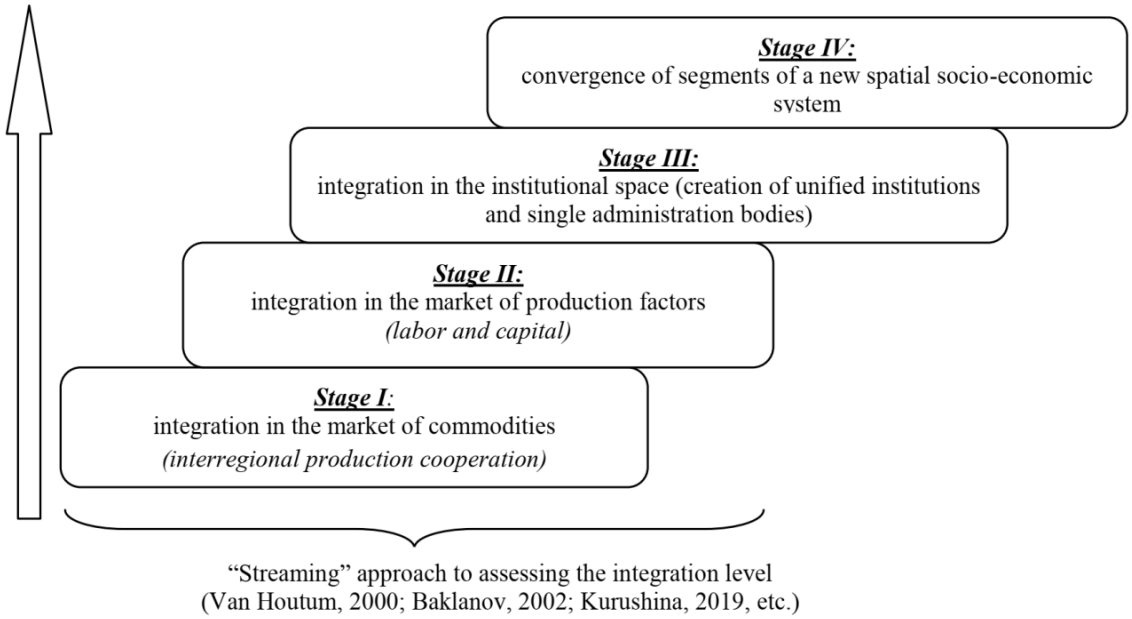
Also, there is no unified approach toward forms and models of integration in the literature. However, it is possible to draw a clear distinction between its two major forms: mechanical and organic. "Mechanical" integration refers to a characteristic of a spatial system's structure, and it is a measure of its internal homogeneity; it occurs if regions are characterized by, approximately, the same level of key development indicators (for example, gross regional product per capita, unemployment, infrastructure development, etc.). At the same time, organic integration is characterized by the presence of stable, balanced flows between a system's elements, and it is a measure of the intensity of relations between subsystems.

There is also a classification of integration processes according to a degree of rigidity of relations between a system's elements: in "hard" integration, relations between parties are regulated by government documents/internal corporate regulations; in "medium" integration – by economic agreements; currently, "soft" integration plays a major role – it makes socio-cultural, historical, and other relations without legal obligations of participants important (Polanyi, 2002; Cechella C, 2010).

In this research, we understand spatial integration of regional economies as a controlled multi-factorial process of increasing connectivity and convergence of regional space segments because of increasing scale and intensity of contacts (economic, social, cultural, etc.) between its elements.

Within the communicative approach to the interpretation of space, the following stages of regions' spatial integration development can be distinguished (Fig. 3). As a result, at the "mature" development stages, there is usually a convergence of segments of a new spatial socio-economic system (Çolak O., 2015). At the same time, according to the European Union study (Alexiadis, 2020), the process of regional convergence here is currently limited by significant differences of regions (NUTS-2 EU-27) in the level of their scientific and technological development, and technology implementation.

Figure 3. Development stages of integration processes in a spatial regional socio-economic system



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The results of the critical analysis of theory and practice allowed us to identify the following prerequisites and factors that positively affect spatial integration of regional economy (Voronina, 2014; Tinbergen, 2006; Frolov, Mirzoev, 2014):

– geographical proximity of territories (territorial proximity and common borders (Lanaspa Santolaria L., Olloqui Cuartero I., et al., 2015);

– social, economic, cultural, and other similarities of territorial systems, existence of traditional historical links between regions;

– functional and resource complementarity of territories (resources: natural, human, personnel, investment, economic-geographical and geostrategic location);

– general infrastructure of territories (transport, energy, financial, information, etc. (Dionelis C., Mourmouris J., et al., 2012; Hirobata Y., Miyata Y., et al., 2011);

– spatial proximity (measured by economic distance);

– absence of cultural and political contradictions between a system's elements;

– similar problems of territories' socio-economic development (for example, for the Far North territories);

– high capacity of regional markets, stimulating development of production and trade relations;

– efficient administrative bodies.

Integrated management of these factors is an objective basis for the development of integration processes in the economic space.

3. Research methods

The most common method of assessing integration processes in space from the perspective of the "metabolism" function of a socio-economic system (stage 1 and 2), according to A.M.

Libman and B.A. Heifetz (2011), is the assessment of absolute and relative indicators of flows of production commodities and factors (labor, capital). This classical functional approach to spatial integration, called the "flow approach" by Van Houtum (2000), is most often analyzed by the authors.

At the same time, we should agree with B. Balassa (1961) that such interchange characterizes only initial stages of economic integration. The significance of flows between places is not sufficient to determine the existence of spatial integration. At the same time, in many cases, such flows can be asymmetric and associated with social or economic heterogeneity between territories (Engin Duran H., Pelin Özkan S., 2015). Flows help to determine a material dimension of spatial integration (Var E.B., Yazgi B., et al., 2014), but they do not directly provide information about its institutional and mental dimension that is the most important in the long term (Kurushina, 2019).

To assess the level of cooperation relations between entities of Russian European North, Rosstat data on the volume of commodities' import and export were used; to assess migration processes, data of Rosstat and its territorial bodies were used. Moreover, we substantiated and tested the methodological tools for assessing integration processes in the region's economic space from the perspective of the development of migration relations between the territories. They include the calculation of the following coefficients:

а) coefficient of efficiency of migration relations (CEMR) is a quotient of a number of departures from region i to region j by a number of arrivals in the opposite direction, measured in per mil. Region i actively gains population if the CEMR is less than 800; region actively loses population if the CEMR exceeds 1250;

б) coefficient of intensity of migration relations (CIMR) is the ratio of the paired volume of departures in the total volume of departures of the i-region to the migration capacity of this region in the entire active environment of the array;

в) migration index of spatial structure of turnover (MISS) shows how high the connection tightness between two regions is in comparison with the arithmetic weighted average for the entire array of interregional migration links.

The economic space integration and provision of its connectivity largely depend on the development level of transport and other infrastructure. To assess the level of transport development in Russian European North, we used data of the Federal Road Agency (Rosavtodor) for the RF entities.

4. Results

According to the results of the conducted analysis, liberalization of foreign trade in the early 1990s significantly affected the economy of Russian European North. Thus, according to Rosstat data on the volume of commodities' import-export, currently, nearly 65–70% of products of the Republic of Karelia, 55% of products of the Murmansk Oblast, 40% of products of the Komi Republic are delivered to foreign markets. Moreover, a significant share of exports includes products of the region's specialized industries – mostly of low technological conversion: fuel and energy complex (Komi Republic, Arkhangelsk Oblast), chemical industry (Vologda Oblast), ferrous and non-ferrous metallurgy (Vologda and Murmansk oblasts), and timber industry (Karelia, Komi, Arkhangelsk Oblast). In some regions of the Russian Federation, food products are also significant (for example, fishing products in the Murmansk Oblast). In turn, the ENR entities import products of mechanical engineering (machinery, equipment, vehicles) and petrochemical complex – goods of higher levels of technological conversion (Tab.1).

Table 1. Commodity structure of exports and imports of entities of Russian European North (2018)

Territory	Food products and agricultural raw materials		Products of fuel and energy complex		Chemical industry products, rubber		Wood, pulp and paper products		Metals and products made of them		Machinery, equipment, and vehicles	
	E	I	E	I	E	I	E	I	E	I	E	I
NWFD	6.7	20.9	47.7	0.48	8.7	12.5	9.7	2.7	14.3	6.64	8.2	47.7
Republic of Karelia	5.9	10.9	0.1	0.3	1.2	17.2	47.5	11.6	1.1	15.1	1.8	39.3
Komi Republic	0.0	0.2	32.1	0.1	2.9	32.8	63.5	6.1	0.0	3.81	0.2	51.9
Arkhangelsk Oblast (with NAO)	3.5	6.6	39.8	0.1	0.2	9.6	34.9	0.6	1.5	4.53	8.5	76.4
Vologda Oblast	0.5	12.6	0.3	0.6	32.6	12.3	11.1	4.5	52.9	18.0	1.2	42.9
Murmansk Oblast	17.2	14.3	2.8	0.0	0.3	31.8	0.0	0.4	68.7	13.1	0.7	37.7

For reference: E – export, I – import.
Source: own calculation based on data of the Federal State Statistics Service.

In other words, within such model, the European North loses significant resources that could be used to ensure the accelerated growth of its economy and improve northerners' well-being.

For example, the most export-oriented entity of the ENR – the Republic of Karelia – has Finland as its key counterparty country: its share in the foreign trade turnover of the Republic is about ¼. The commodity structure of exports in 2020 was dominated by pulp and paper products (38.5%), fuel wood, unprocessed and processed timber (37.4%); food products and raw materials for its production (18.8%). In import – machinery products (boilers, machinery, industrial equipment, electrical machinery, and equipment).

To enhance cross-border cooperation between territories of the Republic of Karelia and Finland, the "Karelia" Euroregion was established in 2000. In general, its activities, to a certain extent, contributed to the development of interregional cooperation between countries in the commodity markets. However, as the authors rightly note (Druzhinin, Kukhareva, 2012), such cooperation between the territories was not a parity-based and "in fact, the western part of Karelia became a part of the Finnish forest cluster, supplying raw materials for Finnish timber processing enterprises".

In other words, the nature of such relations did not lead to more "mature" stages of integration processes, i.e., a qualitative convergence of economic systems of Russian and Finnish regions in terms of the main socio-economic indicators and their development as a single cross-border region due to the continuing extremely high disparities in the development of its parts. In particular, in 2018, household income per capita in Finnish territories of the "Karelia" Euroregion was 18.5 thousand euros; in the Republic of Karelia – about 5900 euros (i.e. 3.1 times less). Also, there are huge technological economic differences in these territories. Thus, in the Kainuu economic structure (Finland), economic activities related to "blue" bioeconomy, mining, innovations in metallurgy, forestry, as well as information and communication technologies (ICT), and electronics are significant; in North Karelia (Finland) – forest bio-economics, distributed by bioprocessing, renewable energy sources, technologies and materials (photonics, ICT, development of materials for chemical industry), wooden housing construction; in North Ostrobothnia (Finland) – clean technologies, including the energy sector; ICT and software development. In turn, in the Republic of Karelia, the key economic sectors are types of economic activities of low technological conversion (forestry and mining, electricity production, food and chemical industries).

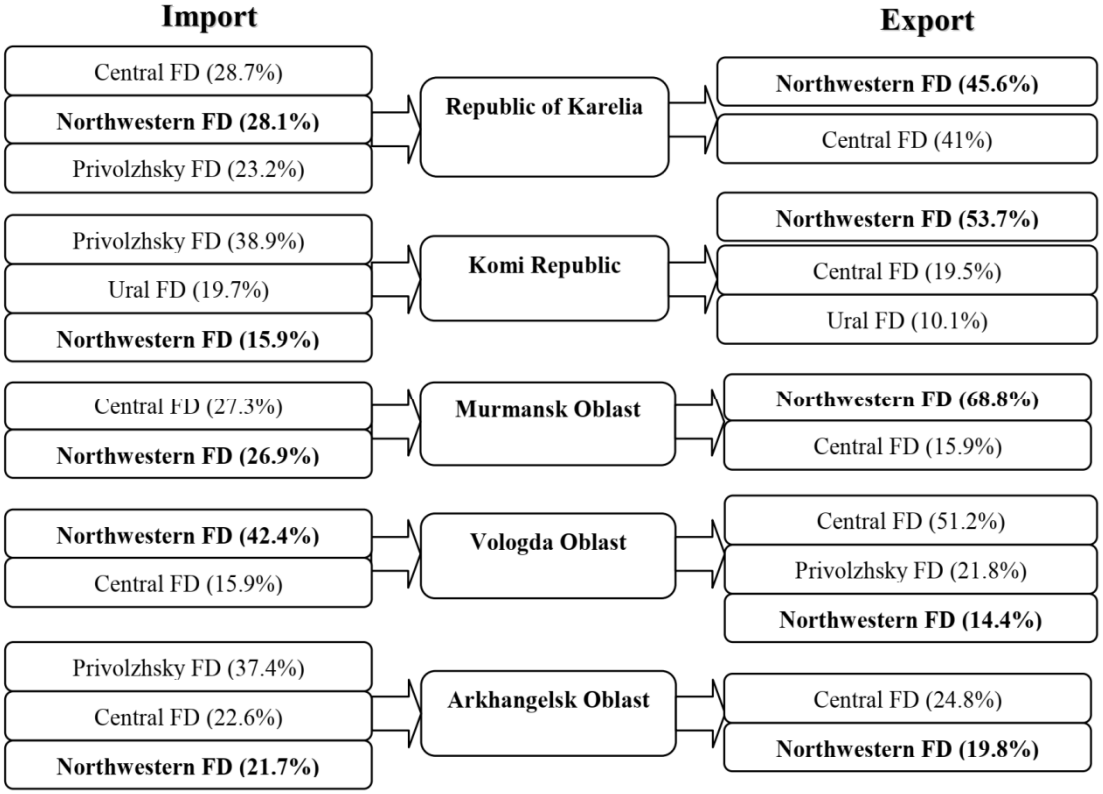
For the Russian party, the situation with modernization is aggravated by extremely low spending on science and research (in Karelia, on average, it is 18-80 times lower than in Finland), which preserves the outdated structure of the Karelian economy. At the same time,

the territories of Finland develop within the innovative "knowledge economy", producing products with high added value.

The existence of certain cooperative processes in the region's economic space can be assessed by directions of commodity flows. Entities of Russian European North have rather close ties with each other in terms of commodity exchange, and it is especially evident in the Northwestern Federal District. In the structure of commodities, imported to the Republic of Karelia from other entities of the Russian Federation, the NWFD accounts for 28% of the total volume of commodity flow; in turn, 45.6% of goods exported from the Republic to other entities of the Russian Federation are also in the NWFD. Among the ENR entities, the closest ties have developed with the Vologda, Arkhangelsk oblasts and Komi. However, the main attraction centers for incoming and outgoing commodity flows within the district are

St. Petersburg and the Leningrad Oblast (Fig. 4).

Figure 4. Main flows of commodities' import-export in the territory of Russian European North, % of a total volume (excluding exports)



Source: own calculation based on data of the Federal State Statistics Service.

It should be noted that the main categories of products that are exported outside the ENR to the NWFD territory and other regions are products of the mineral raw materials complex and processing of natural resources (non-metallic construction materials, wood, lumber, paper, coal, and products of its processing, rolled ferrous metals, steel pipes, fertilizers), food industry (milk, meat, sausage, and confectionery products, compound feed). In turn, southern entities of the NWFD (St. Petersburg, Leningrad Oblast) supply the following products to the European North territory and other RF regions: food (sweets, beer, sausage, etc.) and commodities of higher technological conversion – products of ferrous metallurgy and mechanical engineering (steel pipes, passenger and cargo cars, cargo wagons, air and gas drive compressors, bulldozers and cranes, medical equipment), petrochemicals (paint and varnish materials, automobile tires, synthetic detergents), TIC (household furniture).

Thus, Russia's European North retains a historically established status of the "currency workshop of the country" and "resource storehouse". Production and primary processing of natural resources remain major specialization areas of the region. Preserved relations with the NFWD entities and integration in the commodity markets are objective prerequisites for the development of more mature forms of integration processes in the economic space.

However, the research shows that integration processes in the ENR markets of production factors have not received a high level of development. For example, in the labor market, this is primarily related to high centripetal vectors of population migration. Population of the European North mostly migrates to the Central FD and the Leningrad Oblast. Thus, the population of the Murmansk Oblast mainly leaves for the CFD (7827 people out of 39866 residents who left the region for other country's subjects, or nearly 20%; mostly – to the Moscow Oblast (1485 people, 4%) and Moscow (1072 people, 2.7%)), other entities of the NWFD (24846 people, primarily – St. Petersburg (5871 people, 14.7%) and the Leningrad Oblast (2649 people, 6.6%), the Republic of Karelia (1206 people, 3%)).

In 2018, the population of the Komi Republic left for St. Petersburg (2576 people out of 22642 people who left the Republic for other regions, or nearly 11.4%), Moscow and the Moscow Region (2614 people, 11.5%), the Kirov Oblast (1791 people), and Krasnodar Krai (1632 people).

From the Republic of Karelia, people also leave primarily for the Leningrad Oblast (616 people out of 9530 people), St. Petersburg (521 people), the CFD – 254 people (mostly, the Moscow Oblast).

Before 2011, the Vologda Oblast had a positive migration balance, and later it became negative. The population from the Vologda Oblast mostly relocates to other subjects of the NWFD (first of all, St. Petersburg).

Thus, in the post-Soviet period, the subjects of Russia's European North lost their population due to migration. The main attraction centers are Moscow and the Moscow Oblast, St. Petersburg, and the Leningrad Oblast. At the same time, we agree with S. Farahmand and N. Ghasemian (2019) that regions, which are actively losing their population, may soon face a reduction and, perhaps, even destruction of not only human, but also material capital. It will eventually lead to stagnation of the territory's production and economy.

Using the well-founded tools for assessing integration processes from the perspective of the "flow" approach and calculating the corresponding coefficients, we have identified that relatively balanced migration flows only exist between the subjects of Karelo-Kola (Murmansk Oblast and the Republic of Karelia) and Dvino-Pechora (Komi Republic, Nenets AO, Arkhangelsk and Vologda oblasts) sub-regions of the European North. At the same time, in the post-Soviet period, such connectivity was significantly disrupted due to the increasing centripetal vector of migration to the NFFD and CFD (Manaeva I., Rastvortseva S., 2016). These processes cause the polarization and disintegration of the region's space (Tab. 2).

At the same time, despite the reduction of an extremely high level of heterogeneity of space in terms of labor market tension in 1992–2019, its current value (48.7%, threshold value of the coefficient – 33.3%) still indicates a low level of its integration, which cannot yet be provided by migration flows within the region.

One of the barriers to spatial integration of the country's economy is its weak infrastructure (Manaeva I., Kanishteva A., 2017). At the same time, according to the annual study of the InfraOne investment company, the main specialization of which is direct investment in infrastructure, these problems are truly relevant for the entities of Russia's European North. At the same time, such issues are particularly relevant for the region's transport infrastructure: in the Arkhangelsk Oblast, its development level is 2.52 points, in Karelia – 2.73, in the Vologda Oblast – 2.86, in the Komi Republic – 2.99 points out of 10 (the leader is Moscow – 8.54 points).

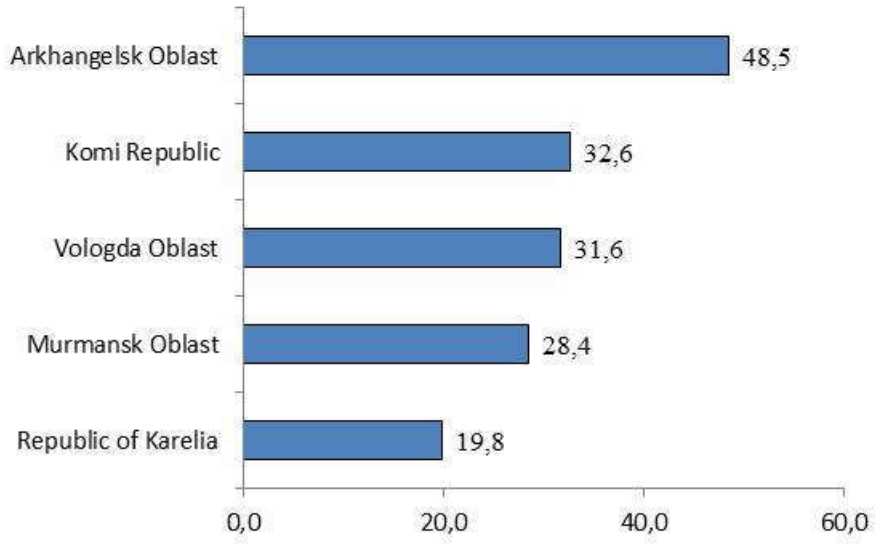
Table 2. Indicators of interregional connectivity for population migration of the ENR entities

Region j	CEMR paired, ‰	CIMR (departures), un.	MISS of turnover, times
Vologda Oblast (region i)			
Arkhangelsk Oblast	1001.84	**1.51**	**1.41**
Murmansk Oblast	1051.53	1.21	0.82
Republic of Karelia	1419.19	0.48	0.48
Komi Republic	826.64	0.50	0.93
Arkhangelsk Oblast (region i)			
Vologda Oblast	998.16	**1.14**	**1.31**
Murmansk Oblast	1487.78	1.60	0.89
Republic of Karelia	937.20	0.26	0.30
Komi Republic	966.32	0.82	**1.37**
Murmansk Oblast (region i)			
Arkhangelsk Oblast	672.14	1.02	0.93
Vologda Oblast	950.99	0.83	0.79
Republic of Karelia	1075.83	**2.32**	**2.09**
Komi Republic	584.84	0.23	0.42
Republic of Karelia (region i)			
Arkhangelsk Oblast	1067.01	0.44	0.37
Vologda Oblast	704.63	0.41	0.55
Murmansk Oblast	929.52	**3.63**	**2.45**
Komi Republic	2222.22	0.23	0.27
Komi Republic (region i)			
Arkhangelsk Oblast	1034.86	**1.68**	**1.69**
Vologda Oblast	1209.72	0.90	**1.07**
Murmansk Oblast	1709.88	0.83	0.50
Republic of Karelia	450.00	0.13	0.27

Source: own calculation based on data of the Federal State Statistics Service.

According to our calculations based on Rosavtodor data, poor transport connectivity is natural, first, for rural areas of the eastern ENR entities. Nearly 48.5% of rural localities in the Arkhangelsk Oblast do not have auto transport connection for paved roads with a network of public roads (the nearest railway station, port (pier), airport); in the Komi Republic – 32.6%, in the Vologda Oblast – 31.6% (*Fig. 5*).

Figure 5. Share of rural localities that do not have auto transport connection for paved roads with a network of public roads (the nearest railway station, port (pier), airport, % of their total number



Source: own calculation based on Rosavtodor data.

To solve this problem, a local road network has been developed: in the Murmansk Oblast, about ¼ of rural settlements, in the Komi Republic – 11%, in the Arkhangelsk Oblast – 4.5% of their total number are connected through it to the nearest railway station, sea or river port (pier), airport. At the same time, such transport system is a factor that limits connectivity of the economic space, free movement of commodities and people, and leads to additional time and other logistics costs. A poor development of the transport infrastructure and its limited capacity lead to an increase in the economic distance and "viscosity" of the country's Northern regions space in certain areas.

Several barriers to ensuring spatial integration of the Northern regions' economy are associated with the current system of public administration. Thus, based on the analysis of 2025–2030 strategic documents of the federal level and entities of Russia's European North, it was revealed that:

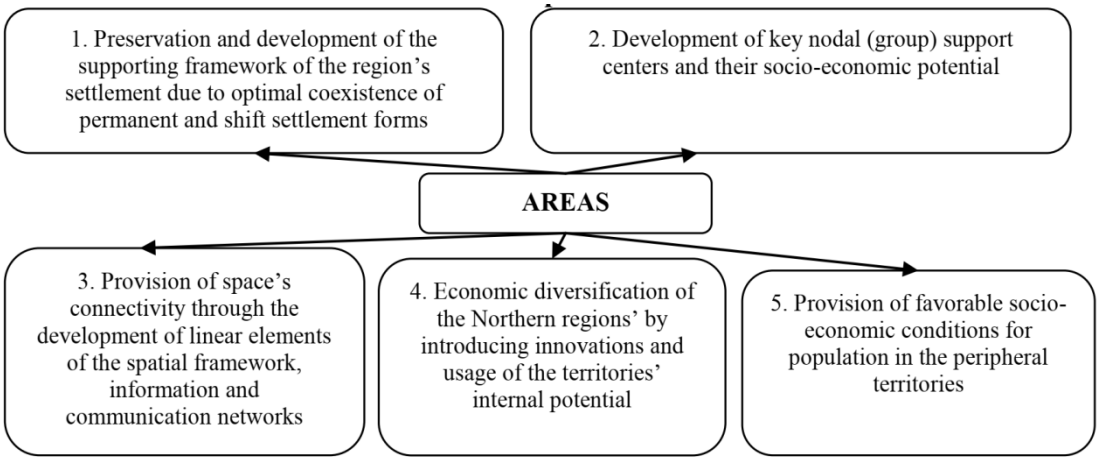
- they poorly reflect a current and prospective place of the Northern territories in the national division of labor;
- task of ensuring spatial integration with other RF entities was not directly recorded;
- in the instrumental provision, the main emphasis is still placed on the development of nodal forms of space organization and "development corridors"; at the same time, a place and tools for supporting non-urban territories are poorly substantiated;
- a significant emphasis in the transport framework development of the region is placed on strengthening mostly external relations, which limits the development of interregional integration within the national economic space and preserves the raw material model of the economy of these territories.
- functionality of interregional institutions' activities (for example, the ANPO "North-West" Strategic Partnership") to ensure integration processes is extremely limited.

These circumstances actualize the task of improving the public administration of the spatial development of the country's Northern territories, which will be focused on the efficient usage of integration potential of their economies.

5. Conclusion

Considering opinions of leading regionalists, domestic and foreign practices, we can propose the following conceptual areas for improving strategic administration of the development of the Northern territories, focused on ensuring the spatial integration of their economies at intra- and interregional levels (Fig. 6).

Figure 6. Conceptual areas of strategic administration of the Northern region's spatial development



Source: own compilation.

Let us overview these areas in more detail and identify the specifics of implementing these priorities, considering the best experience of the Nordic countries.

5.1. Preservation and development of the region's supporting framework due to optimal coexistence of permanent and shift settlement forms.

Due to pronounced depopulation in the Northern regions of the country, the question of general expediency of maintaining the existing settlement system arises. There is currently no global consensus on how exactly Northern and Arctic territories should be settled. Supporters of the intensive approach suggest a point development by creating large agglomerations and group settlement systems, which can significantly reduce costs of supporting the territory's infrastructure.

At the same time, from a geopolitical point of view, it is necessary to form a settlement system that covers space as much as possible. Obviously, consolidation of sovereignty in the North and the Arctic requires a permanent resident population. As

V. V. Fauser (2018) rightly points out, the emphasis should be placed on the development of small and medium-sized towns, since cities and agglomerations only attract population to themselves, thereby "exposing" adjacent territories.

In the foreign North, territorial organization was usually based on the predominance of highly specialized small settlements, and, since the 1970s, the shift-expedition development method has been widely used. Today, it is becoming obvious to the world community that the former model, based on the resource-industrial development, should be replaced by a comprehensive sustainable development of these areas. At the same time, in our opinion, it is important to preserve the existing towns, since they, as the author notes (Fazylov, 2012), are existing and potential points of the economic growth, "connecting transport hubs, important information, scientific, and cultural centers for adjacent territories".

5.2. Development of key nodal (group) support centers and their socio-economic potential.

Destructive socio-economic processes in the North lead to a concentration of population and economic activity in large nodal centers (administrative and industrial), as well as an increase in the economic periphery area, which includes not only rural areas, but also several small and medium-sized towns that are in a systemic crisis.

In this regard, a relevant objective is to identify nodal forms, as well as group settlement forms, which can act as reference points for holding space in the North and its "in breadth" development, as growth poles in the transition to the resource-innovative economy of the North. According to foreign experience, an option for the formation of a stable settlement system and development of the Northern territories' economic space can be the construction of an interaction scheme "base city – intraregional watch". To do this, it is necessary to analyze and identify several the most promising nodal and group settlement sites that have a relatively stable economic base, growth potential, and stable existing or potential connections with other localities within the region and with other RF entities. These cities and group settlement systems, in our opinion, will be reference points in maintaining space and its deeper development in modern conditions.

5.3. Provision of space's connectivity through the development of linear elements of the spatial framework, information and communication networks.

The Northern territories are characterized by a low population density and a focal (enclave) nature of locating production facilities and infrastructure. Development of transport systems, information and communication networks is crucial for ensuring territories' connectivity in this context. In this regard, it is interesting to study the experience of the United States and Canada, since the Northern regions of these countries have great similarities with Russia in terms of territory size, natural and climatic conditions.

For example, the feature of Alaska is that its most remote and sparsely populated towns and villages are not connected to the rest of the state by a road network. Air transportation is the only transport for passengers and cargo. To provide local population with food and

household items, the federal Alaska Bypass Mail program and subsidy programs arrange regular air transportation by mail planes.

Under the current scheme, the federal government funds the US Postal Service from the federal budget, and the Postal Service sends 70% of the funds to local air carriers. Local airlines, participating in the program, are required to maintain a minimum number of flights to each served locality. Cargo of the Bypass Mail system is delivered from the airports of the Anchorage and Fairbanks agglomerations. Transportation is carried out to 16 regional centers and up to 120–130 remote settlements. Even though the program is unprofitable for the US budget, rural population is provided with regular passenger transportation and cargo delivery at affordable prices due to its implementation [1].

Canada pays a lot of attention to the development of connectivity between focal settlements and other localities. For example, the country has the Airports Capital Assistance Program (ACAP), which provides funding for remote airports. This status is assigned if air service is the only year-round communication method with a locality it serves. Allocated funds are used to solve the tasks of improving security of regional airports, protecting infrastructure facilities (equipment, runway), and reducing transportation costs. The National Airports Policy (NAP) is being implemented simultaneously. With it, the federal government plans to continue funding remote airports. In addition, one of the promising areas may be the creation of logistics systems for delivering goods using unmanned aerial vehicles.

5.4. Economic diversification of the Northern regions' by introducing innovations and usage of the territories' internal potential.

An important component of spatial development strategic management in the context of transition from the raw-material model of territories industrial development to innovative development is diversification of the economy. Let us explore successful experience of the Nordic countries in solving this problem.

For example, even though Alaska is a region with a raw-material focus, in addition to mining, other industries (prospecting, fishing, and hunting tourism) are also highly developed there. Intensive development of prospecting tourism is primarily caused by the implementation of several administrative tools (issuance of licenses for free ore minerals extraction, etc.). Small family enterprises offer tourists independent gold mining services; federal services and regional departments support the development of this area, including release of special reference books for novice prospectors. Efficiency of the implementation of measures for developing hunting and fishing tourism is proven by the fact that, in 2017, the Alaska Department of Fish and Game was second in the state, after the Alaska Railroad, in terms of revenue generated from outside tourists – 25.5 million dollars (20% of state government revenue). In general, government revenue from tourism activities in Alaska increased by 38% in 2011–2017.

Canada is actively implementing a set of measures to support development of entrepreneurship in the Northern regions of the country. For example, the Nunavut Development Corporation (NDC) is engaged in developing priority sectors of the region's economy and small businesses. The organization invests in fishing, tourism, and culture areas, therefore creating new jobs in the region. In 2018, the NDC invested 1.6 million dollars in small businesses through venture financing.

The implementation of regional innovation policy instruments contributes to balanced spatial development in Finland. In cities, innovative strategies are being developed to strengthen the prerequisites for the economic growth and deepen specialization within national and international division of labor. A regional policy implementation tool is the Program of Expertise Centers, coordinated by the Ministry of Economic Affairs and Employment. These expertise centers offer universities and private companies services that provide competitive advantages in implementing an innovative project: planning, access to innovation networks, establishment of partnerships with contractors, etc.

[1] *Sbornik luchshih praktik razvitija regionov rossijskoj i zarubezhnoj Arktiki: Chast' I* [Collection of best practices for the development of Russian and foreign Arctic regions: Part I]. Institute of Regional Consulting: Izdatel'skie resheniya, 2018. 54 p.

The key elements of Finland's innovation infrastructure are science and technology parks. The homeland of Finnish technology parks is Oulu, situated in the North, which has transformed from a depressing industrial city into one of the key European centers of high technology over the past 30 years. Technopolis was created here: it is an association of 18 science and technology parks, 2 of which are located outside the country. There are more than 1300 companies that have up to 20 thousand employees.

Thus, the policy of the Nordic countries in terms of territorial modernization of areas in systemic crisis is the economic diversification. At the same time, modernization of old raw-material centers using a new technological basis and development of new (innovative) economy sectors occur there due to capitalization of existing factors of the "first" and "second" nature.

5.5. Provision of favorable socio-economic conditions for population in the peripheral territories.

In addition to towns, which should become base points for the economic space development in the Northern territories, peripheral settlements also require special attention. Thus, in the United States, due to implemented socially oriented policy, population of Alaska continues to grow steadily. In Finland, regional policy also considers the development of all the country's territories: towns, rural areas, settlements of the archipelago islands. Special attention is paid to the development of rural areas in the country. Back in the 1990s, a special government commission, an extensive network of regional research institutes and rural development organizations were established. Finnish rural policy has achieved significant results mainly through participation in the European LEADER program, which was developed by the EU. The country has also developed its counterpart – own national program. The emphasis in the rural development management was placed on maximum usage of internal resources of local communities, consideration of regional specifics, introduction of innovations, and application of the network approach by building clear trajectories of interaction of stakeholders not only at local, regional, and state levels, but also at the transnational level (Nikulin, 2015).

The archipelago policy remains an important component of Finland's regional policy. Back in 1948, the government created a committee for the affairs of this territory, but a special law on the archipelago was adopted only in 1981. It obliges the state and communes to ensure economic development, transport links, services, culture, and environmental protection there. The main tools are the programs developed by the Archipelago Affairs Committee in cooperation with ministries, municipalities, companies, and public organizations. The goal of the current program is to develop the archipelago as a natural and recreational complex for the whole country and to improve living conditions of local population.

Even though Norway does not have a specific rural development policy, sustainable rural development is a priority of regional policy. It is explained by the fact that Norway, compared to other Nordic countries, is more focused on maintaining existing settlement system to fully use the country's resources and ensure freedom of residence for its citizens. To solve this problem, Norway is taking measures to create conditions for employment and creative usage of local resources in the peripheral territories, as well as to ensure universal living conditions in cities and villages. An important tool for implementing local development is the national program aimed at small local communities. Over the past four years, it has funded nearly 50 various projects: in particular, ones to provide services to population, to use local natural and cultural resources, to attract migrants and refugees to sparsely populated areas.

In Canada, the Northern regions (Yukon, Nunavut, Northwest territories) have the Aboriginal Entrepreneurship Program (adopted in 2014) aimed at assistance with business planning and support for existing firms. To implement this program, 42 million dollars are allocated annually from Canada's federal budget. As a result, in 2012–2016, an annual increase in a number of companies created by the aboriginal population was 2%. Besides, back in 2009, the Canadian Northern Economic Development Agency (CanNor) was established to develop a diversified and sustainable economy in these Canadian provinces. It develops programs for the economic development of indigenous peoples and cooperates with governments and aboriginal organizations.

In the Russian North, despite certain restrictions, it is possible to form local innovation systems based on available opportunities in urban and regional peripheries. As noted by Pilyasov A.N. and Zamyatina N.Yu. (2013), priorities for cities are innovative modernization of city-forming industrial resource enterprises, introduction of technologies and competencies of heat and energy efficiency in a local community, development of entrepreneurship in the industry and business services sector, creation of new communication platforms for active interaction of carriers of different knowledge of a local community. For a district type, local innovations in environmental management, introduction of new technologies for heat and energy conservation, and modernization of local educational institutions, mostly secondary vocational education, are of particular importance.

The implementation of a comprehensive approach to the development of the North will increase the efficiency of using the potential of this region by integrating it into national value-added chains and the national economic space.

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