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PROBLEMS AND ASSUMPTIONS OF TRANSPORT DEVELOPMENT IN THE REGIONS OF THE ARCTIC ZONE OF THE RUSSIAN FEDERATION. MESSAGE 3

Abstract: in the article, the object of research is the State Program of the Russian Federation "The main trends in the spatial development of territories included in the Arctic zone of the Russian Federation" for the period up to 2035 as an expression of the policy of the Federal Center pursued in relation to the regions. The subject of the study are the elements of the above program, which, in conflict with regional specifics, hinder the achievement of the goals set in government documents. The analysis of the conducted research is the formation of an understanding of how the regions of the Arctic zone should be taken into account when formulating federal policy aimed at their socio-economic development. In order to achieve this goal, it is necessary to solve a number of tasks, namely: it is planned to implement problems in the regions of the Russian Arctic.

Key words: spatial development, priority, technical regulation, certification, standardization, financial condition, profitability, profit, demand, preferences, relevance, competitiveness, social and economic well-being of nine regions of the Arctic zone of the Russian Federation.

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Introduction

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Designations of the Arctic regions of the country largely have an economic basis - the following norms are enshrined in the Labor Code of the Russian Federation:

➤ regional coefficients and percentage bonuses to wages (the amount is set by the Government of the Russian Federation) - bonuses are paid for work experience in the North; tables of regional coefficients were developed in the 60s of the twentieth century, the size of the coefficient depends on the place of residence: the further north, the more, reaching a value of 2 in regions with the most severe climate (north of Yakutia, Chukotka). There is a legend about the history of the construction of the city of Noyabrsk, which had to be built within the oil fields located on the border of the Khanty-Mansiysk and Yamalo-Nenets Autonomous Okrugs. The city was built to the north, because in this case the district coefficient became higher. At present, the significance of these measures has been somewhat leveled, for example, in private companies, any base wage level above the minimum level can be set. Thus, the "long northern ruble" is a thing of the past.

➤ 36-hour work week for women - at the same time, wages are paid to women in the same amount as for a full-time work week. The benefit also has an institutional meaning - the upbringing of the younger generation, since the older generation, traditionally actively participating in this process, "remained on the mainland."

➤ additional paid holidays: granted to persons working in the regions of the Far North - duration 24 calendar days), persons working in areas equivalent to regions of the Far North - 16 calendar days.

➤ persons working in organizations located in the regions of the Far North and areas equivalent to them are entitled to pay once every two years the cost of travel and baggage transportation to the place of vacation and back within the territory of Russia at the expense of the employer. This is the most relevant advantage of the current northern benefits, which has a psychological significance and increases the mobility of the inhabitants of the North, who actively travel long distances in Russia, broaden their horizons and are receptive to the new.

➤ Legislative acts of the Russian Federation define additional benefits, including earlier retirement, increased pensions, etc.

These benefits are partly borne by private employers. For large companies (Norilsk Nickel, Gazprom) this problem can be solved, but for small businesses, leaving most of the employees on vacation for two months in the summer at the expense of the employer becomes a significant burden. This problem is a brake on the development of the economy of the North, there is no solution to it so far, since the

abolition of benefits is an extremely unpopular and harsh measure. History of benefits, namely:

➤ the first compensations were established before the revolution of 1917 during the construction of the city of Murmansk: land plots were provided to the first settlers;

➤ in the USSR, benefits were originally a compensation for the difficulties associated with moving. They were intended only for those moving to the North (Decree of the Central Executive Committee and Council of People's Commissars of the USSR of November 9, 1927 "On compensation for transfers and employment in other areas"). Large companies, currently inviting a highly qualified specialist to remote areas, provide him with an apartment or a significant salary, municipalities provide doctors and teachers with special conditions;

➤ in 1930 - the establishment of benefits for areas with a low level of economic development (Decree of the Central Executive Committee and the Council of People's Commissars of the USSR of August 12, 1930 "On benefits for persons working in remote areas of the USSR and outside large urban settlements");

➤ in 1932 - the establishment of separate benefits for the Far North (by the Decree of the All-Russian Central Executive Committee and the Council of People's Commissars of the RSFSR of May 10, 1932 "Regulations on Benefits for Persons Working in the Far North of the RSFSR"). The benefits provided during this historical period were differentiated by industry and had different sizes of allowances: three categories of workers were distinguished, the greatest benefits were for "higher and middle administrative personnel, specialists of the highest and medium qualifications in industry, transport, communications, agriculture and water management, as well as medical and veterinary personnel working to combat epidemics and epizootics";

➤ Until the 60s of the last century, benefits were allocated only for resettlement to the North; they were not provided for local residents. This is stated in the instructions of the Narkomfin: "Privileges are provided to employees on the condition that the place of their former permanent residence (before starting work) is at least 1000 kilometers away from the place of work by rail or 500 kilometers by other means of communication." This was negatively perceived by the local population, as well as another example of social injustice: representatives of the indigenous small people (Nenets) lead a different way of life - some of them live in the village, some wander in the tundra, formally being homeless, because the chum cannot be registered as permanent housing. The provision of houses in the village to the "homeless" Nenets caused discontent among the people,

➤ In the 1960s, the Russian economy changed dramatically due to the start of the development of the

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rich oil and gas reserves of Northern Siberia. There is a transition from small aircraft to more expensive helicopters, the country begins to live in grand style in many ways, including the expansion of benefits that are beginning to extend to all northerners. They are beginning to be perceived by the population not as lifting, but as compensation for living in the North. A typical example is the poem by E. Yevtushenko "Northern allowance" (1976 - 1977): "For what is this northern allowance! For - eyes pressed in by a blizzard, for frost such that the skin on the faces, as if tarpaulin ...". Benefits - Canadian experience.

In Russia, S.V. Slavin, in Canada - economist and geographer L.-E. Hamelin, who founded the Center for Northern Studies at Laval University. L.-E. Amlen developed a method for determining "northernness", which the scientist defined as a combination of 10 parameters:

1. latitude: 45° N (0 points) - 90° N (North Pole) - 100 points;
2. summer temperatures: more than 150 days per year with temperatures above 5.6°C (0 points) - 0 days (100 points);
3. winter temperatures: less than 1 thousand degree days with temperatures below 0°C (the sum of negative temperatures over the number of days) - 0 points / 12 thousand degree days or more (100 points);
4. soil freezing: less than 1 month (0 points) - continuous permafrost to a depth of 450 m (100 points);
5. annual precipitation: more than 500 mm (0 points) - 100 mm or less (100 points);
6. vegetation: taiga (0 points) - tundra (80 points) - rocky desert (100 points);
7. the number of inhabitants in the settlement: more than 5 thousand people. (0 points) - 0 people (100 points) or: the number of inhabitants in the surrounding area of 250 thousand square meters. km.: more than 1 million people (0 points) - 0 people (100 points);
8. *level of development of economic activity*: no production (100 points) - multifunctional center of interdistrict significance (0 points);
9. air communication: regular flights daily (0 points) - irregular flights for a distance of 1600 km or more (100 points);
10. land transport accessibility: year-round, more than one mode of transport (0 points) - no accessibility (100 points). Off-road in the Arctic creates special conditions for farming, so accessibility is a key socio-economic parameter for the northern region. Accessibility has an important psychological effect - the feeling of being on an island described by the inhabitants of the Arctic is more depressing than the polar night.

Summation criteria L.-E. Amlena determines that north in Canada begins almost from the border with the United States. At the moment, in Canada, as in Russia, there is a division into two zones: the North

zone (Prescribed Northern Zones - A) and the transition zone (Prescribed Intermediate Zones - B). The tax system of the country, using the modern criteria of "northernness", introduces a number of benefits:

➤ tax deductions for living in the North for a certain number of days: zone A - tax-free amount - \$ 11 per day, zone B - \$ 5.5. In Russia, tax deductions are made, for example, when receiving paid medical care or when buying real estate.

➤ payment of transportation costs to the place of vacation - a number of Canadian cities.

A significant advantage of the Canadian system is that the benefits are related to the costs of the country's federal budget. There are no similar measures in other countries, it can be noted that the European Union has benefits for companies operating in depressed areas anywhere in the world.

The key border of the Arctic (Arctic AHDR Boundary) is defined by a number of socio-economic studies (Fig. 1.1. blue color), during this course of lectures, this border, passing through the administrative-territorial division (district, region, territory), will be used most often. Two international Human Development Reports in the Arctic provide a comprehensive analysis of demographics, urban development and culture (anthropologists even consider the hip-hop culture of the Arctic peoples). The socio-economic border of the Arctic is based on the border of the Arctic region as determined by the working group for the implementation of the Arctic Monitoring and Assessment Program of the Arctic Council (Arctic AMAP Boundary). A slight difference in the boundaries is noted in the north-east of Canada and in Yakutia. Dixon - ordinary Arctic

The urban-type settlement of Dikson is located on the shores of the Arctic Ocean - on the coast of the Yenisei Bay, the Taimyr Peninsula and Dikson Island. According to the stories of B. Gorbatov, in 1976 a feature film "The Ordinary Arctic" was shot, telling about the wintering of the correspondent of "Komsomolskaya Pravda" in the Arctic village in 1935. When the last plane left before wintering, the correspondent gave up his seat to a sick person, stayed for the winter and wrote a collection of stories. Dikson was founded in 1915, the first house was built as a temporary radio communication point needed to rescue an expedition drifting in the ice. Thanks to the book by B. Gorbatov and the famous song by M. Plyatskovsky "Morzyanka", Dixon became the most celebrated Arctic village of the Soviet era, where journalists and writers came. The village is a "hymn" to combat the information inaccessibility of the Arctic region, since the first thing that was built on it was a radio station that provides communications to the surrounding territories. The port carried out hydrography and loading coal for ships passing through the Northern Sea Route. Ensuring communication, navigation and logistics is an

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extremely important factor for the Arctic, and the main one for its economy.

The 70s of the twentieth century were the heyday of Dixon: a port, a large research organization that collected and analyzed climate data, including an analysis of the ice situation for a vast territory, and was also a base for the passage of icebreakers, a military unit, a coal base, a hydrographic base, sled dog farm. The number of inhabitants of the village reached 5 thousand people, now their number has decreased to 300. Dixon Island is completely settled and cut off from communications, including the airport and meteorological center (water is delivered to the airport in barrels, ice is melted at weather stations). The village has preserved: the administration, the school, the marine rescue coordination center, the base of the reserve and the shop. To ensure navigation along the Northern Sea Route, civil ships use satellite systems, military - ground. It was for the military that the Dixon hydrographic station was preserved.

In the course of considering the socio-economic characteristics of the Arctic territories, a number of questions arise: how many people are needed in the Arctic and who needs them (the state, companies, the people themselves), is the consolidation of the population in the Arctic region justified by the solution of strategic or economic problems? There is an opinion that the population in the Soviet Arctic was excessive. The Russian Arctic continues to be the most densely populated. Large cities in Alaska are located to the south (comparable to the city of Surgut). Changes in the Arctic region as a whole and in the northern regions of Russia are related to:

- with the development of technology: modern methods make it possible to carry out weather forecasts over long distances (the centralized meteorological system was moved from Dikson to Arkhangelsk);
- with economic reasons: the abolition of benefits, the unprofitability of cabotage transportation along the Northern Sea Route.

Paradoxically, in the 30s of the 20th century, due to the presence of serious difficulties with delivery in the Arctic, complex centers were built with educational institutions, research organizations and even vegetable gardens, theaters were operating in large cities (Vorkuta, Norilsk, Magadan). In the 1970s, the cities of the oil and gas North became single-industry, supporting the trend of extraction and development of resources. It should be noted that the Arctic region is so specific that the implementation of a number of Russian and international standards has to be recognized as inappropriate, for example, the norms for planting greenery on the territory of a school.

Small aircraft provide access to remote and sparsely populated territories, while aircraft are cheaper to operate than helicopters for various

purposes, including military ones. The famous polar aviation has practically disappeared: there is no pilot training system, the production of aircraft engines has been curtailed. It should be noted that work on the modernization of the AN-2 aircraft continues. At present, the Russian Arctic has become less accessible than at the end of the Soviet period. It should be noted that the President of the Russian Federation instructed the development of small aircraft in the Far East, where a similar situation has developed. An example of a small aviation zone is Alaska - almost every small town in the country has a runway for private aircraft. Helicopters are used in Greenland.

In the 1990s, the port of Dixon was transferred to the management of the Norilsk Nickel company, which was charged with the obligation to save it. Vostok Coal is planning to mine coal in a vast area of the Taimyr coal basin. Within the framework of the project, it is planned not to use the rotational method, for which it will be necessary to build a city with all the infrastructure. It is easier to deliver coal to China from the territory of Dixon, a new port is being built, but the extraction of raw materials was stopped in 2018 due to problems with the legislation. It is important to note that the territory of the coal basin is not delimited from the territory of the reserve.

The Arctic is a naturally and economically mobile region, for example, it is difficult to predict a fall in prices for extracted raw materials, which in turn can lead to a reduction in population (Igarka from 18 thousand people to less than 5 thousand). In arctic conditions, houses are built on piles to keep the permafrost from thawing, otherwise the house may collapse. The compactness of settlement in the Arctic and the provision of heat (central and individual heat supply) are an important topic that is as relevant as benefits. Building five-story houses with district heating is effective for quickly building cities during a boom, but with a declining population, maintaining stretched communications becomes uneconomical. Private heating involves the cost of clearing roads, gasoline, etc.

The concept of "pulsating cities", able to adapt to the waves of influx and decline of the population, has not yet been implemented in the Arctic. The idea of "temporary cities" is not supported by the population of the Arctic region, and the practice of temporary earnings in the North does not contribute to the development of the region, because people accumulate funds, depriving local entrepreneurs of a sales market. An example of "temporality" is barrel-shaped houses specially designed to keep warm, minimizing contact with cold air. Currently, they are used as museums of the romantic era of the development of the North, where many graduates of higher educational institutions strove to get by distribution after training.

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Main part

In the field of transport in Russia, in recent years, the necessary modernization of the infrastructure has been carried out, which made it possible to satisfy the growing demand for passenger and freight transportation and create a certain reserve for further development.

Russia has all modern modes of transport, the location and structure of its transport communications generally meet the internal and external transport and economic relations of the country, but need significant improvement.

As of the beginning of 2007, the length of communication routes of the Russian transport system was 85 thousand km of public railways, 42 thousand km of industrial railway transport, 755 thousand km of paved roads (including 597 thousand km of public roads), 102 thousand km of inland waterways, 2.8 thousand km of tram lines, 439 km of metro lines, 4.9 thousand km of trolleybus lines, 532 thousand km of air routes, of which more than 150 thousand km are international.

Every day, 69.1 million passengers and 33.1 million tons of cargo were transported through these transport communications by all modes of transport.

The growth in the volume of cargo and passenger traffic was reflected in positive changes in the socio-economic situation of the country in recent years. The volumes of transportation of goods and passengers in 2000 - 2007 are given in Appendix No. 1.

The volume of cargo transportation in 2000-2007 by all types of transport (excluding pipelines) increased by 18.1 percent (by public transport - by 23.9 percent). Freight transportation by rail increased most rapidly (by 28.4 percent).

The growth in the volume of cargo transportation was influenced by the revival of the real sector of the economy, the increase in production in the main cargo-forming industries, the development of markets for goods and services, and the favorable external economic situation in the main commodity items of domestic exports.

Railways play an important role in the transport system. Railway transport performs 62 percent of the total volume of freight traffic carried out by public transport, or 84.3 percent of the total freight turnover carried out by all modes of transport (excluding pipelines). Road transport accounts for 47.4 percent of the volume of commercial transportation of goods, and the share of rail transport has been declining in recent years, while road transport has been growing, which indicates an increase in the competitiveness of road transport in certain segments of the transport services market.

Positive changes are observed in the creation of parity between Russian and foreign carriers in the performance of international transportation. The volume of international transportation of goods by road in 2007 reached 40.2 million tons.

The share of automobile (bus) transport in the total volume of passenger transportation by public transport is 57.8 percent. In the structure of passenger traffic, 35.4 percent is occupied by rail transport, 29.4 percent - by road transport and 22.6 percent - by air transport. (Figure 1).

The decrease in 2000 - 2007 by 42.5 percent in the volume of passenger transportation carried out by rail transport in suburban traffic, automobile and urban ground electric transport is associated with a decrease in the number of trips of privileged categories of passengers, a change in the system of their accounting as a result of the introduction of unified social travel tickets, as well as with the transition to personalized accounting.

The constant growth in the number of cars in the personal use of citizens also has an impact on the decrease in the volume of work performed by urban passenger transport. In 2007, the fleet of passenger cars amounted to 29.4 million units.

Since the start of the economic reform program, the non-state sector has dominated the transport sector. Enterprises of non-state forms of ownership currently carry out: in road transport - 94.9 percent of cargo transportation and 18.5 percent of passenger transportation, in sea transport - 88.4 percent and 97.3 percent, respectively, 90.4 percent, by air - 87.1 percent and 77.8 percent, by industrial railway - 85.6 percent of cargo transportation.

Since 2002, the development of the country's transport system has been carried out in accordance with the federal target program "Modernization of the transport system of Russia (2002-2010)".

During this period, the construction of the 1st launch complex Tommot - Kerdem of the railway line Berkakit - Tommot - Yakutsk, the border railway station Chernyshevskoye of the Kaliningrad railway, a combined bridge over the river. Lena near the city of Yakutsk. The Lagar-Aul Tunnel on the Far Eastern Railway, the Bolshoy Loop Tunnel at the 1855th kilometer of the Belorechenskaya-Tuapse section, a number of checkpoints across the state border of the Russian Federation on the main directions of transportation were put into operation. Measures were taken to modernize the railway infrastructure of Sakhalin Island.

More than 15,000 km of federal and regional roads have been built and reconstructed. More than 100,000 km of federal and regional roads have been repaired. 5,000 km of federal roads were overhauled.

The length of federal highways corresponding to the normative transport and operational indicators is 17.7 thousand km.

Construction and reconstruction of federal highways, including Chita - Khabarovsk, M-4 "Don", M-5 "Ural", M-10 "Russia", transport bypass of St. highway), as well as 4 unique out-of-class bridge crossings. Four-lane traffic was introduced along the

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entire length of the road from Moscow to Nizhny Novgorod.

The growth of passenger turnover in air transport amounted to 70.2 percent, cargo turnover - 14.5 percent. The share of aircraft that meet the requirements of the International Civil Aviation Organization regarding noise in the structure of the realized carrying capacity of the fleet increased from 44 percent to 59.1 percent, the share of modern aircraft in the structure of the fleet increased from 24 to 35 percent.

Reconstruction of runways at Pulkovo, Krasnoyarsk, Khabarovsk, Blagoveshchensk, Kurgan, Cheboksary airports and replacement of lighting equipment at Pulkovo, Khabarovsk, Barnaul, Kurgan, Ulan-Ude airports was completed. Aviation security equipment was purchased for 53 Russian airports.

The volume of cargo transshipment through Russian commercial sea ports increased 2.6 times and amounted to 451 million tons, which exceeded the maximum volume of cargo transshipment by the ports of the Soviet Union in 1989 by 12 percent.

With the participation of seaports, about 60 percent of Russia's foreign trade cargo turnover is carried out.

Restoration and repair work was carried out at 723 hydraulic structures. The conditions for navigation on waterways for the delivery of goods to the regions of the Far North with a total length of 68,160 km have been provided. In 2006, the complex of works of the first stage for the construction of the second line of the sluice of the Kochetovsky hydroelectric complex was completed.

On the inland waterways of the Unified Deep Water System of the European Part of the Russian Federation, 42 percent of communication systems have been updated.

Actual expenditures on the implementation of the federal target program "Modernization of the transport system of Russia (2002 - 2010)" in 2002 - 2007 amounted to 1.93 trillion. rubles, including at the expense of the federal budget 0.54 trillion. rubles, or 27.7 percent.

Out of the total volume of financing, expenditures on railway transport amounted to 27.1 percent, on roads - 57.4 percent.

In the volume of financing from the federal budget, the share of roads is 89.9 percent, the share of railway transport is 0.4 percent.

Since 2008, the implementation of 13 major infrastructure projects has begun on the principles of public-private partnership, including at the expense of the Investment Fund of the Russian Federation.

Transport enterprises are gradually adapting to the new business conditions. However, many issues of the work and development of transport in the conditions of the formation of market relations have not yet received a satisfactory solution.

Among the main shortcomings of Russian transport, the low technical level and the unsatisfactory state of its production base stand out.

The reduction in the volume of reconstruction and construction of infrastructure facilities, as well as the rate of replenishment and renewal of fleets of vehicles and other transport equipment has led in recent years to a significant deterioration in their technical condition (age structure, increased wear, etc.) and efficiency.

At present, the length of problem areas in terms of throughput capacity is 8.3 thousand km, or about 30 percent of the length of railways, which provide about 80 percent of all freight work of railway transport.

To date, the formation of a backbone network of federal highways connecting all regions of Russia has not been completed. Only about 38 percent of federal highways meet the regulatory requirements.

The low level of development of the road network in agricultural areas, as well as in the regions of the Far North, the Republic of Sakha (Yakutia), the Magadan Region, the Chukotka Autonomous Okrug, etc., remains low.

Due to the lack of paved roads, more than 10 percent of the population (15 million people) remain cut off from transport communications in the spring and autumn.

Until now, 39 thousand settlements with a total population of up to 2 million inhabitants (including 7.5 percent of the total number of regional centers and 6.7 percent of the central farmsteads of agricultural organizations) have no connection with the country's transport network through highways with hard coated. The formation of a backbone road network in the regions of the North, Siberia and the Far East has not been completed.

Federal highways have exhausted their capacity. 13,000 km of roads are operated in excess of the standard load, especially on the approaches to the largest cities, which is almost 29 percent of the network length. The local road network is underdeveloped, so a significant part of local traffic is carried out on federal roads. The acceleration of motorization of the country has not yet led to a corresponding increase in the volume of construction and reconstruction of the road network, and the repair of roads has even somewhat decreased in recent years. With an increase in the length of public roads by 15 percent over the past 10 years, the car park has grown by almost 75 percent.

Solving the problem of bringing the length and condition of the road network in line with the needs of the economy and the population is significantly complicated by the influence of the outstripping growth of market prices for road construction materials. The rise in prices for these resources over the past 5 years was 1.5 times higher than the rise in price indices in construction over the same period. Up

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to 60 percent of the funds allocated for road works are spent on the purchase of materials.

The pace of development of civil aviation in Russia is currently 2-3 times higher than international indicators. Not only the international transportation market is developing dynamically, but also the domestic transportation market (growth - 17 percent). This is due to an increase in real incomes of the population, an increase in the competitiveness of air transport compared to rail transport in the long-distance passenger transportation market, as well as the development of consolidation and integration processes for air carriers.

At the same time, over the years of economic reforms, the number of operating Russian airports and civil aviation airfields has decreased by 2.5 times (mainly due to regional facilities). To a large extent, as a result of this, the configuration of the passenger airline network has developed, within which the largest volume of passenger traffic (up to 80 percent) is accounted for by air communications in Moscow.

Many constituent entities of the Russian Federation have almost completely lost both the network of local airlines and the airfields of local airlines. The reduction of local traffic, the closure of airlines, the collapse of the air transport infrastructure and other negative trends can become irreversible, which will lead to the complete collapse of the system of local airports operating regional aviation aircraft, and the creation of a crisis situation in many regions that are not provided with alternative modes of transport.

There is a sharp backlog of airport infrastructure and equipment from the level of development of international civil aviation, a backlog in the implementation of modern means and technologies recommended by the International Civil Aviation Organization in the field of air traffic management, automatic landing systems and other radio systems.

The systems interacting in air navigation services are not interconnected by a single organizational and technical structure, the transition from the Unified Air Traffic Management System of the Russian Federation to the Air Navigation System of Russia has not been completed, which hinders the improvement of the quality of air traffic services, the dynamic implementation and development of advanced air navigation facilities and systems recommended International Civil Aviation Organization.

The development of Russian ports and related transport infrastructure is uneven. Significant differences have accumulated in terms of the levels of manufacturability and capitalization of port hubs. This is a consequence of the uneven and unstable cargo base, the insufficient development of the adjacent railway, road and pipeline infrastructure, as well as the rear terminal and warehouse infrastructure.

There is a shortage of port capacities focused on transshipment of imported cargo (containers and ro-ro cargo), which is caused by the rapid development in recent years of port capacities aimed at transshipment of export cargo.

The share of inland waterways that limit the capacity of the Unified Deep Water System of the European part of the Russian Federation is currently 4.9 thousand km (75 percent).

The most important problem is the technical and technological lag of the Russian transport system in comparison with developed countries. It is not ready for the widespread use of modern technologies, primarily container technologies. The growing demand for freight transportation is constrained by the underdevelopment of the country's transport and logistics system. Forwarding services for the population and the economy remain at a low level. There is no high-speed rail service in the country.

The innovative component in the development of rolling stock fleets and technical means of transport remains at a low level, especially in domestic transportation. There is a significant lag in the environmental parameters of transport operation.

Urban public transport does not receive proper development, including its modern high-speed types, which could significantly reduce the severity of the problem of transport development of megacities.

Almost in all sectors of the transport complex, the tendencies of aging of fixed assets and their inefficient use persist. Depreciation of fixed production assets for certain groups of fixed assets has reached 55 - 70 percent and continues to grow.

At the beginning of 2007, the depreciation of fixed production assets of large and medium-sized commercial organizations amounted to: in railway transport - 58.6 percent, in maritime transport - 51.2 percent, in inland water transport - 69.7 percent, in automobile transport (without road facilities) - 49 .6 percent, air - 50.3 percent.

The state of many technical means of transport has reached a critical level. A significant part of them is operated beyond the normative service life, the other is approaching this period. As a result, the safety and economic efficiency indicators of transport operation are significantly deteriorating.

One of the most significant is the problem of imbalance in the development of a unified transport system in Russia. It includes 3 most important components.

The first is disproportions in the pace and scale of development of different modes of transport. The most striking example is the significant lag in the development of inland water transport and the high growth rates of motorization.

The second is the underdevelopment of the existing transport infrastructure, which is most acutely manifested in the discrepancy between the level of development of roads and the level of motorization

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and demand for road transport, in a sharp reduction in the number of regional and local airports, as well as in the presence of numerous "bottlenecks" at the junctions of individual modes of transport.

The third is the territorial uneven development of transport infrastructure.

The most significant differences are between the European part of Russia, on the one hand, and the regions of Siberia and the Far East, on the other. Differences between regions in terms of transport provision are becoming unacceptable. For example, 6 constituent entities of the Russian Federation do not have rail links with other regions of the country.

Due to the insufficient development of transport, the integrated development of new territories and the development of mineral deposits, primarily in Siberia and the Far East, are held back.

The solvent demand of the population for transportation is not fully satisfied. Passenger transportation is not provided on socially significant routes, including due to unaffordability of prices (primarily in the regions of the Far North and the Far East).

In connection with the growth of transport tariffs in recent years, there have been certain restrictions on transport and economic relations. Due to the high transport component, the competitiveness of domestic products is reduced not only in the external, but also in the domestic markets. The weakening of ties between the regions of the Russian Federation undermines its unity and reduces the economic security of the country.

The mobility of the population in non-urban traffic in 1995-2007 decreased by 60 percent, mainly due to a reduction in trips related to recreation and tourism. For a significant part of the population, travel over long distances has become practically inaccessible, which causes additional social tension in society.

The level of safety of transport activities remains low, primarily in road and air transport. In road traffic accidents, 23.5 people per 100,000 people die every year, in the countries of the European Union this figure is 9-10 people.

The insufficient level of safety of transportation of goods and passengers by domestic transport companies negatively affects their competitiveness in the international market of transport services.

Road transport is the main air pollutant in large cities (up to 80 percent of total emissions), its share in the total emissions in the country is 40 percent.

The current state and capabilities of the transport system in the field of ensuring the military security of Russia indicate that the most difficult period in its development is over. However, a number of significant problems remain. The needs of the country's defense in the development of modern types of vehicles, the construction of new and the reconstruction of existing transport communications

related to dual-use infrastructure facilities are not sufficiently taken into account. A negative impact is exerted by the insufficient throughput and carrying capacity of transport infrastructure facilities and vehicles, the underdevelopment of the railway and road networks in the north and east of the country, as well as in a number of border regions, the passage of the main transport communications in the east of the country near the state border of the Russian Federation.

The resource intensity of transportation and the transport costs of the economy are growing. The increase in the cost of transportation, in turn, causes an increase in transport tariffs.

Due to the shortage and unsatisfactory condition of the rolling stock, many city and intercity bus routes have been closed, and the frequency of bus traffic has decreased. Due to unprofitability and the lack of state support measures, many air lines and part of river passenger routes are closed, which leads to the satisfaction of the population's demand for transportation not in full.

The complexity of the financial condition of transport is exacerbated by the outpacing growth in prices for the resources it consumes. The level of the revenue rate for transportation especially began to lag behind the growth in prices for resources after the Government of the Russian Federation made decisions to curb the indexation of railway tariffs without extending a similar procedure to industries supplying transport with material and technical resources.

Despite the multiple increase in tariffs for the transportation of passengers and goods, the financial situation of transport enterprises could not be normalized. Passenger transportation in domestic traffic on all modes of transport (with the exception of intercity bus transportation and regular air lines) is unprofitable, and the profitability of modes of transport for the carriage of goods is minimal. The share of unprofitable large and medium-sized enterprises in 2007 was 32 percent. On the part of the clientele, receivables to transport organizations also increase.

The main reasons for the low profitability and unprofitability of transportation are a decrease in the volume of transportation work while maintaining the entire infrastructure of modes of transport and a slight decrease in the number of production personnel, as well as a lag in the growth of revenue rates from the growth in prices for fuel, electricity, materials and technical equipment consumed by transport. The allocated budget subsidies do not yet fully cover the losses in the income of transport companies resulting from the state regulation of tariffs for passenger transportation.

The influence of these causes affects regardless of the form of ownership of transport organizations. The main railway transport, classified as a natural

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monopoly industry and owned by the state, also operates with low profitability. There is an acute problem of attracting investments in the development of the transport industry, which is due to the low investment opportunities of transport enterprises, difficulties in attracting long-term borrowed funds, and the underdevelopment of public-private partnership mechanisms. Currently, in most cases, a non-capital-intensive development model is being implemented, in which the volume of services grows due to an increase in the use of existing fixed assets.

The priority problem remains the improvement of the legal framework for the development of the transport system and the transport services market, including the creation of a regulatory framework that regulates the quality of transport services, ensuring the mobilization training of transport organizations and the fulfillment of their military transport duties, the development of public-private partnership mechanisms that ensure a clear legislative distribution of rights, responsibilities and risks between the state and the investor, as well as the definition of priority areas for the application of these mechanisms in transport.

The shortage of qualified professional personnel is increasing in the transport industry.

Another important problem is the insufficient level of competitiveness of domestic companies and the entire transport system of Russia as a whole in the global market of transport services. This is due to both the listed problems and insufficient opportunities for domestic transport organizations to compete in the world market, including the effective use of Russia's geopolitical advantages in international transit traffic.

The technical and technological parameters of international transport corridors do not ensure their competitiveness in the international market.

Integration into the global and regional markets for transport services will mean increased competition, increased access to the Russian market for foreign carriers, removal of administrative and tariff barriers, and will lead to a more difficult situation for domestic transport companies.

An analysis of global trends in the development of transport shows that no country is able to control the risks of its own economy without having strong transport positions.

World trends in the development of transport show that:

the period of patronage in relation to modes of transport and carriers has ended. The efforts of most countries are aimed at increasing the competitiveness of national transport and abandoning the quota system, as well as tariff and other restrictions. They are replaced by the harmonization of transport legislation;

The market of transport services has become more complex, all segments of the transport process and logistics have begun to be integrated. This led to

the development of a new type of transport infrastructure - transport, storage and commodity transport complexes, which formed an integrated system of interaction;

transport centers became the control elements of the system, which made it possible to optimize "through" tariffs. This has led to the transition of the point of profitability from the processes of physical transportation to the field of transport and logistics services. The concept of transport corridors has been transformed. From a set of routes, they turned into a system of transportation control centers and transport hubs, which gradually acquired the functions of managing the tariff policy;

the quality of transport services and competitiveness have reached a high level of development. In segments of the transport market, the services of which are in demand, competition has stepped over the stage of competition for the quality of transport services. It's guaranteed. The struggle is price-based. Against this background, the requirements for the environmental friendliness of transport are increasing. Hence the desire to maintain an acceptable share of the transport component in the price of the final product, while observing strict environmental and safety standards.

For the Russian transport system, these levels of development are not yet achievable. It is necessary to stimulate a gradual improvement in the quality of transport services, the integration of transport service technologies, and an increase in the competitiveness of carriers and operators of transport hubs. Following this, one can expect an optimization of the affordability of transport services. As restrictions, the given levels of safety and environmental friendliness of transport should act.

The main system-wide problems in the development of the transport industry of the Russian Federation are as follows:

Availability territorial and structural disproportions in the development of transport infrastructure;

insufficient level of accessibility of transport services for the population, mobility of labor resources;

insufficient quality of transport services;
low level of export of transport services, including the use of transit potential;

insufficient level of transport security;
strengthening the negative impact of transport on the environment.

Thus, significant restrictions on economic growth have appeared in Russia, due to the insufficient development of the transport system. A new long-term transport strategy is needed, which defines the main strategic directions and targets for the development of the transport system for the period up to 2035. Predictive qualitative and quantitative parameters for the development of the transport

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system of the Russian Federation for the period up to 2035. Scenario options for the development of the Russian transport system for the period up to 2035 have been developed in three versions - inertial, energy and innovative. Inertial version of the development of the transport system.

The inertial option for the development of the transport system involves:

- implementation of large-scale transport projects that ensure the extraction and development of mineral deposits in new production areas (oil in Eastern Siberia, gas on the Arctic shelf, etc.) and the construction of relevant pipelines;

- development of transport infrastructure that ensures the realization of the transit potential of the economy;

- reconstruction and construction of especially important objects of transport infrastructure, primarily objects that ensure the safety of the functioning of transport systems, as well as the modernization and renewal of the fleet of vehicles;

- advance development of transport infrastructure in the areas of export deliveries of goods, primarily the development of seaports and approaches to them;

- growth in the volume of domestic transportation of raw materials in connection with the increase in coal mining, the development of energy, metallurgy and oil refining;

- low dynamics of export traffic and outstripping growth of import traffic,

- continued dominance in imports of food and consumer goods;

- insufficiently high rates of construction and reconstruction of the road network, the persistence of sharp disproportions in its development in the European and Asian parts of Russia;

- maintaining low mobility of the population, primarily in air transport, which is due to insufficient growth in incomes of the population and the continuing aging of the aircraft fleet;

- lack of transportation and infrastructure reserves in the modes of transport necessary to improve the quality of transport services for the population and production, the introduction of transport and logistics technologies.

The energy and raw material option involves the accelerated development of transport infrastructure, mainly for transport support for the development of new mineral deposits and the increase in fuel and raw materials exports, the realization of Russia's competitive potential in the field of transport and the growth of exports of transport services. At the same time, the following features can be distinguished:

- implementation of large-scale transport projects (including within the framework of public-private partnerships) that ensure the development of mineral deposits in new mining areas, mainly in Siberia, the Far East and the continental shelf;

- diversification of directions for export deliveries of Russian hydrocarbons, including to China, and the creation of an appropriate infrastructure;

- development of transport infrastructure that ensures the implementation of the country's transit potential, including joint projects for the production and export of hydrocarbons within the framework of the EurAsEC, as well as with other states;

- increase in domestic transportation of coal in connection with the development of power generating capacities and metallurgical production;

- increase in transportation volumes and assortment of products of fuel processing and raw materials (petroleum products, concentrates, chemical cargoes, metals, etc.), as well as engineering products;

- low growth rates of export shipments and a significant increase in the volume of import shipments of highly processed goods, primarily products of high-tech sectors of the economy;

- continued increase in the number of private passenger cars, with a decrease in the volume of passenger transportation by public transport (mainly by road) in the period up to 2025 and some growth in 2025-2035;

- an increase in the need for the construction and reconstruction of the road network connecting new residential areas in megacities and suburban areas of large cities with places of application of the labor force.

When implementing this option, measures to develop the country's transport system will be carried out primarily in metropolitan agglomerations, as well as in regions with high growth rates - in the South of Russia, Siberia and the Far East.

Rail transport will have to ensure unhindered growth in the transport of raw materials to the main centers of consumption, including transport for export.

Of decisive importance will be the specialization of seaports through the creation of so-called "layered ports" following the Rotterdam model, when the port system will include remote railway junctions and transport and logistics complexes. This will require the development of access roads to ports and port production and storage areas focused on the processing of cargo, the formation of port zones that ensure the processing of incoming cargo.

An additional impetus will be given to the development of transport in the Arctic zone (territories located mainly to the north of the 60th parallel).

The development of the country's transport system will become one of the main sources of economic growth. The impetus for technological development will be received by a part of the manufacturing industries associated with ensuring the development of transport. At the same time, the implementation of the energy and raw material option will have a number of negative consequences for the

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prospective socio-economic development of the country and ensuring national security, in particular:

it will be necessary to create significant reserves of the capacity of the transport network in the main directions due to possible sharp fluctuations in demand for the transportation of export bulk cargoes in terms of volumes, nomenclature and directions due to changes in the situation in the world markets for fuel and raw materials;

a decrease in the economic efficiency of transportation is possible due to an increase in the imbalance in export-import cargo flows. The imbalance will be associated with an increase in exports of bulk and liquid cargoes and imports of finished products. Specialized and universal types of rolling stock will have low performance in terms of the coefficient of mileage with a load, that is, significant flows of empty stock are possible;

population mobility will grow at a slow pace, which will be one of the reasons for the insufficient dynamics of improving the quality of human capital in the country. The level of passenger traffic will be lower than the level with the innovative option by 14.3 percent, and passenger turnover - by 11.5 percent. This is due to lower rates of growth in real incomes of the population, a decrease in the population and a smaller scale of development of infrastructure and rolling stock of passenger transport. Lower growth in the welfare of the population will cause a slower growth in the number of personal cars;

there will be significant differentiation in ensuring the availability of transport services for different regions and social groups of society;

low investment activity will cause a significant burden on the budgetary system associated with financing the construction, repair and maintenance of roads.

The innovative option involves the accelerated and balanced development of the country's transport system, which, along with the achievement of the goals envisaged in the implementation of the energy and raw material option, will provide transport conditions for the development of the innovative component of the economy, improving the quality of life of the population, and the transition to a polycentric model of Russia's spatial development. For the innovative option, a number of features characteristic of the energy and raw material option are retained, in particular:

implementation of large-scale transport projects that ensure the development of mineral deposits in new mining areas;

diversification of directions for export deliveries of Russian hydrocarbons;

development of transport infrastructure that ensures the implementation of the country's transit potential, including joint projects within the framework of the EurAsEC, as well as with other states;

increase in domestic transportation of coal in connection with the development of power generating capacities and metallurgical production;

an increase in the volume of transportation and the range of products of fuel processing and raw materials, as well as engineering products due to the increase in innovative activity in the energy, fuel and raw materials industries, and related machine-building industries.

At the same time, the distinctive features of the development of the transport system according to the innovative option will be:

a significant increase in export transportation of highly processed goods, primarily products of high-tech sectors of the economy, the growth rate of which will be 2.5 times higher than the growth rate of transportation of similar imported goods;

increasing the role of transport and logistics infrastructure in organizing the movement of goods;

growth in the volume of passenger transportation by public transport. The highest growth rates are expected in air transport, and the main absolute increase will be provided by road transport;

the emergence of the need to build and reconstruct a road network connecting new residential areas in megacities and suburban areas of large cities with places of application of labor in a significant number of large and medium-sized cities due to an increase in the level of income and quality of life of the population;

increasing the demand of the economy and the population for high-speed transportation services (with a predetermined delivery time) and passengers (with maximum freedom of movement and the possibility of planning personal time).

When implementing this option, measures to develop the country's transport system will be concentrated, along with metropolitan agglomerations, also in cities where significant innovation and human capital is concentrated. In the east of the country, such a scenario will give a selective impetus to the development of cities with a significant amount of accumulated innovation potential - Tomsk, Novosibirsk, Krasnoyarsk, Irkutsk.

At the same time, the "infrastructural effect" of the formation of urban agglomerations associated with the implementation of projects for the construction of large transport complexes, multimodal logistics centers and information hubs will be of paramount importance.

Along with the South of Russia, Siberia, the Far East and the Arctic zone, the Volga and Ural macroregions will become zones of priority transport development. Spatial development will become multipolar, not rigidly tied to the established energy and raw materials and financial centers.

Regional aspects of the development of the country's transport system will be related to:

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creation of a network of territorial production clusters focused on high-tech industries (in the aviation industry, shipbuilding, nuclear industry, in the production of new materials, in computer science and telecommunications), with the concentration of such clusters in urbanized regions;

the creation of territorial production clusters focused on deep processing of raw materials and energy production, ensuring the development of new territories; formation and development of tourist and recreational zones on the Black Sea coast, in Altai, Baikal, Kamchatka, regions of the North;

the development of large transport, logistics and production hubs in the North-West, the South of Russia and the Far East.

The development of railway and maritime transport, along with the tasks of ensuring the transportation of bulk cargo, including export ones, will increasingly focus on improving the quality of transport services for cargo owners and strengthening interaction in the framework of ensuring efficient logistics chains of goods movement.

An important role will be played by the development of the Northern Sea Route, primarily for commercial transportation, with the creation of an appropriate infrastructure on the northern coast of Russia.

Measures to increase the competitiveness of maritime transport will significantly increase the share of the fleet flying the State Flag of the Russian Federation in the world's maritime fleet and significantly increase the export of transport services.

Transportation by road will grow at a high rate, which provides the most flexible response to the demands of the economy, especially the sectors of high- and medium-tech industries.

Measures aimed at the development of air transport and the use of significant advantages (primarily environmental) of inland water transport will significantly increase their share in the country's transport balance.

Of decisive importance for the formation of a modern commodity distribution network in Russia will be the creation of an integrated network of transport and logistics complexes that provide a wide range of competitive services, the accelerated development of intermodal transportation and the formation of territorial production clusters.

The development of public passenger transport will receive a significant impetus. First of all, this applies to the development of high-speed and high-speed rail transportation, all types of air transportation, urban and suburban transport.

When implementing this option, the country's transport system should develop at a faster pace than the sectors of the economy and the social sphere in order to remove the infrastructural restrictions on the country's future socio-economic development, which depend on transport.

The implementation of an innovative option for the development of the transport system will solve the main tasks facing the country, namely:

indicators of population mobility will approach the level of developed countries, which will be one of the most important factors in improving the quality of human capital in the country;

differentiation in ensuring the availability of transport services for different regions and social groups of society will decrease;

the competitiveness of domestic goods and services in world markets will increase due to the balanced development of the country's transport system;

the growth of the economic efficiency of passenger and freight traffic will optimize the transport costs of the economy and increase the availability of transport services for the population.

Comparison of scenario options leads to the conclusion that the innovative option acts as a target for the long-term state transport policy, since it fully allows to realize the strategic interests of Russia.

When moving to an innovative option, the requirements for the nature and directions of development of the transport system are most determined by the following fundamental factors:

strengthening of global competition covering the markets for goods, services, capital, and other factors of economic growth. Structural restructuring of the world economy, associated with a change in the balance between economic centers, an increase in the role of regional economic unions, the expected spread of new information, nano- and biotechnologies. This will entail a change in national and world cargo and passenger flows, an increase in the requirements for the quality of transport services;

exhaustion of sources of export-raw material type of development, based on increasing fuel and raw material exports, the need for a transition to intensive innovative development.

On the agenda is the need to diversify the Russian economy, increase the share of products with high added value in the structure of the gross domestic product, and the share of the processing industry.

As a result, the question arises of the transition from a predominantly extensive to an intensive model of development of the transport system based on innovative breakthrough technologies that improve the quality of transport services.

The second important trend is the globalization of the economy and Russia's entry into the World Trade Organization. This factor causes an increase in international and intra-industry competition, which requires an increase in the competitiveness of the transport industry.

Considering these factors and the current state of the Russian transport system, we can conclude that transport is a priority point for the growth of the national economy.

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When switching to an innovative option for the development of the transport system, it is necessary to ensure:

development of a competitive market for transport services;

availability of transport services for the population;

an increase in the share of domestic transportation and transportation of finished products in the overall transport balance of the country;

expanding the range and improving the quality of transport services based on the use of modern transport, logistics and infocommunication technologies, the development of new forms of organizing the transport process and interaction between modes of transport;

multiple increase in labor productivity and energy efficiency in transport;

revitalization of the activities of domestic transport organizations in the world market of transport services, transnationalization of their activities, the transformation of Russia into the largest exporter of transport services;

integration of the transport system of Russia into the Eurasian transport space, development of multi-vector transport links with world economic centers;

transport support for new centers of socio-economic development of the country;

high territorial mobility of the population;

increasing the innovative activity of transport companies, a radical renewal of transport and technical means, taking into account the development of domestic transport engineering, strengthening the role of scientific and technical support in the development of the transport industry;

increase in the level of professional training and qualifications of transport workers, improvement of their material and social security, creation of safe working conditions;

ensuring the reliability and safety of the functioning of the transport system, including in the field of ecology, reducing the number of accidents and disasters, injuries and deaths in transport accidents;

development and application of effective mechanisms for state regulation of the functioning and development of transport;

improvement of the investment climate in the transport industry.

At a new stage, the transport strategy should determine the active position of the state in improving the transport system of Russia as a key factor in the socio-economic development of the country. This primarily concerns improving the quality of transport services, reducing the total costs of society dependent on transport, increasing the competitiveness of the domestic transport system, and strengthening the innovative, social and environmental orientation of the development of the transport industry. Based on this, the goals, priorities and objectives of the strategic

development of transport for the long term are formulated.

The main task of the state in the field of functioning and development of transport is defined as creating conditions for economic growth, increasing the competitiveness of the national economy and the quality of life of the population through providing access to safe and high-quality transport services, turning the geographical features of Russia into its competitive advantage.

The strategic goal of the development of the transport system is to meet the needs of innovative socially oriented development of the economy and society in competitive high-quality transport services.

The achievement of this strategic goal will be ensured through the effective development of a competitive environment in the transport industry, the creation of optimal reserves in the development of infrastructure, the achievement of an advanced level of development of engineering and technology, increased attention to social and environmental factors, and an increase in the national, economic and other types of security of the country, depending on transport. To create an efficient competitive transport system, 3 main components are necessary, namely:

competitive high quality transport services;

high-performance, safe transport infrastructure and vehicles, which are needed to the extent that they will provide competitive high-quality transport services;

creation of conditions for exceeding the level of supply of transport services over demand (otherwise there will be no competitive environment).

In order to form high-quality transport services, it is necessary, first of all, to determine the parameters and quality standards, to provide incentives for their implementation and the creation of highly efficient technologies that meet quality standards, to work out the elements of technologies, the regulatory framework and methods of state regulation, and to introduce a number of pilot highly efficient technologies in the regions.

It is necessary to create conditions for the development of both internal competition (between carriers, modes of transport) and external competition (with international transit systems). Internal competition will increase the rhythm and speed up the movement of goods, reduce transport costs, increase the availability of transport services, improve the investment climate and develop market relations. This will have a positive impact on the external competitiveness and realization of the country's transit potential. Creating a market for competitive transport services involves:

development of the regulatory framework in the field of transport services (safety, environmental friendliness, quality of transport services, development of methods of state regulation of the market). At the same time, the creation of effective

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feedback in the form of a system of control and supervision is of paramount importance for regulation;

development of a high-performance transport and logistics infrastructure that ensures a competitive level of transport services (primarily commercial speed and reliability);

achievement of the advanced level of engineering and technology that provides standards of safety, environmental friendliness, efficiency and quality of transport services.

The most important strategic direction in the development of the transport system is the balanced development of the transport infrastructure. The implementation of this direction means the coordinated integrated development of all elements of the transport infrastructure based on a comprehensive analysis of statistics and the use of mathematical methods for predicting the needs of sectors of the economy and the population in transport services, developing a statistical accounting system, building a transport and economic balance, predicting the dynamics of the cargo base, analyzing models of transport development, systems in order to select optimally balanced options.

The development of the regulatory framework should provide for the harmonization of transport legislation, integration into the global system of standards and communications, the definition of standards for the quality of transport services, responsibility for their observance, as well as consumer rights. Improving the quality of transport services will require the creation of reasonable reserves in the transport system, and this, in turn, will allow developing competition in the main directions of freight and passenger traffic.

Of particular importance for the transport strategy is the improvement of the system for providing the transport industry with labor resources, which should ensure the design and implementation of projects for the development of transport systems, the operation of transport infrastructure and vehicles, the provision of transport and logistics services, etc.

An important role in the implementation of the transport strategy is played by increasing the manageability and controllability of transport development by increasing the efficiency of state regulation and management methods, and developing project management mechanisms.

In accordance with these main strategic directions of development, the structure of the main targets of the Transport Strategy of the Russian Federation for the period up to 2035 (hereinafter referred to as the Transport Strategy), its goals, priorities, tasks and implementation mechanisms is being formed. The main targets of the Transport Strategy, namely:

- general social;
- general economic;

general transport;

types of transport activities.

General social guidelines are:

the mobility of the population and the availability of transport services;

reduction of accident rate, risks and security threats by means of transport;

reducing the share of transport in environmental pollution.

General economic guidelines are:

provision by the transport industry in full of high-quality transport services that ensure the planned growth rates of the gross domestic product;

competitive level of specific transport costs in the price of final products;

increasing the commercial speed and rhythm of the promotion of consignments of goods;

use of innovative technologies for the construction and maintenance of transport infrastructure;

implementation of an effective state tariff policy;

use of modern mechanisms for the development of an economic competitive environment, including public-private partnerships;

coordination with strategies and programs for the development of related industries.

General transport landmarks are:

development of the transport network in accordance with the needs of the economy and society;

increasing the productivity and profitability of transport systems;

increasing the return on assets of the transport infrastructure;

reduction of energy intensity;

creating priority competitive conditions for national carriers and increasing their competitiveness;

innovative commodity transport technologies corresponding to the best world achievements;

preparation for transportation of high-tech products;

formation of the necessary conditions for investing in the transport industry, ensuring its development at a faster pace;

development of transport engineering and allied industries - suppliers of resources to the level necessary for the implementation of the Transport Strategy.

By type of transport activity, the guidelines are:

until 2035 - addressing issues related to the elimination of "bottlenecks", the development of throughput and transportation capabilities in accordance with federal targeted programs, as well as strategies and concepts for the development of various types of transport;

from 2035 - adjustment of these strategies and concepts, development of federal targeted programs in accordance with the results achieved, new conditions and the Transport Strategy in order to develop a single

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integrated integrated balanced transport system that meets the needs for high-quality competitive transport services. The main targets by types of transport activities for the period 2021-2035 are determined by the federal target program "Development of the transport system of Russia (2021-2035)" and its subprograms by types of transport. It is envisaged that the main targets for the types of transport activities should be updated in accordance with the goals and objectives of the Transport Strategy. It is advisable to carry out these adjustments in 2024, taking into account the results achieved and new features of transport development. Anthropologist from the European University at St. Petersburg E.V. Lyarskaya offers an original definition of the boundaries of the Arctic: "The Arctic is where the timetable ceases to make sense." Despite the availability of modern technology and the possibility of navigation, this phenomenon is typical for the North. Anthropologist and expert on nomadic peoples A.V. Golovnev in his book "Ethnoexpertise on Yamal: Nenets nomad camps and gas fields" develops the concept of the specificity of the constantly moving Arctic world. For a person living in middle latitudes, movement is an unusual state, which confirms the existence of goods "on the road" or a special regime for believers that

allows travelers not to fast. For people living in the North, being on the road is the norm, only those who cannot move (the sick) stay in one place. which confirms the existence of goods "on the road" or a special regime for believers, allowing travelers not to fast. For people living in the North, being on the road is the norm, only those who cannot move (the sick) stay in one place. which confirms the existence of goods "on the road" or a special regime for believers, allowing travelers not to fast. For people living in the North, being on the road is the norm, only those who cannot move (the sick) stay in one place.

The cult of movement that exists in the Arctic is justified from the point of view of common sense: if you don't move, then midges and mosquitoes will "eat" in the summer, except for rare periods with a very high density, in winter you can freeze. In order to stop and stay in one place, in the North, a person needs to take special actions: build a shelter, invest resources, make efforts for heating. As illustrations for the book by A.V. Golovnev used symmetrical photographs of reindeer argish and a train moving along the Yamal Peninsula. Moving around the North requires taking into account certain subtleties, even with modern technology, so the parallel with deer is not accidental (Figure 1).

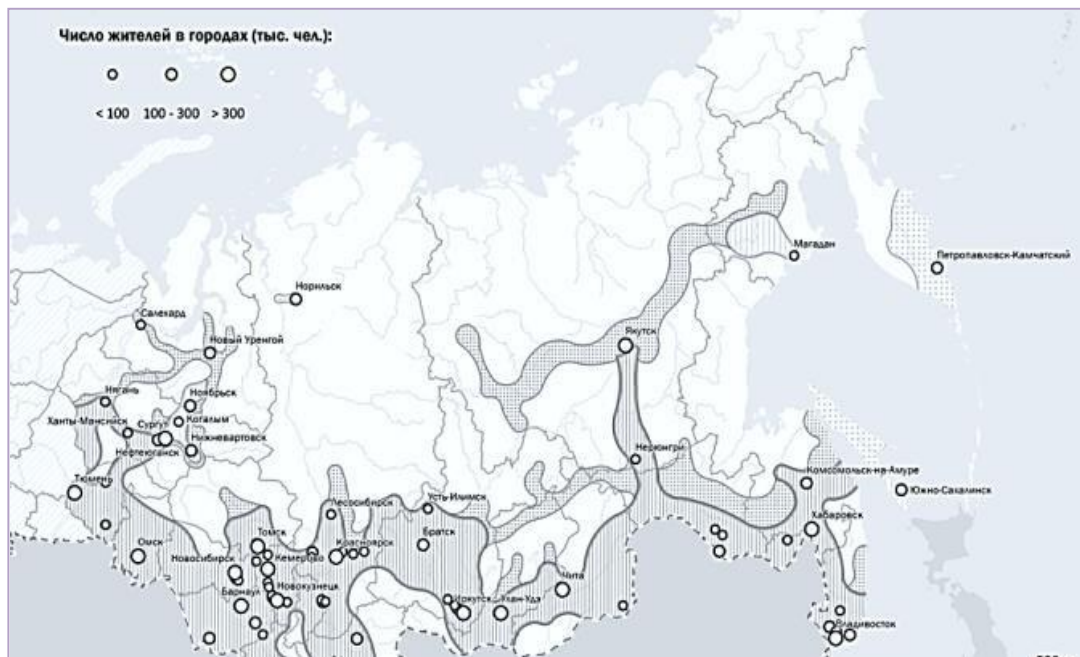


Figure 1 - Off-road and areas of non-alternative transport.

The motto is "The Arctic is movement", but it is followed by a paradoxical conclusion: the Arctic is off-road. Traffic in the Arctic region has a specific character, the traditional transport network practically does not reach the Arctic territories. Off-road is a feature that leaves its mark on all aspects of life in the Arctic, both in Russia and abroad. In Figure 1, off-

road areas are the lightest, gray areas in the north are areas with no alternative transport. If something happens to the key road of the area, then this event is equated to a natural disaster, for example, the blurring of the only road leading to the city of Churchill (Canada) led to a tenfold increase in food prices. Food had to be delivered by helicopter, an expensive

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vehicle. Without alternative northern transport is reflected in the definition of sustainability and reliability of life in the North. The local road to the airport "Alykel" in Norilsk is regularly swept during snowstorms. In the song "Morzyanka" by V. Troshin there are the words: "There is snow all around, at least hundreds of miles to travel."

The north of Russia is the territory of river and air transport. A map showing the density of roads of various types reflects the degree of increasing inaccessibility of the northern territories: roads of various quality reach the regions of Kolyma and Chukotka, and there are almost no railways in the entire northeast of the country. At the same time, the Arctic and the north-east of Russia are a zone of landing sites for air transport. It should be noted that small aviation is currently almost lost, so the issue of its development is at the state level. To do this, it is necessary to develop new types of aircraft, because the AN-2 aircraft is finalizing its age (it is no longer produced), and the transition to helicopters is not economically viable. On the map - Figure 1 of the accessibility of the regions of the world, the brightest are the zones with cities (population of at least 50 thousand people), the travel time to which is several hours, the darkest - several days (d - days). Regions are available, as well as to other desert areas of the world. Recently, experts from Australia and Arizona (USA) have begun to study the Arctic, since the problems of the regions turned out to be close. It should be noted that a separate scientific direction is being formed that studies the features of remote regions of the world.

If we define the boundaries of the Arctic in an economic way, then, first of all, we will have to talk about its remoteness from the main transport routes and economic centers. This is reflected in the daily life of people in the form of a rise in the price of products, the delivery of which takes a long time and with a large number of transfers, which requires additional costs. The cost of food products in the Yamalo-Nenets Autonomous Okrug for 2022 shows that the price of individual items (beef, butter, milk) may differ by two or more times from the industry average. A winter road leads to the largest Krasnoselkupsky district of the district - a motor road, the operation of which is possible only at sub-zero temperatures. This means additional transshipment, for transportation on a winter road, special vehicles are required that consume a lot of fuel: off-road Ural trucks or all-terrain vehicles on ultra-low pressure TREKOL ("Ecological Transport") tires that do not damage the thin tundra cover. The Yamal district of the district is the third zone of inaccessibility, to which there are two ways: by rail from Surgut to Novy Urengoy and from Labytnanga to Salekhard (in summer - by ferry, in winter - by ice crossing, until the ice has become - under certain conditions, ships move on air cushions, which is dangerous and reduces the carrying

capacity).

From the point of view of the economy as a whole and the efficiency of the industry, the absence of transport means the absence of development. The Tomtor deposit of rare earth metals is located in the north-west of Yakutia, rare earth minerals occurring there ("new oil") are necessary for the modern technological order, they are used in the production of communications equipment and electric vehicles. The project for the development of the deposit is included in the state program "Industrial Development and Increasing its Competitiveness". Many oil fields discovered during the Soviet era have not yet been developed due to lack of communication. If the field is located on the coast, oil can be exported using tankers, but in the Arctic Ocean they can not always go directly to the coast, which can be shallow. Therefore, economic activity in the Arctic is always a balance of transport accessibility and the efficiency of raw material extraction. In this aspect, the region is in the past, economic geographers are well aware of the idea that the Earth has become flat.

Off-road is strongly reflected in the psychology of the northerners, who are very keenly aware of their isolation. In the 30s of the 20th century, the only connection with a number of territories was a caravan of waterways (a line from a song about the regions of Kolyma: "Do not swear from evil longing, the last caravan is going to the mainland"). The instability of air travel imposes certain requirements on the reliability of systems and means of life support for cities in the Arctic region. 30 years ago in Norilsk there was an accident on the gas pipeline, which could leave the city in winter (at a temperature of -40°C) without heating. When considering the evacuation of people, calculations were made that determined that if the planes took off one after another, then it would take more than two months. In order to launch the gas pipeline, the whole city worked, up to that in kindergartens dumplings were made for the liquidators of the accident. Transport isolation is the need for mutual assistance, the ability to mobilize and do more than just one's job. When considering the prospects for the development of the Arctic and life in a northern city, it is necessary to take into account an additional miscalculation of risks and reliability, and the courage of people is also necessary. Despite the fact that since the 1930s a lot of efforts have been made to make the Arctic look like the European part of Russia, it does not give in.

Potential transport routes

➤ **Northern latitudinal course**- a railway line under construction in the Yamalo-Nenets Autonomous Okrug with a length of 707 kilometers. Route: Salekhard - Nadym - Novy Urengoy - Igarka - Dudinka - Norilsk. Less likely is the launch of a segment of the route Korotchaevo - Norilsk, more likely that the capital of the region, Salekhard, will connect with the main economic centers, primarily

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Novy Urengoy, almost along the route of the "dead Stalinist road", which was dismantled after the death of I.V. Stalin.

➤ **Railway "Obskaya - Bovanenkovo - Karskaya"**- the northernmost of the operating railways, built by JSC "Gazprom". It is expected that it will have a number of branches to other fields.

➤ **Project "Ural Industrial - Ural Polar"** assumed the laying of the railway to the south through potential areas for the development of minerals (mainly ore). The project is currently on hold.

➤ **"Belkomur"**(White Sea - Komi - Ural) - involves the connection of the White Sea through the Perm Territory with the Ural railway networks in different versions: connection of a new branch with Arkhangelsk; a branch line to the projected port of Indiga, located on the coast of the Barents Sea. The port is convenient, but minerals have been found at a great distance from it.

You can get acquainted with many problems of the region's development prospects on the example of the city of Igarka, located on the banks of the Igarskaya channel of the Yenisei in the Krasnoyarsk Territory. The first Soviet city built in the Arctic was founded in 1929, the population in its entire history has never exceeded 25 thousand people, at present it is about 4.5 thousand. With the colorful and characteristic history of Igarka, it is worth starting to study the Arctic, because that it is a warning of a multitude of scenarios.

The scheme of organization of traffic flows in the North zone shows that a significant part of the territory is occupied by the off-road zone. If air transport and winter roads are not taken into account, then water transport remains - rivers (in the diagram from left to right: the Ob, Yenisei, Lena), the railway (black dotted line) and the Northern Sea Route (blue line). The red circles indicate the southern entrance bases off-road - the ports where shipment from rail transport to river transport is carried out. In the case of r. Yenisei is Lesosibirsk, Yeniseysk and Krasnoyarsk, on the river. Ob - Surgut, on the river. Lena - Osetrovo. The northern entry bases off-road are ports (blue circles), where shipments from the Northern Sea Route to river transport (Dudinka, Igarka, Pevek, Tiksi, etc.) take place. One of the key transport routes in the Arctic - the city of Igarka is located at the exit of the Yenisei to the Northern Sea Route (marked with a red star). From the Angara region and the upper reaches of the Yenisei, the timber was transported in rafts to Igarka, where it was reloaded onto sea vessels. The uniqueness of the location of the city was that the width and depth of the Yenisei River allowed ships with a wide draft to enter several hundred kilometers to Igarka. With the beginning of the shipment of timber in the 30s of the twentieth century, the systematic use of the western wing of the Northern Sea Route began through Igarka, which was originally

called "Komseverput" and was controlled by the Committee of the Northern Sea Route. The long Northern Sea Route made it possible to establish a military threat; earlier attempts to provide trade communications failed. Kupets M.K. Sidorov, author of the book "North of Russia" failed to establish trade links with the European part of Russia and Western countries from Krasnoyarsk along the Yenisei and further through the future fragment of the Northern Sea Route. Mentor of the future Emperor, General N.V. Zinoviev in response to the project of M.K. Sidorov in 1867 "On the settlement of the north of the Empire, on the improvement of the situation of its inhabitants and on the development of foreign trade" wrote the following: "Since there is permanent ice in the North, and arable farming is impossible, and no other industries are unthinkable, then, in my opinion, it is necessary to remove the people from the North in internal countries of the state, and you are busy on the contrary and explaining about some kind of Gulf storm, which cannot be in the North. Such ideas can only be promoted by lunatics." The unwillingness of the tsarist government to deal with the North before the Russo-Japanese War is characteristic. Comrade I.D. Papanin at the 18th Congress of the CPSU (b) in 1939, beginning with the words "Dumb-headed tsarist officials did not see the vital need to master the Northern Sea Route," was a direct response to this position.

Having been refused, M.K. Sidorov published an announcement in the foreign press, which attracted the attention of the English captain Joseph Wiggins. From 1874 to 1894, D. Wiggins conducted eleven trading voyages to the mouths of the Siberian rivers and back, and proved the possibility of using the Northern Sea Route. In 1877, on the initiative and at the expense of M.K. Sidorov, the first voyage of the schooner "Morning Dawn" from the Yenisei to St. Petersburg was made. The expedition was carried out by Captain D.I. Schwanenberg, who had to change the ship and spend the winter on the Yenisei, while part of the crew died. The new composition included a sailor exiled to Siberia, who was met in St. Petersburg with shackles, but was subsequently released. Sweden met the hero Niels Nordenskiöld in a different way, who committed on the schooner "Vega".

Regular export of Siberian timber through Igarka was established due to its unique economic and geographical position:

- **geographic microlocation:** on the Yenisei, which is several hundred meters wide, there can be serious storms, but the Igarskaya channel allowed ships to settle and winter safely. Port facilities located in the channel are less prone to destruction during the ice drift, which demolishes port cranes in Dudinka, located downstream (they still have to be lifted annually to a hill).

- **transportation methods:** in the days of the USSR, according to the bold decision of Volzhanin

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B.V. Lavrov, who manages export operations, self-raffing of timber in rafts was established.

Lesson #1: the importance of finding a good junction between highways and off-road, but for specific technological capabilities. The geographical position of Igarka can be considered as a field that was discovered, gave a powerful positive effect, but eventually exhausted itself.

The Norwegian Jonas Lied was an entrepreneur, diplomat, writer, citizen of the Russian Empire, citizen of the USSR and supporter of trade in the Yenisei region. For its organization, J. Lid met Nicholas II, A.V. Kolchak, V.I. Lenin, F.E. Dzerzhinsky, G.V. Chicherin. Even before the Revolution of 1917, J. Lid made a lot of efforts to create the Ust-Yeniseisk transit point and was understandably jealous of the construction of Igarka. He founded an enterprise that assumed a two-way flow of goods: in order to produce export products (fabrics, oil), machine tools were imported to the Krasnoyarsk Territory. The second powerful interchange station was planned to be organized in the area of Belushya Guba, in the book "Siberia - a strange nostalgia" Jonas Lid recalls: " The plan called for the transportation of various types of goods across the Kara Sea using a flotilla of specially built and cheap to operate icebreaking tugs and barges. For this, it was mainly necessary to build a deep and ice-free harbor in Belushya Guba, which on the western coast of Novaya Zemlya is located about 160 kilometers north of the Kara Strait and not much less south of Matochkin Shar. To use one or another channel from the Kara to the Barents Sea, a tug with a caravan of barges from Ust-Yeniseisk and Nakhodka could make five round trips in one season. Large cargo ships from the west would unload and load in Belushya Bay and could make as many voyages as in any European harbor. At present, the center for the development of Novaya Zemlya and the military command of the units stationed there are located in Belushya Guba. Transshipment of goods from one mode of transport to another for the regions of the North remains relevant. Gazprom Neft uses ice-class tankers to deliver raw materials from the production area (Cape Kamenny) to the city of Murmansk, where it is reloaded to the floating oil storage facility UMBA, which delivers oil of class and relatively small displacement (compared to tankers that can be used in the Atlantic), which is economically disadvantageous.

This scheme has been used since the mid-90s of the twentieth century, when tankers were used to export oil, following the route along the Ob River to the Khanty-Mansiysk Autonomous Okrug. In 1999, the RITEK company developed a transport scheme for the export of oil produced in the Priobye by river tankers during the ice-free period. The use of the Northern Sea Route makes it possible to avoid mixing high-grade oil produced at a number of fields with the cheaper grade Urals. If one pipe of an oil pipeline is

used for transportation, then the oil mixed in it will be sold at the lowest price, which emphasizes the problem of the lack of alternatives to transport.

The Belokamenka supertanker is one of the world's largest floating oil storage facilities with a displacement of 360 thousand tons, a length of 340 m, a width of 65 m and a side height of 35 m. in the United Arab Emirates. Over 81 million tons of crude oil were transhipped through Belokamenka during its operation. In Europe, the use of such tankers is prohibited without sufficient reinforcement of the sides and tanks, which can lead to an oil spill. In 2022, the place of Belokamenka was taken by the vessel UMBA.

Transport accessibility turns the remote outskirts into the periphery: diversity and self-sufficiency are reduced.

- the basis of diversification and sustainability is the local knowledge infrastructure (universities, research centers), but in 1977, in order to optimize, a branch of the Krasnoyarsk forestry technical school was closed in Igarka;

- in 1983 - due to the appearance of the central television, local television was closed, the production of vegetables and selection work were stopped;

- The problem of fresh food is acute not only during times of crisis, but also during the heyday of the city, when it is included in good transport networks: the prices for vegetables and fruits that are delivered in non-marketable form increase.

- Since the 1990s, there has been a gradual decrease in the population following the collapse of the city-forming enterprise.

- the project "Zapolyarnaya Igarka: the archive revives the city" involved the creation of a city-museum. Potentially, the idea could be implemented, the capital of the Soviet Arctic has something to show: the Museum of Permafrost, the House of Crafts, the "Dead Stalinist Road", the work of architects and writers, hunting, fishing, the exceptional beauty of the Yenisei. The city of Dawson (Alaska) - the "capital of the gold rush" with 2 thousand inhabitants is a popular tourist center.

- the upper timber processing plants begin to use the railroad for timber export, it ceases to flow to the city of Igarka, in the absence of raw materials, the sawmill transshipment plant is closed. Up to this point, the employees of the plant are paid wages in coupons for products that are almost impossible to buy, but on the black market they can be exchanged for money at an unfavorable rate. In a better position were people associated with the extraction of fish, who had the opportunity, for example, to send their children to study in Krasnoyarsk.

- introduction of "icebreaking collection" - thanks to the appearance in the 70s of powerful nuclear icebreakers, navigation along the Northern Sea Route began. They are expensive to operate: a

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number of large companies (Gazprom, Novatek) use their own vessels to transport oil, Yamal LNG and Norilsk Nickel try to do without icebreakers, using ice-class vessels. During the transition to self-sufficiency in the 90s, the Murmansk shipping industry, to which the nuclear fleet passed, "pushed through" the introduction of a tonnage due for passage along the Northern Sea Route for all ships, regardless of the season (even in the summer, when icebreakers are not used). Officially, this decision was justified by the need to maintain the navigation economy of the Northern Sea Route, unofficially - to save the icebreakers.

We can say that the victory over seasonality in the Arctic region is approaching, but it paradoxically "kills" the traditional sectors of the economy. Having learned that the Igarsk forest was being taken out during the escort of nuclear icebreakers, J. Lid proposed to the Soviet government a project to use cargo submarines for the Yenisei voyages. The world's first nuclear-powered LNG transport submarine is indeed being developed. There were a lot of discussions on the question of the expediency of preserving the icebreaker fleet, which exists only in Russia. Despite the fact that large companies try to avoid the use of pilotage by nuclear-powered icebreakers, in unstable ice conditions they often have to be called in for help.

The victory over the Arctic is the death of small forms. The similarity between the Arctic and African regions lies in remoteness, as well as in a low level of economic development, including low solvency. In the traditional economy, the land is cultivated with the help of hand tools, the equipment that has appeared requires fuel and lubricants, that is, it is expensive to maintain. The economic sectors that could exist in the 30s of the last century with a semi-handicraft organization do not survive in modern conditions. Officially, the Northern Sea Route starts from the Kara Gate, and everything located to the west of Novaya Zemlya is not legally it. The main transport vector of the Northern Sea Route is the vector to the west, where nickel, natural gas and oil are supplied from Yamal. The most severe conditions are noted on the eastern part of the route, therefore, in the days of the USSR, the Lena Diameter existed - part of the cargo was not circled around Taimyr, but along the river. Lena was brought in with an overload, for example, to Kolyma. The website of the Administration of the Northern Sea Route publishes information about the constantly changing navigational and hydro situation. In the course of icebreaking assistance, the icebreaker crushes ice floes 2-2.5 m thick, which remain in the formed corridor. Vessels are currently being designed to handle 4m ice and are equipped with an Azipod rig that gives greater maneuverability, including 360-degree rotation, which is especially important when working in ice. There are situations when icebreakers

get stuck, ice floes flying out from under them can hit the hull of the following ship. Depending on the ice conditions in the winter and summer periods, icebreakers are escorted by vessels of different ice classes. The dilemma of the strategy for the development of modes of transport on the Northern Sea Route: Icebreaker + caravan or smaller ice-class vessels. Leading Russian and foreign design institutes, shipyards and shipowners took part in the development of the new high ice class tanker (ARC7).

Currently, the FSUE "ATOMFLOT" fleet includes four icebreakers:

- type Arktika: "Yamal" and "50 Years of Victory" - work in the ocean;

- Taimyr type: Vaigach and Taimyr are low-draft icebreakers needed to navigate through freezing river mouths;

- the construction of the heavy-duty nuclear icebreakers "Leader" (length about 209 m, icebreaking capacity - 4.3 m), the universal icebreaker "Arktika", serial icebreakers "Sibir" and "Ural" in deep water).

The crisis of the 1990s in Russia and the "icebreaking collection" led to a sharp decrease in the volume of transportation along the Northern Sea Route (1.8 million tons in 1998), but thanks to the Yamal LNG project, the situation began to improve (2016 - 7, 2 million tons). Decree of the President of the Russian Federation dated May 7, 2018 No. 204 "On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024" assumes that the volume of traffic by 2024 will reach 80 million tons. An increase of almost 10 times will occur due to the launch of the Arctic LNG 2 project, the operation of the Norilsk Nickel oil production complex, the operation of Yamal LNG and coal deposits in Taimyr.

The Northern Sea Route mostly passes close to the coast, in some places (Kara Gates) the ice conditions are so heavy that it is easier to get around Novaya Zemlya from the north. The climate is changing towards warming, the ice cap around the pole is gradually decreasing, according to forecasts, by 2050 the entire Arctic Ocean will become almost free of a continuous cover of ice (with the exception of icebergs). There is a prospect of using neutral waters in the region of the Pole for international navigation and ending disputes for the right to pass through the Northwest Passage (Canada, USA) and the Northern Sea Route (the Americans are trying to prove that its territory is international).

The port of Sabetta provides work on the production and export of natural gas (17 million tons per year) of the Yamal LNG enterprise. The population of Sabetta is about 20 thousand people. This is a period of prosperity, the beginning of a new cycle of development of natural resources. Like Igarka, Sabetta is a modern "showcase" of a city built in the tundra under the most difficult conditions. In the

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news, you can see the world's first icebreaking gas carrier "Christophe de Margerie", ordered for year-round transportation of LNG within the framework of the Yamal LNG project, VIPs visiting Sabetta, including the President of the Russian Federation. At the competition for painting an LNG storage tank, the project of the artist who proposed the image of a can of condensed milk won. Remembering the history of the city of Igarka.

Conclusion

➤ Technical difficulties or disbelief are examples: building on permafrost in the Arctic or building the port of Churchill in Canada. Many of the roads that were built began to function despite the notion that this was impossible. The governor of Alaska noted that the first railroad contributed to the development of the central part of the country, but as a transport project it was on the verge of payback. Throughout the 20th century and up to the present time, discussions about the possibility of using airships in the North have not stopped. Obstacles to the implementation of this idea are: wind, the high cost of helium and the explosiveness of hydrogen.

➤ Special qualification requirements: for driving on a winter road, for passing in a caravan behind an icebreaker, for driving special vehicles. The Soviet writer V. Konetsky writes: "It is better to get hit in the stomach yourself than to feel how ice floes flying out from under the icebreaker hit the ship's hull." An icebreaker can pass through ice not exceeding 2-2.5 m in thickness, the most modern - up to 4 m, hummocky ice is impassable. Vessel navigation in ice conditions requires its reconnaissance, carried out either by remote means (satellite) or by aviation. Thus, navigation along the Northern Sea Route is a complex technical and science-intensive process.

➤ Additional maintenance costs: The winter road is expected to be built virtually anew each year.

➤ Additional transshipment / reloading, sections of the way on which different modes of transport are used.

➤ Megaprojects or off-road transport - megaprojects inevitably leave vast territories "overboard", "small forms" allow continuous development of space

A high official of one of the northern regions, in response to a proposal to support a small project to create all-terrain vehicles, for which residents have a high demand (which indicates that it will be present in other similar regions, including foreign ones), replied: "Am I invited to engage in zhivopyrkami?". It should be noted that "zhivopyrki" is an innovative future, since the largest company "Bombardier" started the release of its wide product line with snowmobiles, and Silicon Valley - with structures assembled in a garage. Now in Russia in garages they assemble equipment designed to overcome the Arctic off-road and is a

niche of competitiveness. One of the first Canadian tundra planes, the F-11 Husky ("Bush plane"), was made by an American firm in Quebec, the whole of Canadian shipbuilding grew out of this project. Bombardier produces not only airplanes and snowmobiles, but is also a major manufacturer of rolling stock and services for the operation of rail transport.

Despite the small number of people living in the Arctic region of Canada, the country is very Arctic in terms of economic specialization. When in Russia they talk about construction in the Arctic, then by inertia they are talking about the construction of large cities with a population of up to 100 thousand people. The development of the Arctic is also technical development:

- a center with a test bench for research of aviation technology and automotive technology (icing, low temperatures) was built in the city of Thomson;

- a test center for helicopters has been opened in the city of Yellowknife, Yakutia has been fighting for this for a long time;

- The history of sliding vehicles designed for off-road movement is being studied by the Ural group of northern design. Researchers, constructors and designers, from the point of view of a scientific approach, consider traditional household items of indigenous northern peoples, for example, sleds. Modernization of traditional Nordic ideas allows the design of modern transportation systems, shelters and clothing. Such areas should be given no less attention than large projects, such as the construction of a highway, because the new road will not be able to work effectively without the support of small capillary projects.

Summing up the consideration of the Arctic transport, it must be emphasized that it has two "wings": Features of the natural and socio-economic conditions of the Arctic, which reduce the effectiveness of traditional methods of management, namely:

- **seasonality**- associated with climatic features, affects the availability of food and its cost, transport accessibility (winter roads, summer navigation), features of industrial production and the work of housing and communal services;

- **social seasonality**: northerners have a long vacation, which is more important for them than for residents of central Russia. Thus, during the summer period, there is a shortage of labor in all sectors at once, including the medical and commercial sectors;

- **seasonality in the extraction of raw materials**: The American model of oil development calls for all installation work to be carried out from frozen sites to ensure environmental responsibility and not damage the thin tundra vegetation. Currently, the commissioning of the Tomtor deposit of rare earth metals in Yakutia is being considered. The need to

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transport ore with a low radiation background (less than in an airplane) caused protest movements in the region, which Khatanga joined, where it was planned to store ore for six months, since its transportation is possible only by winter roads;

- **low population**- does not make it possible to create the necessary market volume, and is also the reason for the lack of specialists, which is recognized as the main problem in almost every northern village. To eliminate it, both in Russia and abroad, a lot of special measures and benefits (payments, provision of housing) have been developed. Having provided remote settlements with modern technology, it is necessary to provide them with specialists serving it. At the same time, trained experts often leave remote areas.

In different regions of the Arctic, development is proceeding in two main directions (depending on the situation), namely:

- **scrapped:** implemented in the frontier regions - "Let snowstorms rage nearby, it will be necessary - we will melt the ice" (a line from a song of the 60s). In the process of developing new and resource-rich territories, instead of seasonal navigation, an efficiently operating highway is mastered - the Northern Sea Route, the environment is being arranged: roads are being laid, cities are being built.

- **fixture:** in the absence of a significant resource in the Arctic regions, special laws begin to work. As symbols of ongoing processes, you can use a house on stilts, built in such a way as to protect the permafrost from the thawing process, and sleds - the most efficient northern transport.

Principles of effective organization of management in the Arctic:

- **concentration**- alternation of active and passive phases, vigorous activity is concentrated in compressed time and space intervals, for example, an enterprise needs to bring in equipment, spare parts, fuel (preferably with a margin) during the season;

- **polyfunctionality** - the traditional principle of managing in the North (the deer is both transport, food, and clothing), the key to the innovative development of remote settlements through the institution of local multifunctional innovation centers;

multifunctionality of the Arctic in modern conditions, namely:

- **at the level of individual enterprises and settlements:**

- dissemination of practices of self-sufficiency with food;

- heat and power supply based on local and/or renewable resources, consistent transition to distributed energy;

- **at the level of individual specialists:** specialists traditionally take on a number of functions that, in the conditions of inhabited territories, are

delegated to individual organizations or professionals. In general, in the Arctic regions, the combination of professions is more common than in the southern regions: medical workers master broad competencies and can provide assistance in more cases; a driver in the North must have the skills to repair a vehicle;

- **mobile infrastructure**- alternate use of the resource by users located remotely from each other, for example, mobile slaughter complexes for deer;

- **zoning**- territorial differentiation of priorities, target indicators and mechanisms of socio-economic development, consistent with the main provisions of the Strategy for Spatial Development of the Russian Federation;

- **most developed areas**- are the place where it is most expedient to place the support bases for the development of the Arctic. Increasing the efficiency of the economy in the most developed areas should be ensured by measures developed for densely developed territories, including year-round and round-the-clock transport accessibility;

- **buffer zones**- transitional not only in space, but also in time. Buffer zones are areas of active economic development, for which a consistent set of measures should be planned, focused either on gradual "additional development" to the state of a developed territory, or on a long-term curtailment of activities, reclamation of the territory and its return to a "natural" state. The first case involves the development of a road network, the second - the closure of sites. Controlled compression is a difficult decision, involving understanding the dynamics of the development of the territory and considering the possibility of its "revitalization". In a 1961 paper, economist S.V. Slavin noted that stopping the work of the "dead railway" (Salekhard - Igarka) was the right decision, since it is impossible to build in such harsh conditions in the north of the Yamalo-Nenets Autonomous Okrug, the road towards the city of Norilsk is possible only along the river. Yenisei. In the same year, F. Salmanov discovered large oil reserves in Western Siberia, and a few years later new railway lines were opened. Preservation of the "dead road" would save the Soviet Union a significant amount of money. We emphasize that the development of the Arctic territories took place with great difficulty, so complete elimination is not advisable.

- **least developed lands**- the classic hard-to-reach, roadless Arctic with the most severe conditions, where the implementation of the triad of principles is especially effective: impulsiveness, mobility, multifunctionality. The fight against off-road involves investment in the development of off-road transport.

Policy implementation success criteria:

- **traditional:** large investment projects that provide jobs for thousands of jobs often involve costs that are not comparable to the benefits, the northern territories need not quantitative (many workers), but qualitative indicators (skilled specialists);

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➤ **arctic:** territorially differentiated efficiency criteria.

- **Poor cell and internet coverage** and low reliability: they hinder the socio-economic development of the regions, lead to difficulties in providing emergency assistance, hinder the development of tourism and a positive perception of the region, and lead to problems in production. Laying fiber optic cable along the Northern Sea Route faces political challenges, permafrost creates problems for laying cables over land, and it is difficult and expensive to provide Internet communications via satellites in elliptical orbit ("Yamal"). There are plans to implement the total coverage of the territory with Internet communications as a pilot region for a low-orbit satellite communications project ("Sphere" or an analogue). Several projects are working on creating a network of several dozen satellites.

- **Low density of year-round roads, lack of terrestrial communication with all settlements** as a result - high transport costs. Solution: building roads and developing new forms of off-road transport. In Yakutia, a new type of airship was tested, the idea of using them appeared long ago, but it faced a number of problems.

- **Seasonality, including the seasonal nature of the delivery of goods.** To solve this problem, it is necessary to provide for the replacement of the northern delivery with local resources. Architects in Alaska include in the design of the house the possibility of a one-time delivery of all the necessary materials to a remote village by one small-engine aircraft.

- **Periphery/remoteness - low susceptibility to innovation** in peripheral rural communities due to the lack of human capital and material resources, as a result - the high cost of life support. For example, there is a high demand among the administrative structures of a number of territories for information about new technologies and features of self-sufficiency, for example, the construction of a dam in difficult climatic conditions. The solution is to use in the Arctic the methods used in the field of social innovation, when a specific person is selected as an intermediary between the local community and the carriers of new technologies, for example, a teacher who is able to introduce and use innovations (wind power plant).

- **The high cost of life support for remote settlements.** The solution is the provision itself or the elimination of settlements. The key factor for choosing a strategy is the decision of the inhabitants. In foreign Arctic regions, there are works dedicated to helping small communities in a crisis situation, the first proposal in them is to search for a local leader (and not an investor). In some settlements, representatives of older age groups support the idea of resettlement, in others, it is advisable to use a flexible system of legislative standards. A person who wants

to live in the wild in Alaska independently builds a road to his house and installs solar panels, freeing local authorities from the need to deliver fuel and a socially significant set of products to him. Russia fulfills a wide range of social obligations, the impossibility of providing them paradoxically leads to the liquidation of remote settlements. Therefore, people should have the right to make lifestyle choices - while taking responsibility for their lives and health.

- **High construction cost**, as a result - low rates; the use of non-adapted technologies, as a result - a high level of accidents. Solution: creation of a pilot quarter to select the best design and technological innovations for the Arctic regions.

- **High transport costs for the import and export of agricultural products**, low demand in the Russian market. To solve the problem, there is a range of possibilities: promotion of products to the markets of large cities of Russia and to foreign countries, development of gastronomic tourism and infrastructure for primary processing of products, sales in corporations of subsoil users. For the Nenets Autonomous Okrug, the traditional approach is the delivery of products produced throughout the district to the regional center - the city of Naryan-Mar, while in the eastern part of the region there are winter roads that provide the opportunity to use a much shorter route to the city of Vorkuta, in the western part - faster and it is easier to export products to the city of Arkhangelsk through the city of Mezen. Note that the Arctic almost always requires non-standard solutions.

- **Threats of degradation of the traditional way of life of indigenous peoples and the ecology of the environment.** Solution: distance education for representatives of the indigenous peoples of the North, including the development of textbooks in national languages, the introduction of the practice of nomadic schools, the creation of digital archives of culture, including recordings of traditional folklore and rituals, the involvement of representatives of indigenous peoples in the creation of video products, the development of computer games. Ensuring a healthy lifestyle, including self-diagnosis based on the use of automated medical devices, educational work and a "hot line" for residents of remote settlements. In nature management: the use of digital technologies, the use of unmanned aerial vehicles to optimize the routes of movement of herds, control the quality of the state of pastures, and warn of predator attacks.

- **Low level of entrepreneurship development** driven by a number of barriers:

- **institutional-** the need to provide northern benefits provided for by the Labor Code of the Russian Federation;

- **natural-** heating and capital construction costs;

- **economic** - high transport costs.

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Solution: compensation for the costs of entrepreneurs aimed at providing northern benefits, or revision of the preferential system.

References:

- (2018). *Prospects for the construction of the North Siberian Railway*. Retrieved 11/15/2018 from <https://tass.ru/transport/3296879>
- (2019). *North Siberian Railway*. Retrieved 03/09/2019 from <https://dic.academic.ru/dic.nsf/ruwiki/357114>
- (1969). *The document was approved by Order of the President of the Russian Federation dated September 18, 2008 No. 1969*.
- Alekseev, V. (n.d.). *From the heart of Asia to the threshold of the European Arctic*.
- (2002). *Problem Regions of the Resource Type: Economic Integration of the European Northeast, the Urals and Siberia* / Ed. Academicians V.V.Alekseev, V.V.Kuleshov and Professor M.K.Bandman, Novosibirsk.
- Basov, V., & Dmitrakova, T. (n.d.). *"BAM-2" approved*. Retrieved from http://newchemistry.ru/letter.php?n_id=7591
- (n.d.). *History of the North Siberian Railway*. Retrieved from <http://www.loglink.ru/massmedia/analytics/reco rd/?id=1060>
- (1854). *Northern Sea Corridor - on the way to the future*. Retrieved from <http://www.barents.no/cppage.4951854-142772.html>
- Vasiliev, A.V. (2011). Arctic: a new vector of development. *Arctic. Ecology and Economics*, No. 1, pp.20-25.
- (2014). *State program of the Russian Federation "Socio-economic development of the Arctic zone of the Russian Federation for the period up to 2020"*: Decree of the Government of the Russian Federation No. 366 dated April 21 2014.
- (2014). *On the land territories of the Arctic zone of the Russian Federation: Decree of the President of the Russian Federation No. 296 dated May 2, 2014*.
- Tsukerman, V.A. (2012). Conceptual foundations of innovative industrial development of the North and the Arctic. *North and the market: Formation of the economic order*, No. 3, pp. 139-143.
- Kozmenko, S.Yu., Selin, V.S., & Shchegolkova, A.A. (2014). Peculiarities of the demarcation of the maritime space of the Arctic. *Marine collection*, No. 5, pp. 41-44.
- (n.d.). *Zhuravel Valery Petrovich - Ph.D., Associate Professor, Leading Researcher, Head of the Center for Arctic Studies of the Institute of Europe of the Russian Academy of Sciences*.