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### Determination of Regional Specific Features of the North-East of Russia and their Influence on Macroregion's Development

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#### ABSTRACT

**Annotation:** Determination of regional specific features is of great importance for theory and practice of the regional economy. The aim of the research is to give a modern interpretation of the determination of the given concept using general scientific system analysis methods, methods of statistical analysis and synthesis. It is demonstrated that economic and geographic, business, as well as social and economic specific features have initial and production character, and also discover the presence of horizontal and vertical interconnections. Employing the analogue method of their influence on the development of economy and scientific-technical progress, it was determined that about 2/3 of regional social labor expenses per unit of manufactured product and major construction is connected with the business retardation of North-East. It is established that most of the unfavorable regional characteristics are of a relatively temporary nature, which, in the process of economic development and scientific and technological progress, can change or even disappear. This long-lasting dynamic process of regional socio-economic development policy can be regulated with the application of special methods of strategic planning and innovation development policy. Regional specific features of the North-East of Russia is one of the most extensive and specific macroregions of the Russian Federation. It is necessary to make investigations in technical, biological, medical and other sciences, as well as to give an economic assessment of their manifestation and impact on the economy and life activity of the population.

**Keywords:** North-East of Russia, classification, regional specific features, living standards, human potential, regional economics, macroregion.

## **1. INTRODUCTION**

### **Representation of the Concept “Regional Specific Features” and its Familiarization**

Determination of regional specific features, which are typical for large and macroregions, is, in our opinion, of great importance for theory and practice of regional economy. Large and macroregions are economic regions, federal districts, economic-geographic districts and similar territorial and economic areas of the country. It should be noted that in the context of planned economy in Russia, analysis and consideration of regional specific features of the economy were mandatory requirements for a long-term planning of the national economy development, elaboration of a master plan for the distribution of productive forces of the country, republics and economic regions forming its part. In the market economy conditions, when the development of strategies and programs for the long-term socio-economic development of regions and constituent entities of the Russian Federation were widely developed, a SWOT analysis of strengths, weaknesses, opportunities, and threats, competitive advantages and problems of regional development is used.

Modern scientific researches and published works often contain the notion of “regional features” and their brief enumeration without disclosing the economic essence of this very important category of regional economy. Theoretical and methodological foundations of the regional economy, institutional concepts, as well as of regional specific features, have changed dramatically in the system of regional relations, categories and laws. Taking into account new approaches and using my and other authors’ previously published works it seems possible to interpret the economic category “regional specific features”.

## **2. MATERIALS AND METHODS**

What is understood to be the regional specific features of social and economic development? First of all, they should be distinguished from the concept of “regional differences”, which characterize each economic and administrative region or even the location of construction or enterprise. It is in this sense that economy’s region differences and their influence on the effectiveness of capital investments, construction, transport, mineral raw materials utilization, industrial and agricultural production were usually considered. The term “territorial specific features” means internal differences of any region from others in terms of natural and economic conditions. Many authors used this term to compare the economic and geographical factors of the more immense territory under study, which was usually the economic region. Practical tasks in the study of territorial specific features are the justification of the territorial division of labor, the choice of production specialization, the development of integrated development and inter-regional transport and economic relations with due account of local advantages.

In the Soviet period literature known to us, V.A. Pervushin and V.G. Melnikov made attempts to define the term “regional specific features”. According to the opinion of the first author, they are understood as fundamental differences in the qualitative indicators of economic activity, which extend to large-scale economic complexes, which have a significant impact on the development of the economy. The basis of these differences is the unequal natural conditions, stable socio-economic, technical and organizational conditions of production activity. The second author considered this definition to be too general and not fully revealing the content of regional specifics. He proposed to understand them as the natural and geographical and economic conditions that distinguish the given territory from other regions of the

country and exert a significant influence on organization, production efficiency, economic development, labor and people's life. We think that the first definition is, on the contrary, more complete. It identifies the characteristic features and consequences of this phenomenon: the fundamental nature and stability of differences in the conditions of production activities of the economic complex, the distribution of these differences to a large region and their significant impact on the economy. It seems that V.G. Melnikov was right in that regional specific features should primarily be understood as the primary factors of the geographical environment and socio-economic life, and not the qualitative consequences of their action in differentiating the indicators of economic activity. Based on the analysis of the works of the Soviet period and the results of our own research, we've formulated the following definition:

Regional specific features are specific differences in geographic, economic and socio-demographic conditions of public production, typical for large economic-geographic districts, which have a significant impact on the quality of their economic activities and, therefore, creating the need for implementing regional policies. In this definition the words "creating the need for implementing regional policies" are fundamentally new.

We believe that such determination of regional specific features turned out to be nearly fundamental, since it is rather acceptable in modern conditions of market economy. It is possible to make only some verbal changes, with due account of which the modern interpretation of the concept of "regional characteristics" will be the next. Regional specific features are specific significant differences in natural, geographic, historical, economic, social and demographic conditions of socio-economic development of the territories typical for large and macroregions, which have a significant impact on the qualitative indicators of their economic activities and, therefore, create the need for implementing state regional policy.

Regional specific features are divided into positive and negative from the point of view of expediency and efficiency of economic and public practice. Usually, both are typical for any large region, but in some of them there are positive features that predominate, and in others - negative ones. Different combinations of the influence of positive and negative regional specific features cause the existing territorial differentiation of social production efficiency levels and socio-economic development of the country. In case the cumulative impact of negative specific features predominates in regional economy, then there is a regional appreciation of production and population's living activities. This phenomenon is more peculiar for eastern and northern regions of Russia. Here it is several times higher than in the central and southern regions.

In accordance with our scientific researches regional appreciation is the most significant negative feature of the economy of the North-East of Russia. Perhaps, in all its sectors, except for mining industry, regional appreciation is estimated at 1.5 - 3.5 times. The cost of population's living increases 1.7 - 2.5 times. The estimates of these indicators in the Arctic zone increase 3.5 - 5 times. As a result of regional appreciation of production, capital construction, transport and population's life activities, the northern regions remain underdeveloped and underpopulated. Due to this, and because of the severe climatic conditions, agriculture, and arable farming in particular, is not developing in many northern regions.

In case of country's planned economy we've studied the regional specific features of the North-East more deeply and classified them in accordance with a more significant feature of the effect on the efficiency of industrial production. Based on the results of this study, we will make a comparative analysis of the theory and practice of the regional specific features utilization in the planned and market economies. In order

to make the recording of regional specific features in the planned national economy management more comprehensive there were the attempts to classify them according to the nature of their influence on the efficiency of social production. The question of classification of regional specific features of the North was first considered by S.V. Slavin. He specified three groups of specific features: geographical environment, economic and geographic location and organizational and economic activities. Among each group there are factors that affect the production efficiency either positively or negatively. The effect of geographic factors is constant, while economic and geographic, as well as organizational-economic ones are changed and managed by the society. The question of classification of regional special features of the districts of the country was also considered by G.A. Prudensky, who divided them into natural, socio-economic and technical according to the genetic trait; into the differences in production conditions and non-production sphere development, working people living standard according to the sphere of influence; into positive and negative according to the nature of the impact on the social labor productivity; into permanent and temporary depending on the time of action.

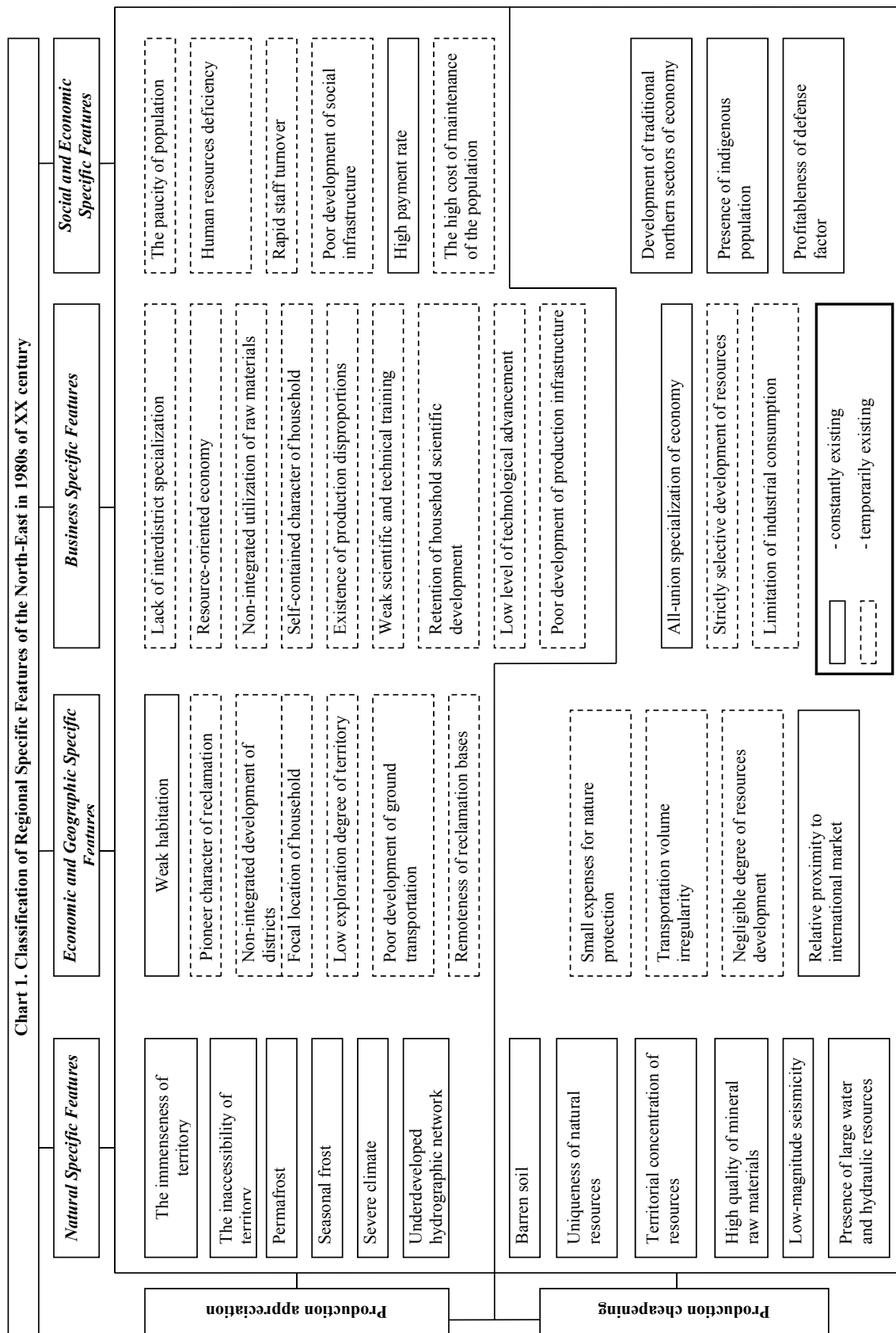
Using the example of the Republic of Komi, one of the large districts of the European North of Russia, G.N. Parashchenko subdivided regional specific features of the North, firstly, into specific features related to natural resources; second, related to natural conditions; third, into historical and economic characteristics, which depend on the development of a vast territory and the specifics of the creation of basic and auxiliary production. In his opinion, the first group of specific features contributes to increasing the economic efficiency of production, while most of the specific features of the second group have a negative impact on production. The third group completely appreciates the production.

More detailed classification and economic evaluation of factors and their specific features of North-East are described by V.G. Melnikov. He divided them into two groups by two characteristics: by the operation time it is divided into continuous (natural and climatic) and temporary (economic) characteristics; by the nature of influence on the production output it is divided into cheapening and appreciating. We believe that the main shortcomings of this classification are: the division of regional specific features into two groups only, the attribution of all natural and geographical differences to permanent ones, while economic differences are attributed to temporary ones, and an incomplete recording of all specific features. The most comprehensive consideration of the regional specific features of the North-East when selecting the methods of assessment and ways to increase the efficiency of industrial production requires a more fractional classification: natural, economic and geographic, business, economic, social and economic (Chart 1). Such division of regional special features was rather easy, but the determination of their range and formulation of each of them was of an infinite character. In our classification we consider 44 special features, among which 12 natural, 11 economic and geographic, 12 business and 9 social and economic specific features.

### **3. DISCUSSION**

#### **Analysis and Evaluation of Economic Substance of Regional Specific Features**

We are of the opinion that in the market economy conditions of the North-East of Russia the genetic principle of classifying regional specific features into natural, economic and geographic, business, as well as social and economic becomes the main principle. However, they notably change with respect to composition (structure), time of operation, nature of the effect on production efficiency. Moreover, there is a new



criterion of classification, which is with respect to the nature of the impact on the innovative development of the economy. Therefore, it is necessary to analyze and evaluate the current economic content of regional specific features in order to implement their modern classification. As other authors correctly point out, in modern times it is impossible to determine the typology of the regions of the country and to achieve rational spatial organization of the national economy without a scientific study of the essence of regional specific features and their classification.

**Natural and climatic specific features:** The immenseness of macroregion's territory, which is 4,731.8 million km<sup>2</sup>, gives place to the necessity: first, to build long mileage transport communications, to perform high expenses for their maintenance and reparation; secondly, to carry cargos and passengers for long distances. As a result, high transportation costs, reaching an average of 50% in the cost of products, works and services, reduce the efficiency of production. The immenseness of the territory is an appreciating factor in relation to the transmission of electricity, maintenance of land lines and other production processes. Therefore, there is a need in most effective means, technologies and methods of organization required in the field of overcoming the space and inaccessibility of the territory.

Long-term permafrost has a great appreciating impact on the construction of buildings, structures, roads, and in many cases excludes the possibility of using the territory for these purposes. There are pile foundations and other complex technologies used for the purposes of construction of residential buildings, industrial buildings and structures, as well as pipelines, which significantly increases the cost of objects by 15-20%. Seasonal frost also causes lots of expenses and troubles during the performance of earthwork operations in the course of construction of roads, sewerage, pipelines, as well as of open cast mining during extraction of mineral resources. Further improvement not only of construction, but also of business activities in many other areas is possible in case of wide application of new innovative ways of preserving permafrost and reducing the negative consequences of seasonal frost. The cold climate requires more intensive and prolonged heating of residential and industrial premises with spending significant amount of material and financial resources. At the temperatures of minus 50-60 °C it is impossible to perform normal operation of conventional equipment, people stop to work outdoors, pre-school, school, and other social institutions are closed. Severe climate of the North is the main factor that determines the extreme and absolute discomfort of population's life activities. There is a need in a variety of innovative measures in order to significantly reduce the negative impact of the macroregion's severe climatic conditions: adjustment of machinery for the efficient operation at low temperatures, production of a fundamentally new machinery using cold-resistant materials, creation of new thermo-insulating building materials, energy-saving technologies, unconventional cheap sources of energy and heat, as well as many other innovations.

Severe climatic conditions in the North-East of Russia extremely limit the conduct of agriculture and labor activity of the population, especially during the winter period, which lasts from 8 to 10 months. There are extensive land resources in the regions of the North-East of Russia, but the land is barren, has low cadastral value and therefore it's sort of cheapens any construction of civil and industrial facilities, use of the territory for the organization of industrial and transport activities. However, barren soil is one of the main negative factors for farming, crop production and livestock farming.

In the Republic of Sakha (Yakutia), the Magadan region, the Chukotka Autonomous District and in the Kamchatka Territory, there are unique natural resources (gold, tin, diamonds, oil, natural gas, etc.) and their territorial concentrations that allow the creation of mining complexes and clusters. However,

up to the present moment, regional advantages have been realized extremely insufficiently due to the lack of highly efficient technology for extraction and processing of complex minerals, underdevelopment of regional energy and transport infrastructure, as well as of interregional commodity markets. In future, the innovative development of these sectors of the regional economy will make it possible to eliminate these shortcomings and make full use of the results of innovation activities of science and enterprises.

The North-East of Russia has significant water and hydro resources. Large rivers like Lena and its tributaries Olekma, Vitim, Aldan and Vilyui, Kolyma, Indigirka, Yana, Olenek, Anabar, Anadyr and others, which collect gullies on the territory of 4-5 million km<sup>2</sup> and flow into the seas of the Arctic and Pacific Oceans, have a significant total drainage and water resources. There is the cascade of the Vilyui hydroelectric power stations (HPPs) in the Republic of Sakha, Kolyma and Ust-Srednekansk HPPs in the Magadan regions, that has been recently built and operate. In perspective there is the construction of 10 additional HPPs planned in the North-East. Hydroelectric power plants produce relatively cheap electricity. Therefore, this is a very serious regional advantage for creating an energy-efficient economy of the macroregion.

**Economic and geographic specific features:** A.N. Pilyasov called all extensive northern territories of the Russian Federation as “the northern periphery” of the country, gave their detailed characteristics and disclosed their development perspectives. The peripheral nature of the northeast macroregion is its most characteristic feature, which means its greater remoteness from developed industrial, cultural and administrative centers, as well as relative socioeconomic backwardness and market isolation compared to the central and middle regions of the country. In order to characterize the remoteness of the regions, it is sufficient to indicate the flight distances from Moscow to the centers of the constituent entity of the North-East of Russia: 4885 km to Yakutsk, 5905 km to Magadan, 6193 km to Anadyr and 6773 km to Petropavlovsk-Kamchatsky. The net flight time of aircrafts along these routes is from 6 to 10 hours. Travelling by ground and water transport will require at least 10-15 days.

Using the methodology of distinguishing functional differences of medial region, proposed by A.I. Tatarkin, we can assess the negative impact of periphery on macroregion's economy:

- high transportation costs for interregional cargo and passenger transport;
- decline in managerial efficiency, as well as financial and economic assistance from federal authorities;
- limiting population in meeting the needs for high-quality material, cultural and medical services produced in the central regions of the country.

Weak habitation and non-complexity of territory development remains a characteristic feature of all northeast regions and its Arctic territories in particular. This is evidenced by a very low population density, which is equal to 0.31 people per 1 km<sup>2</sup>, a small volume of gross regional product production equal to 202.7 thousand rubles per 1 km<sup>2</sup> (2014). The territories of mining complexes, central settlements of the constituent entities of the Russian Federation are relatively inhabited. Thus, in the Republic of Sakha (Yakutia) among these there are: the West-Yakut, South-Yakut and Central-Yakut economic regions with the cities of Yakutsk, Mirny, Udachny, Lensk, Neryungri, Aldan, Vilyuisk, Nyurba and Pokrovsk. The Central-Magadan region with the city of Magadan as its center in Magadan region, and Petropavlovsk-Kamchatsky in the Kamchatka Territory can be considered relatively habitable.

In accordance with long-term programs of socio-economic development, there is a fair amount of regions perspective for the integrated development. Before the 1990s of the XX century the integrated development and elaboration of regions rich in natural resources was carried out through the creation of territorial industrial complexes. Nowadays, there are ideas about the necessity of forming territorial-production clusters, priority development territories and special economic zones being put forward for these purposes. A small exploration degree of the territory of the North-East of Russia is likely to continue for many years to come, since the immenseness and inaccessibility of the territories of the regions for their comprehensive study determine the enormous costs and it is useless to execute them without timely return. One example can prove the good reason behind this proposition. It's been almost during 100 years that the geological study of the territory of Yakutia reached only 10%. Taking into account the progress of science and technology, it will take at least 25 years to bring this indicator to 20%. In order to make a comprehensive study of the territory in addition to geological research there is a necessity in carrying out biological, land, water, forest and other researches, as well as to determine the prospects for their economic development and reproduction.

Until now all types of ground transport (i.e. motor, water and railway) are poorly developed in the regions of the North-East of Russia. Roads are mostly unpaved, with a hard surface of only 20 thousand km or exactly 0,004 km per 1000 km<sup>2</sup> of the total area. As a result, for example, only 20% of the population of Yakutia lives in the zone of year-round ground transportation. The Kamchatka Territory and the Chukotka Autonomous Region do not have any ground transport routes connecting them with other regions of the country. Due to the poor provision of roads with proper facilities, winter snow roads are widely used. There is only one operated all-the-year-round unpaved road with the length of 224 km from the village of Ust-Kuyga to the village of Deputatsky situated in the Arctic zone of Yakutia with an area of about 1.2 million km<sup>2</sup>.

River transport is mostly developed in Yakutia, but it has seasonal character and navigation period lasts for 4-5 months. Sea transport is the main means of communication in the Magadan Region, the Kamchatka Territory and the Chukotka Autonomous Region. Since the 1990s of the last century the Northern Sea Route has become poorly functioning. It's been in 1990s of the last century that railway transport first appeared in Yakutia. Presently the railway with the length of about 900 km is built up to the city of Yakutsk. In other regions of the North-East, there are no railways at all. In the long-term perspective there is a plan to build railway from Yakutsk to Magadan.

Within the last 15 - 20 year's people started to pay more attention to the protection of nature and the entire environment of the macroregion. More specifically, there was the Ministry of Nature Protection established in the Republic of Sakha (Yakutia) and there are significant funds for environmental protection provided from the republican budget. All enterprises and organizations of the national economy have expenses in order to ensure the environmental friendliness of production and the vital activity of the population. They are very significant among the users of natural resources, especially in the mining industry. It is actually proven by science and practice that northern nature is more vulnerable to industrial and any economic activity of society, while nature restoration works are more costly. Due to the strengthening of environmental protection and requirements for the environmental friendliness of the production and products of the regions of the North-East of Russia there is a special need in innovative technologies and methods of sustainable nature management and all economic activities of the society.



Seasonality, limitation and irregularity of import and export of cargos continue to have a great negative impact on the socio-economic development of the regions of the North-Eastern macroregion. This is largely due to the production specialization of the regions in the extraction and supply of low-tonnage products, such as gold, silver, diamonds, tin and other non-ferrous metals. The exception is South Yakutia, which annually delivers 13 million tons of coking and energy coals for export and to other regions of the country. Irregularity of import and export of cargos performed by water transport, for example, by the Lena United River Shipping Company, which annually imports to the republic about 2.0 million tons, and exports about 0.5 million tons, is particularly typical. Ships and oil-loading tankers go along the northern rivers of Yakutia with one-sided loading. Tynda-Berkakit-Tommot is the only trunk railway line in the North-East that has a load in both directions only up to the station Berkakit. It will be loaded only by 30-50% to Yakutsk. In the opposite direction the load will be only 10%. The acute problem of irregularity of import and export of cargos exists in other regions of the North-East of Russia.

An important regional specific feature of the North-East of Russia is its involvement in geo-economic space. This specific feature is presently limited but in perspective it will be rather broad and widespread with due account for the expansion of trade and economic relations with the APAC countries, as well as with Southeast Asia. So, for example the Republic of Sakha (Yakutia) export diamonds, coking coal concentrate, oil, furs and other types of production on the world markets for the amount of about \$5 billion per year and natural gas in the volume over 30 billion cubic meters after 2018. The Magadan Region and the Kamchatka Territory export fish products and have trade and economic relationships with other countries. The increase of macroregion's involvement level in global economic space is possible in case of growth of commercial entities' competitive ability and goods that they produce for export. It is therefore necessary to transfer the economy of the North-East to the innovation-based development with a faster speed.

**Business specific features:** In all regions of the North-East of Russia economic development continues to be raw-materials-oriented, if not tends to expand: in 2014 the extraction of minerals in the structure of the gross regional product (GRP) in the Republic of Sakha (Yakutia) reached 44.5%, in the Chukotka Autonomous District - 42.9%; in the Kamchatka Territory fishery production is developed and makes 12% of GRP. In the long term the raw material orientation will even expand in all regions, especially in Yakutia, due to the increase of the volumes of coal, oil and natural gas extraction, creation of new mining industries, including rare-earth and iron ore. It was earlier that raw-material orientation of regions' economy was possibly incorrectly assessed as production appreciating factor. In fact, it is objectively conditioned by the presence of a unique natural wealth and the realization of this regional advantage of macroregion's economy. Mining and fishing industries are the main basic and income-generating sectors of the economy of the North-East of Russia. Innovative technologies and production organizations implemented in them are characterized as the most necessary and effective.

The socialist society existed in our country according to the requirements of the law of planned proportional development of the economy and these requirements were more thoroughly studied and observed in practice. In the post-Soviet market economy there is very little attention paid to the proportionality of socio-economic growth both in theory and in practice. Though there is a global law of supply and demand, production and consumption of material, educational, cultural and spiritual benefits, that operates in market economy. However, in practice, there are only production-material proportions through market mechanisms that are mainly taken into account. The large lag in processing industries,

a weak development of social and industrial infrastructure, a relatively low technical and organizational level of production, inadequate provision of material, energy and labor resources, underdevelopment of agriculture, crop production, livestock and other branches of agrarian economy are considered to be the main production disproportion in the regions of the North-East of Russia. This is the data to illustrate these disproportions. In 2014 the share of processing industries in the GRP structure of the Kamchatka Territory was 9%, only 2% in the Magadan region and 1.6% in the Republic of Sakha (Yakutia). There is not a single more or less large township-forming manufacturing enterprise. The annual production of gross agricultural output amounted to 22.9 thousand rubles in per capita terms of the macroregion as against 35.25 thousand rubles at the average for the Russian Federation.

The underdevelopment of manufacturing industries is connected with the influence of appreciating factors, such as high cost of capital construction, expansiveness of labor and electricity, limited local market of production distribution, high goods shipping costs, in many cases the lack of effective engineering and technology adapted to local conditions. Significant mastering of negative impact of these production factors requires fundamentally new innovative solutions to technical, organizational and economic problems.

As of January 1, 2016, there were only 550 municipal entities, including 48 districts and 18 cities, functioning in the northeastern macroregion. Most of them do not have enterprises with interdistrict specialization of production. In this respect the municipal economy is closed (self-sufficient) throughout the macroregion. Interdistrict specialization is typical for enterprises in urban districts and some urban settlements. For example, they can include enterprises of energy, construction, mechanical repair, meat and dairy and food industries. Such enterprises are located mainly in the capital cities: Yakutsk, Magadan, Petropavlovsk-Kamchatsky and Anadyr. Interregional specialization of the municipal economy can be developed only on the basis of manufacturing enterprises placement.

It was earlier that in the regions of the North-East there was a strictly selective development of natural resources carried out in the conditions of limited transport accessibility and underdevelopment of territories, lack of material, financial and labor resources, as well as of low efficiency of their use. At the present stage of the growth of national and regional economies under market relations, it is advisable to move from selective to rationally selective development of natural resources. It was earlier that there were only highly scarce and highly valuable mineral resources (gold, tin, diamonds, etc.) involved in industrial development. Today, there is a wider range of minerals (coal, oil, natural gas), as well as not only the best, but also average and sometimes relatively bad deposits being brought into operation, taking into account the sufficient arrangement of the territory, principles of rational utilization of feedstock, careful and ecological natural resources management. More comprehensive development of natural resources and continuous utilization of territory for the location of production can be carried out step by step, in the course of accumulation of production and financial capital, intellectual and innovative potential of the regions. These processes must be accompanied by an active restoration and reproduction of natural resources used in the interests of future generations of the population.

Poor development of production infrastructure is one of the main regional specific features of the North-East of Russia. It is objectively conditioned by the vastness of its territories. In fact, transport, energy and municipal housing economy as branches of regional economy are significantly developed. Thus, the share of transport in the GRP structure is 10.1% in the Republic of Sakha (Yakutia), 6.6% in the Magadan region and 7.6% in the Kamchatka Territory. The total length of public roads (including winter snow roads)

in this macroregion is 43.85 thousand km. The absolute weight of hard-surface roads both in the Magadan region and in the Kamchatka Territory is 92%. The absolute weight of hard-surface roads in the Chukotka Autonomous District and the Republic of Sakha (Yakutia), where most of the roads are seasonal winter snow roads, is only 32 and 42%. There are large capacities of electric power industry built and functioning in all the regions of the North-East of Russia: in the Republic of Sakha (Yakutia) - Vilyuyskaya, Neryungrinskaya and Yakut power stations; in the Magadan region - Arkagalinskaya, Magadanskaya, Kolymenskaya and Ust-Srednekanskaya power stations; in the Chukotka Autonomous District – Bilibinskaya power station; in the Kamchatka Territory - Central and Ust-Kamchatskaya power stations, as well as Pauzhetskaya geothermal power station. In 2015 the total power generation in the macroregion has reached 13.7 billion kWh, which is equal to 9301 kWh in per capita terms against 7285 kWh at the average for the Russian Federation.

However, it is more correct to estimate the availability of infrastructure in macroregion per 1000 km<sup>2</sup> of the territory. For example, the total length of hard-surfaced public roads is about 3.5 km compared to 61 km at the average in the Russian Federation. It is also possible to estimate the availability of high-voltage transmission lines, railways and other objects of industrial infrastructure per 1000 km<sup>2</sup> in the same way. Of course, it will be relatively and comparatively small, but it will not be legitimate to set the task to achieve indicators similar to average ones for the country.

The comparatively low level and reasons for the lag in the development of the regions of the North-East are evidenced by the results of research of specific features and spatial location of the development institutions and the formation of cluster policies and various types of innovation clusters in the regions of the Russian Federation. Institutions are understood as rules, norms, restrictions, mechanisms, instruments, funds, organizations, structures that are explored in economic analysis, planning, organization and management of the economy. More specifically, the current Russian system of the development institutions in the field of innovation activities includes more than 15 organizations, 17 special federal economic zones and 30 technological platforms, etc.

The authors made ranging of the constituent entities of the Russian Federation according to the regional institutions development level and the resulting measures of their utilization efficiency (Table 1).

**Table 1: Ranging of 83 constituent entities of the Russian Federation in 2013**

1.	According to institutions development level	Lieders	With average level	Lack of institutions
	Quantity	22	16	45
2.	According to efficiency measures	Lieders	With average performance	Outsiders
	Quantity	20	28	35

Out of four constituent entities of the Russian Federation in the North-East the Magadan region and the Republic of Sakha (Yakutia) are of the average level according to the institutions development level, while the Kamchatka Territory and the Chukotka Autonomous District are in the group with the lack of development institutions. Further, all the constituent entities of the North-East of Russia were outsiders according to the resulting measures of development institutions utilization efficiency. As reflected by the scientific literature, there is an active cluster policy and the formation of various types of clusters, including innovative networks and clusters, performed in many regions of the Russian Federation. However, there are only scientific justifications and normative documents in the regions of the North-East, and virtually not a single territorial-production, industrial or innovative cluster. Thus, although there is a necessity of

regional economy priority development practically at an acute need in the conditions of special regional features, the North-East at large is characterized by a low level of innovative development and is extremely lagging in this respect. However, the regions of the North-East of Russia possess unique resources and opportunities for technological modernization and the formation of competitive niches in innovative socio-economic development.

In the nationwide social labor distribution the constituent entities of the North-East of the Russian Federation specialize in the extraction of gold, silver, tin, diamonds, oil, fish and furs. In the near future, the range of branches of nationwide specialization will expand significantly due to the large-scale extraction of natural gas, rare earth metals and iron ore in the Republic of Sakha (Yakutia). Harvesting of fish and other seafood in Magadan region, Kamchatka Territory and Chukotka Autonomous District will increase. Their role in interregional and international sea shipments, as well as along the Northern Sea Route, will increase. All the regions of the North-East take an active part in international trade, especially with the countries of the Asia-Pacific region. The Republic of Sakha (Yakutia) holds a specific place in it. It currently exports coking and energy coals, oil. In the near future it will export natural gas, after the construction of the main gas pipeline "Sila Sibiri" (Power of Siberia) from the Chayandinskoye field to the south of the Far East and to the People's Republic of China.

Branches of nationwide specialization in the regions of the North-East of Russia have a sufficiently high competitive ability. However, according to our expert assessment, the regions and the North-East in general are characterized by low levels of overall competitive ability as a result of: first, difficult adjustment of all sectors of the local economy, including agriculture and the social sphere, to market conditions; second, negative impact of many regional specific features of production and vital activities of the population; third, underdevelopment of market mechanisms for strategic planning and regional economy management, taking into account regional characteristics.

**Social and economic specific features:** As of January 1, 2016, the total number of the population of the North-East of Russia was only 1473 thousand people (density - 0.31 people per 1 km<sup>2</sup> of the total territory). The Chukotka Autonomous District with the density of the population equal to 0,07 people per 1 km<sup>2</sup> is considered to be particularly scarcely populated region. In 1990s of the 20<sup>th</sup> century the population of all regions, but especially in Magadan region, Kamchatka Territory and Chukotka Autonomous District decreased significantly. Over the past decade there has not been a steady trend of population growth in the macroregion. The paucity and poor territory population can be considered its constantly existing regional specific feature.

Regional specific features of the North-East of Russia include the existence and habitation of the indigenous peoples of the North, such as Yakuts, Evenkis, Evens, Dolgans, Chukchi, Yukagirs and others. The Yakuts are a numerous state-forming indigenous people of the North with the number of the population as of January 1, 2016, of 476 thousand people or about 50% of the total population of the Republic of Sakha (Yakutia). The remaining small indigenous peoples of the North are represented by 45 thousand people. The indigenous peoples of the North of Yakutia played a large positive role in the economic development of the severe northern region and in the establishment of Russian statehood. In the days of socialist construction and the post-Soviet period, the indigenous peoples of the North of the republic shown fruitful state, productive and public activities in the development of a planned and market economy, in socio-economic transformations aimed at creating a new life. They have made and continue to make a

growing labor contribution especially to the development of agriculture and traditional industries of the North in severe natural and climatic conditions. Due to this, the agrarian sector of the northern economy meets the population's needs for meat, fish, dairy products, vegetables and potatoes by about 30-50%. Highly humane traditions and customs of the indigenous peoples of the North, their careful attitude to the easily-hurt native nature and to the whole environment contribute to the environmental and reasonable environmental activities of the state and society in the regions of the North-East of Russia.

The relatively high migration of the population has traditionally been characteristic for the regions of the North-East of Russia. Previously, it served as the main source of population growth and settlement of a huge territory. Herewith the balance of external migration was positive, i.e. the number of people arriving to the region is greater than the number of those who depart from them. However, there is a negative balance of external migration that has been established in the regions of the North-East of Russia since the 1990s of the last century. This negative balance remains a characteristic feature up to the present day (Table 2).

**Table 2: Balance of external migration of the population in 2015 (thousand people)**

<i>Regions of the North-East</i>	<i>Regions of Russia</i>		<i>Foreign countries</i>		<i>Total</i>	
	<i>Arrived</i>	<i>Departed</i>	<i>Arrived</i>	<i>Departed</i>	<i>Arrived</i>	<i>Departed</i>
The Republic of Sakha (Yakutia)	35,4	41,2	1,0	0,6	36,46	41 ,84
Kamchatka Territory	9,6	12,4	3,8	2, 6	13, 44	14 ,97
Magadan region	4, 7	7,3	1,2	0,3	5,88	7 ,61
Chukotka Autonomous District	4,2	4,9	0,2	0,04	4,39	4, 98
Total	54,1	65, 9	6,2	3,5	60,17	69,41
Balance (+ -)		-11,8		+2,6		-9,24

Internal migration of the population has intensified in the post-Soviet years. It is more intensive in the Republic of Sakha (Yakutia) and the Kamchatka Territory, which is most connected with the displacement of the rural population. As a matter of fact the territorial mobility of the population witnesses the development of freedom of residence, profession and place of residence of the population, as well as changes in production location and populated areas in progress. Therefore, human migration at large is a positive factor for the macroregion development. Human resources deficiency, as well as the deficiency of highly qualified specialists and regular labour force, is an essential regional specific feature of macroregion. It appears as a result of: first, paucity of population, its external migration and pioneer commercial development of new regions; second, irrational utilization of existing human resources, specialists and regular labour force under the conditions of economy disproportionality, including its imperfect sectoral distribution. As a result of human resources deficiency in there is the unemployment that appears in macroregion. Starting from 2000 the level of unemployment has decreased significantly. In 2015 the level of unemployment in the Magadan region (due to migration of the population) and the Chukotka Autonomous District decreased to 4.3 and 4.0% correspondingly. This index remains stably high in the Republic of Sakha (Yakutia) and is 7.3%. Deficiency of human resources and of highly qualified workers in particular as a regional specific feature can be decreased in case of speeding up the innovative socio-economic development of regions due to the fact that the efficiency of labour will essentially increase in all spheres of economy.

Poor development of social infrastructure is one of the characteristic regional specific features of the regions of the North-East of Russia. This lag is difficult to identify on the basis of an analysis of the

average of the provision of the population with social facilities. For example, in 2015 the total area of residential premises per person on the average was: in the Republic of Sakha (Yakutia) – 21.5 m<sup>2</sup>, in the Magadan region – 29.7 m<sup>2</sup>, in Kamchatka Territory – 25.2 m<sup>2</sup>, in the Chukotka Autonomous District – 25.5 m<sup>2</sup> against the average 23.2 m<sup>2</sup> for the Far East Federal District and the whole Russian Federation – 24.4 m<sup>2</sup>. However, some regions are at the same time lag far behind in terms of the level of housing stock (for example, availability of water pipelines in housing in the Republic of Sakha (Yakutia) is 54%) compared with the average 81.4% for Russia.

Taking into account the inequality of provision and other specific regional conditions for the organization of educational, medical, cultural, communal and other institutions of the social sphere, it is quite possible to prove the weak development of regions' social infrastructure. Moreover, it must be developed according to the higher social standards in order to reduce the levels of absolute and extreme discomfort of the population living in the arctic zone and the Close North. The creation of developed social infrastructure in severe natural and climatic conditions, with the vastness and difficult accessibility of the territory, as well as due to other difficult circumstances of the North-East, is possible only on the basis of fundamentally new innovative technologies and organizational and economic approaches. In response to this problem it is necessary to perform a more consequent implementation of the principle of outstripping creation and development of social sphere in comparison with the growth of basic production and real economy.

Severe natural and climatic, unfavorable economic and geographic, as well as difficult socio-economic conditions of the regions of the North-East are the factors, which form the high cost of population's life. It depends on the number of material, financial and other expenses required for continuous functioning of human life and activities, his/her physical and mental ability to work, study, rest and do other activities valuable to the community. These expenses include expenses for food, clothes, accommodation, paying for educational, medical, cultural, communal, transport and other vital services. All these per capita expenses vary widely region-wise and are objectively higher in the North, including in the North-East. Despite economic and social significance of the cost of population's living it lacks an integrated aggregate measurement (index). Therefore, different methods and indexes are used for its analysis and evaluation. These methods and indexes include consumer food basket, consumer non-foods basket, minimum cost of living, consumer expenditures at the average per capita and other. Therefore, in order to ground the consistency of the increase of the cost of population's life in the North-East it is essential to provide sample calculations performed with due consideration of additional expenses excluded from the minimum cost of living.

**Table 3: Appreciation of social and economic conditions of the living environment of the population in the regions of the Asian North in 2015 (in factors towards Moscow region 1:1)**

<i>Types of expenses</i>	<i>Latitudinal zones of the North</i>		
	<i>Arctic zone</i>	<i>The Far North</i>	<i>The Close North</i>
Minimum cost of living	1,7 – 1,9	1,4 – 1,6	1,3 – 1,6
Subsidies for paying for housing and public services per 1 person	5,8	2,5 – 3,2	2,0
Cost of minimum set of foodstuff	1,6 – 2,8	1,4 – 1,7	1,2 – 1,7
Cost of housing construction per 1 m <sup>2</sup> of the total area	5,4 – 5,7	2,4 – 3,8	1,8 – 3,8
Logistic expenses for the delivery of provisions	2,5 – 5,5	2,0 – 2,8	1,5 – 2,5
Logistic expenses for construction cargos	8,3 – 8,8	3,3 – 5,7	2,3 – 5,7

As can be seen from Table 3, the indices of the northern appreciation of the cost of living in the Asian North were as follows: minimum cost of living 1.3-1.9 times, the cost of the minimum set of food products 1.4-2.8 times, the cost of housing construction 1 m<sup>2</sup> of the total area 1.8-5.7 times, logistic costs for food delivery 1.5-5.5 times and construction cargos 2.3-8.8 times. If we calculate the total costs for all these indicators, then the integral appreciation of the cost of living of the population in the Asian North is estimated at the level of at least 3.0 - 3.6 times in comparison with the Moscow region.

In the Asian North of Russia, its extreme eastern vector is occupied by the North-East with three latitudinal zones. It is characterized by more severe natural and climatic, as well as unfavorable economic and geographical specific features if compared with the North of Western and Eastern Siberia. Therefore, it is indisputable that the regional appreciation of the cost of living of the population in the North-East is much higher than it is indicated at an average across the entire Asian North. Multiple regional appreciation of the life activities of the population of the macroregion occurs as a result of high prices of food products, industrial consumption goods, higher cost of housing and communal services, medical, educational, cultural, construction and transport services. Therefore, it is necessary to cardinaly modernize and improve the efficiency of all life-supporting branches of the regional economy in order to significantly reduce the cost of living of the population.

The comparatively low level and low quality of life of the population of the North-East of Russia can be considered an integral indicator of the degree of appreciating influence of all negative regional specific features. Ultimately, the high cost of living of the population must be considered a key factor for its low level. Another key reason is a substantively low monetary income of the population in comparison with its expenses required to meet reasonable needs. In other words, real incomes of people do not reimburse the high cost of their living.

**Table 4: Cost of living and per capita income of the population in 2015**

<i>Russian Federation, its constituent entities</i>	<i>Life cost appreciation</i>	<i>Money income per capita, rubles (month)</i>	<i>In factors towards the average over the Russian Federation</i>
Russian Federation	1,0	30 474	1,0
North-East of the Russian Federation including:	3,0 – 3,6	47 729	1,57
The Republic of Sakha	2,5 – 2,8	37 847	1,24
Magadan region	2,8 – 3,2	50 262	1,65
Kamchatka Territory	2,9 – 3,1	41 402	1,35
Chukotka Autonomous District	3,5 – 4,0	61 704	2,02

As can be seen from Table 4, in the North-East, with an average increase of the cost of living of the population in comparison with the Russian Federation in 3.0 – 3.6 times, the actual per capita monetary incomes in 2015 exceeded only 1.57 times, including in the Republic of Sakha (Yakutia) – 1.24 times, Magadan region – 1.65 times, Kamchatka Territory – 1.35 times and Chukotka Autonomous District – 2 times. Thus, inference should be drawn that the real average per capita monetary income in the regions of the North-East of Russia reimburses the cost of living of the population by only about 50%. It means that the real standard of living is 2 times lower than the scientifically justified indicator.

According to the available researches the quality of life differs significantly from its level and is determined by the Human Development Index (HDI), which is calculated on the basis of indices of production of per capita GDP, life expectancy (LE) and educational level of the population (ELP). The

HDI shows that the quality of life of the population of the regions of the North-East is significantly lower than the average for the Russian Federation (Table 5).

**Table 5: Comparison of human development indexes in the regions of the North-East of Russia in 2008-2014**

Regions	Income index		Longevity index		Education index		Human development index	
	2008	2014	2008	2014	2008	2014	2008	2014
The Republic of Sakha	0,844	0,978	0,680	0,747	0,916	0,927	0,813	0,884
Magadan region	0,801	0,941	0,645	0,703	0,891	0,966	0,798	0,870
Kamchatka Territory	0,749	0,864	0,689	0,718	0,891	0,931	0,776	0,838
Chukotka Autonomous District	0,88	1,00	0,628	0,622	0,883	0,933	0,783	0,852
Russia (for reference only)	0,848	0,924	0,715	0,766	0,913	0,933	0,825	0,874

In our opinion, life expectancy of the person, that most notably depends on the quality factors of his life activity, including on the quality of nutrition, quality of housing and medical services, quality of ecological living environment, etc., is most objective and adequate out of all the indicators of the quality of life of the population. In case we take the aggregate of these qualitative living conditions, the regions of the North-East are absolutely and extremely uncomfortable for the population's living. As a result, in 2015 the average life expectancy of the population was: 70 years in the Republic of Sakha (Yakutia), 68 years in the Magadan region, 67 years in the Kamchatka Territory and 64 years in the Chukotka Autonomous District against 71 years at the average for the Russian Federation.

#### 4. RESULTS

##### Classification of Current Regional Specific Features of the North-East of Russia

Natural and climatic regional specific features of macroregion have a permanent character which is the reason for the changes to happen slowly in their composition. According to our expert estimation, the effect of all these special features generates an urgent need for innovative development of all sectors of national economy, both of production and social spheres. Of course there are a fairly large number of natural and climatic regional specific features, but we've managed to analyze the following of them: immenseness of territory, permafrost, severe climate, barren soil, uniqueness of natural resources, presence of large water and hydraulic resources. First three regional special features increase the cost of industrial production, while last three special features are considered to be cheapening factors. According to rough estimation all the analyzed natural and climatic special features are the stimulating conditions for the creation and application of innovative technologies and methods of regional economy organization.

Economic and geographic specific features are characterized by noticeable changes in the structure, dynamics and efficiency of their display. For example, new concepts about the types of regions appeared as a result of the development of regional science and practice, i.e. central, middle and remote regions, donor regions, beneficiary regions and other. More specifically, the North-East of Russia is characterized as a peripheral macroregion in economic and geographic relation. The initial character of the development of the regions has largely ceased to be manifested, the costs of nature protection have multiplied and become a factor that appreciates production, poor development of the production infrastructure is most due to the economic and geographical condition of the macroregion. Taking into account these and



other changes, the main economic and geographic specific features include: peripheral location of the macroregion, weak habitation and low exploration degree of territory, low exploration degree of territory, underdevelopment of transport system, high costs of environmental protection, limited external cargo turnover, involvement of regions in the geo-economic space (GES). All these regional specific features, except for the peripheral location and the involvement of regions in the GES, have a temporary nature, and, apart from the involvement of regions in the geo-economic space, have an appreciating effect on the industrial production.

Business regional specific features change significantly under the conditions of a market economy. So, for example, currently the incomplete use of raw materials, the closed nature of the economy at the regional level, the weak scientific and technical preparation for the creation of a new production, the lag in the scientific level of management of the regional economy, are not substantially manifested. But then the new special features appeared: weakness of interregional specialization and closed nature of the economy of most municipal entities, poor adaptation of the regions to the conditions of market economy, low level of innovation in the regional economy, resource-oriented economy, existence of production disproportions, closeness of municipal economy, strictly selective development of resources, poor development of production infrastructure, low level of economy innovativeness, all-union specialization of regions, and low level of competitive ability of regions. The raw materials orientation, selective development of natural resources and all-union specialization of regions are related to the factors reducing the industrial production, and all other special features are considered to be appreciating factors. In addition to nationwide specific features, all other regional specific features have a temporary nature of manifestation and a restraining influence on the innovative development of the economy of the macroregion.

Social and economic regional specific features of the macroregion. As a result of the transition from socialism to capitalism, from a planned to a market economy, their negative impact on the social and economic development of regions and the population has changed radically. There were new negative processes in people's lives such as increased migration, unemployment, poverty of a significant part of the population. Thus, modern social and economic regional specific features include: paucity of population, presence and residence of indigenous peoples of the North, high level of human migration, human resources deficiency, poor development of social infrastructure, high cost of population's life, low level and low quality of life of the majority of the population. Only presence and residence of indigenous peoples of the North can be considered the factor that cheapens the production, while the rest have an appreciating effect. Social and economic regional specific features, except for the paucity of population and presence of indigenous peoples of the North, exist temporarily. Also, social and economic regional specific features affect the innovative development of the regional economy in different ways. According to our expert assessment, the stimulating factors are: paucity of population, presence and residence of indigenous peoples of the North, human resources deficiency and poor development of social infrastructure, while high level of human migration and low level and low quality of people's life are considered to be the deterrent factors.

## 5. CONCLUSION

One should take into account the interrelationship of factors within individual groups (vertical) and between them (horizontal) while making a general assessment of the regional specific features of the North-East and their impact on production efficiency. There are vertical interrelations among the natural and climatic

specific features: immense territory - inaccessibility of territory - permafrost - harsh climate - barren soil; presence of many natural resources - their territorial concentration - high quality of raw materials. There is the following interrelation between economic and geographical features: small exploration of the territory - incomplete development of regions - underdevelopment of the transport system - irregularity of import and export of cargos.

The following can be considered as an example of horizontal interrelations of factors: immenseness of territory - paucity of population - optional development - weak habitation; inaccessibility of the territory - self-sufficient nature of the municipal economy - poor development of the social infrastructure. Moreover, regional specific features have primary and derivative character. All natural and climatic specific features, paucity of population and presence of indigenous population are considered to be primary, while economic and geographic specific features, except for peripheral location of macroregion, and business specific features are considered to be derivative. It can be seen from the classification that almost all unfavorable economic and geographic, business, as well as social and economic specific features are relatively temporary. In the process of economic development and scientific and technological progress, some negative specific features may change or disappear. Positive specific features should appear instead of them. However, their appearance is a long-term dynamic process that can be regulated by special methods of strategic planning and technical policy.

The technical and economic analysis of the influence of regional specific features on the efficiency of resources utilization shows that almost every feature, depending on the specific conditions of production, has both positive and negative influence. However, taking into consideration the prevailing influence, which is currently manifested, it is possible to roughly outline specific features that both appreciate and cheapen the production. The immenseness of territory, its inaccessibility, large scale of permafrost and harsh climate are the specific features that significantly appreciate the industrial production. The presence of mineral raw materials, which is a resource-related factor, significantly increases the efficiency of production. The impact of its utilization in many branches of mining industry and, finally, region-wise, covers the national-economic losses from the influence of negative factors.

The economic and geographic position of the North-East can generally be characterized as unfavorable. Although, so far as there is the complex development of productive forces and transport in particular, it can change radically. Many unfavorable conditions can be largely eliminated in 2030 perspective. This is especially true for South, Central and Western Yakutia, for the central regions of the Magadan region and for the southern regions of the Kamchatka Territory, which make up the most part of the territory of the North-East of Russia.

There are only two business specific features of the North-East most fully taken into consideration in order to increase the economic efficiency of industrial production: the advantage of nationwide specialization of the economy and selective development of resources. Meanwhile, according to our rough estimate, approximately 2/3 of the increased regional social labor costs per unit of physical volume of manufactured product and major construction are associated with the business lag of the North-East.

In the conditions of the North-East, social and economic special features are mainly conditional upon the initial social and economic factors and unbiased difficulties of economic development of the territories. The relative numerosity of the indigenous population, existence of national administrative territories, effective

development of traditional sectors of the northern economy are the factors contributing to the integrated development of a distinctive regional economic complex. It is obvious that such negative phenomena as human resources deficiency, high level of human migration, poor development of social infrastructure and relative appreciation of public service should be overcome in the course of time. However, certain specific features of social development (small number of permanent population and high cost of population's life) will apparently remain for a long time. As it was proven by science, regional innovation policy should be aimed at a relative reduction in manpower requirement and preferential application of highly skilled labor, the need for increased payment for which becomes even greater.

The change of unfavorable economic and geographic situation and elimination of other negative features of the North-East requires major changes in all areas of economic and social life. They are possible in case of gradual implementation of regional innovation policy, large investment production and social programs. It is possible to say that the influence of regional specific features on the innovative social and economic development of the North-East of Russia has not yet been studied. Therefore, at this stage, we can use the method of analogy of their influence on the economy of scientific and technological progress in relation to which we have certain knowledge and research results.

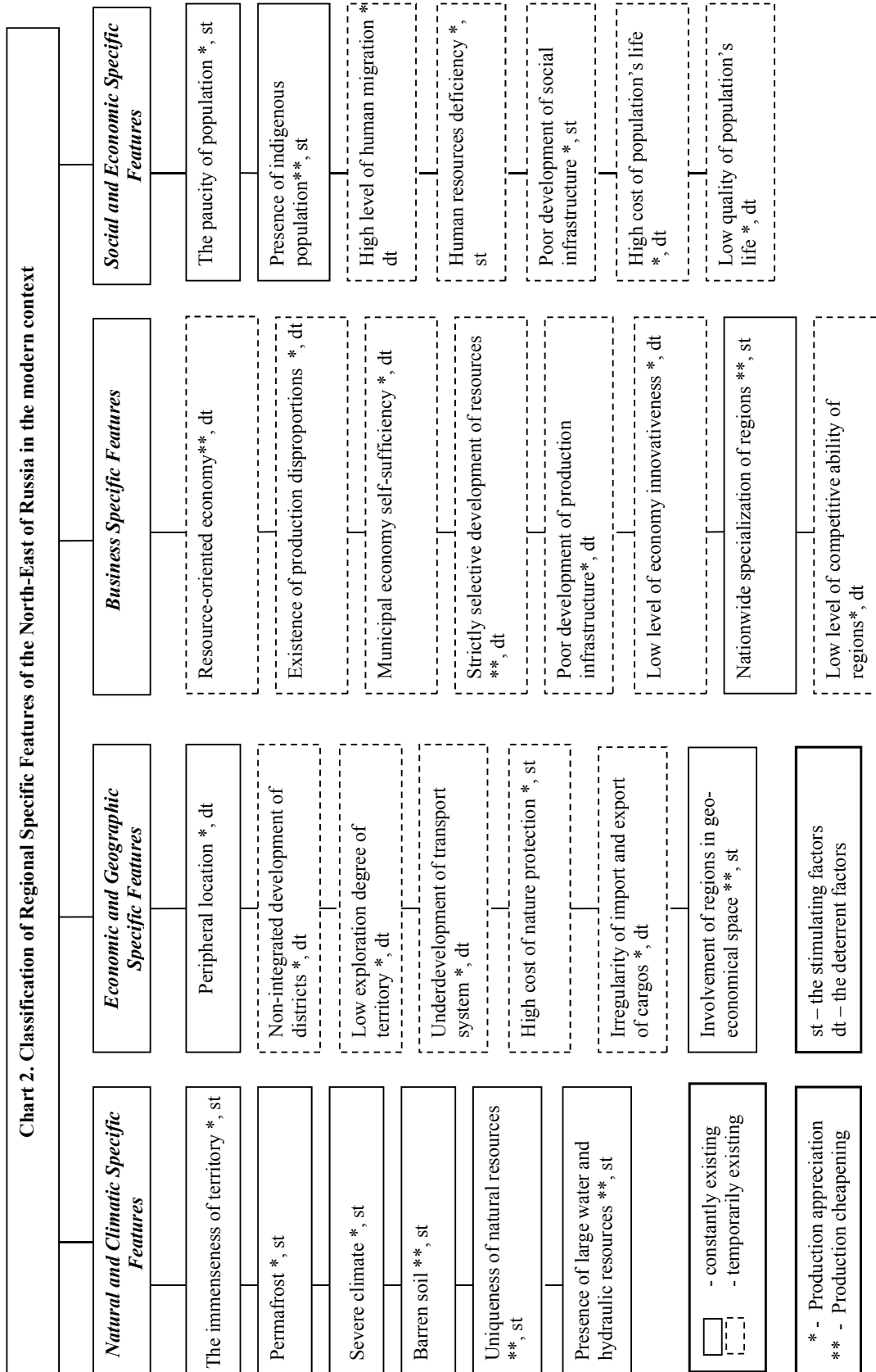
All regional features of macroregion can be divided into two groups: stimulating and restraining the development of the economy and the vital activity of the population. The stimulating effect of regional specific features is that they objectively create the need in search, development and utilization of new innovative technologies, technical means, as well as organizational and economic mechanisms. The restraining influence of regional specific features is the fact that they objectively determine the impossibility or uncertainty of search, development and utilization of innovations (Chart 2).

It seems to us that modern classification of regional special features of the North-East of Russia has a special scientific and practical importance. First of all, it allows comprehensive and more profound study of the regularity of the development of regional economy by means of organization of fundamental interdisciplinary researches. Secondly, it will contribute to the practical solution of various problems resulting from the effect of regional special features on the basis of differentiated normative approach. Presently regional specific features of the North-East of Russia are drastically understudied by technical, biological, medical and other sciences. There is also a lack of accurate economic assessment of their demonstration and impact on economy and population's life activity. For this reason, integrated scientific researches on the given problem could be considered as of high-priority.

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