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Transport Support for the Socio-Economic Development of Russia

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Abstract

The competitiveness of the country's economy, the realization of its transit potential and citizens' life quality is largely dependent on the transport complex efficiency. The role of infrastructure sectors in the formation and development of the region as an object of management and a multi-level production system is increasing. In this regard, the development of infrastructure sectors at the regional level is one of the key state policy priorities. The article examines the key indicators of transport security of the federal districts' economy of Russia. It has been revealed that the priority direction of railway transport development is the modernization and expansion of the appropriate infrastructure for direct Russian supplies of a wide range of industrial consumer goods, chemicals, fertilizers, metals, to the ports of the Persian Gulf and further in this direction to the final destinations in India, Southeast Asia, the Middle East, Africa and China. The North-South international transport corridor is becoming a full-fledged option to other key cross-border transport corridors: transporting goods through the ports of the Azov-Black Sea basin or through the "Eastern Polygon" (the railway network within the boundaries of the Krasnoyarsk, East Siberian, Trans-Baikal and Far Eastern Railways). The problem of the discrepancy between the needs of the country and the level of infrastructure provision is acute especially related to passenger transport. Despite the growth of cities, passenger transportation by public transport is declining, which is directly related to the growing motorization, which causes an increase in traffic flows, with a mismatch in the capacity of city streets and roads. The motorway traffic high dynamics causes major problems connected with decreasing road safety, in monetary terms increasing transport costs and the trip duration. The creation of a high-speed passenger traffic infrastructure will reduce congestion on the roads and simultaneously increase the population mobility.

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Keyords

Transport infrastructure, transport provision, transport corridors, federal districts, throughput capacity.

Introduction

Transport refers to the infrastructure sectors, the products of which are universal and being considered the leading branch of material production, greatly effects country's economy development, strengthening interregional and international economic ties, improving the welfare of the population [Livshits, 1986], is a consumer of labor and material resources, determines the location of productive forces and affects the socio-economic structure of society The cultural level of the population plays an important role in foreign policy. As part of the production infrastructure it affects the functioning of all sectors of the country's economic complex, serves the needs of agriculture, manufacturing and extractive industries, the construction industry, and the social sphere, ensures the activity of non-productive sectors of the economy as well as the mobility of the population [Penshin, Bychkov, 2007], ensures the growth of public product and income [Razdorozhny, 2009].

The production infrastructure creates the necessary conditions for the location and successful operation of production and encourages interaction of inter-sectoral complexes of the country's regions. In industrial complex it creates conditions for deepening the division of labor, developing specialization and cooperative ties, and efficient transportation of resources. In agro-industrial complex exiting infrastructural constraints lead to the losses of final output and to the failure in meeting the needs of the population. Developed infrastructure favours agriculture intensification, enables zonal division of labor, materials and structures transportation for the construction complex, which leads to creating fixed assets for the production infrastructure [Oreshin, 1985]. The general conditions of producing public goods include all means of transport, communication, logistics as well as a system for promoting goods, procurement and marketing of agricultural goods, electric power facilities [Fedko, 2000].

The opportunity to allocate productive forces ensuring the continuity of production processes as well as to extract natural resources arises due to the functioning of a unified transport system. At the same time, the strengthening of stable interregional socio-economic ties contributes to the development of regions and economic areas, the formation of their industrial specialization taking into account the prevailing natural, demographic, cultural and other factors.

Materials and methods

The system of transport statistics indicators grouped by economic, territorial, technical and technological characteristics is the basis for studying the country's transport system and an integral part of regional statistics as a theoretical basis for studying the territorial aspect of indicators of socio-economic development of Russian regions. On the one hand, it characterizes the effectiveness of using localized production and resource potential within the borders of a particular region, and on the other hand, it reflects the interaction of economic sectors, the level of their specialization, considering national goals and the stakeholders' interests.

The share of the Transportation and Storage industry in the economy ranges from 6–7%, it employs 7–8% of the working-age population, and accounts for 16% of production assets, 16% of investments in fixed assets, the share of transport services to the final consumers accounts for 18–19% of the total volume of paid services. Within the country's subjects, these indicators are not uniformly distributed. The largest share of transport can be observed in GRP (Gross Regional Product), employment structure, investments in fixed assets, and services to the population in the Far East regions (Table 1).

Table 1 – The place of the transport industry in the economy (percentage indicators)

Federal District	Share in GRP	Share of employed	Share in production funds	Share of investments in fixed assets	The share of transport services to the population
Central	5.9	7.9	10.5	13.4	22.7
Northwestern	9.8	9.2	17.9	18.3	13.1
Southern	9.5	7.9	16.6	16.4	11.6
North Caucasian	4.7	6.5	14.5	4.7	15.6
Volga	5.8	7.2	15.8	10.2	12.0
Uralsky	6.2	7.9	24,1	10.4	23.1
Siberian	7.4	8.1	11.6	14.7	12.2
Far Eastern	10.6	9.8	23.7	25.7	24.4

The modern structure of the transport network was formed under the influence of the technical and economic characteristics of the modes of transport, as well as the economic and geographical features

of Russia [Skrynnik, 2016]. The transport system of Russia includes railway, automobile, air, sea, river, pipeline (including gas pipeline, oil pipeline, oil product pipeline) modes of transport. The key indicators of the functioning of the regional road network are the length of the transport network and its operational characteristics (Table 2).

Table 2 – Road transport infrastructure main characteristics, 2022

Federal District	Density of paved roads, km per 1000 sq. km	The paved roads percentage, %	The percentage of roads compliant with regulatory requirements, %	Railway density, km per 10,000 sq. km
Central	384	69.4	55.2	261
Northwestern	63	71.9	45.4	78
Southern	239	69.4	53.7	165
North Caucasian	432	79.0	68.6	123
Volga	242	69.6	45.8	142
Uralsky	44	75.4	55.1	47
Siberian	37	71.6	49.3	25
Far Eastern	12	67.0	43.3	18

The territory of the European part, including the Central, Northwestern, North Caucasian, Southern, and Volga Federal Districts, is home to 74.4% of the country's population, accounts for 65.5% of the volume of shipped industrial products, high density of roads and railways – the largest value is in the Central Federal District 384 km of tracks per 1000 square kilometers and 261 km of tracks per 10000 sq. km, respectively. The Far Eastern Federal District by the provision of railways 14.5 times lacks behind the Central Federal District, and by provision of roads – 32 times.

63.8% of traffic and 74.8% of cargo turnover by road falls on the European part of the country, the share of indicators relative to 2000 increased by 14.2% and 3.3%, respectively.

At that the share of the Far Eastern, Ural and Siberian Federal Districts in the total amount of the goods transported by rail increased from 46.7% in 2000 to 53.1% by 2022.

In stable conditions, the rates of cargo turnover (transport work) correspond to the growth rates of the economy. However, the ratio is determined by the country's transport policy aimed at reducing the cost of moving products and population, optimizing the placement and development of productive forces and transport. The figure shows a scatter diagram of the indices of cargo turnover and gross domestic product of Russia. Calculations have shown that there is a positive correlation ($R2 = 0.64$) and, on average, with an increase in freight turnover of transport by 1%, the GDP index increases by 0.66% (Figure 1).

With the growth of cargo turnover, the volume of inland waterway transport is decreasing: the decrease in 2022 compared to 2015 was 9.8%. Due to insufficient financing (this type of transport accounts for 0.2%–0.3% of investments in the type of economic activity "Transportation and storage"), the technical condition of waterways is deteriorating: only 55.5% are serviced by the environment (with signs of navigability). For comparison, in 2001 the figure reached 71%.

The bulk of the freight turnover of railway transport is accounted for by the transportation of raw materials, the sources of which are located at a considerable distance from waterways. Thus, a significant part of coal transportation is carried out from the Kuznetsk coal basin to the Urals, to the central regions of the country, the Volga region; crude oil and petroleum product cargo flows – from Western Siberia, the Urals, the Volga region, the North Caucasus; transportation of timber – from the North and Siberia along the Trans-Siberian Railway to the West; ferrous metal ores – from metallurgical bases of Central and Siberia (Gornaya Shoria, Metallurgical Complex of Khakassia,

Angaro-Ilimsk iron ore basin) for consumers of the Central region, North Caucasus, North-West; grain cargoes – from forest-steppe and steppe zones (Volga region, Siberia, Black Earth region) go to densely populated consuming areas. In the volume of transportation, the distribution by type of transport is as follows: 70.7% of goods are transported by road, 15.4% by rail, pipeline – 12.2%, sea and inland waterway – 1.6%, air – 0.01% [Transport in Russia, 2022]. Due to its mobility, design and economic characteristics, the use of motor vehicles is effective for transporting relatively small loads over short distances. However, for long-distance transportation, rail and sea transport is the cheapest.

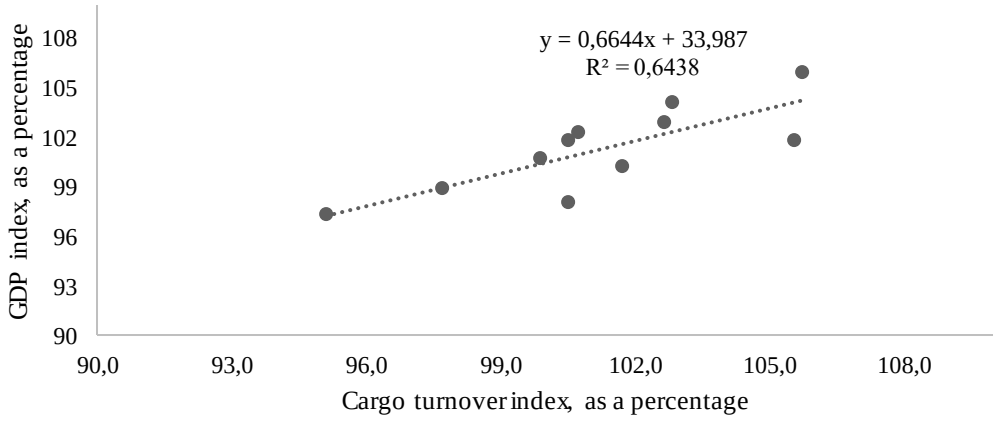

Figure 1 – Correlation of freight turnover indices for all modes of transport and the physical volume of GDP

The reduction of sea cargo-passenger, passenger and non-passenger transport vessels (from 55 units in 2015 to 47 units in 2021) is due to the switching of cargo and passenger flows to cheap, convenient, high-speed delivery [Rykalina, 2021], more attractive routes. The need to reorient cargo flows in the Asian direction has been actualized by the development of international transport corridors, in particular, "North-South" (ITC "North-South"). As noted above the competitiveness of motor transport in long-distance transportation is low. In this regard the priority is to modernize and build up the railway transport infrastructure for direct Russian supplies of a wide range of industrial consumer goods, fertilizers, metals, chemicals to the ports of the Persian Gulf and further to final destinations in India, South-East Asia, the Middle East, Africa and China. International transport corridor (ITC) is becoming a full-fledged alternative to any other key international transport corridors: transportation through the ports of the Azov-Black Sea basin or through the Eastern polygon. Accelerating cargo turnover growth rates are caused by such determinants as increase in foreign trade maritime traffic and active development of the Eastern polygon, international transport corridors, transport and logistics centers, etc. This leads to an increase in the average transportation distance and strengthens the connectivity of the country's economic space.

Results

A significant share of investment in the Far Eastern macro-region, Northwestern and Southern Federal Districts is largely due to their border location, international transportation corridors passing through their territory, and the presence of major seaports. However, the high depreciation of fixed assets creates limitations to meet the growing demand for transportation services and the multiplicative

investment effect. Due to the redistribution of foreign trade cargo flows between different modes of transport, the share of railroads in international transportation will grow.

Export flows are distributed in their respective directions through the ports of the Northwestern region, Far East, Azov-Black Sea basins. However, the development of ports and related infrastructure is uneven – there are differences in the levels of technology and capitalization of port hubs due to the instability of the cargo base, inconsistency in the development of railways, roads, pipelines, rear terminal and storage infrastructure.

However, in order to reduce the load on the road network it is necessary to provide conditions for redistribution of transportation to inland waterway and sea transport, namely, it is necessary to build appropriate terminals and related port infrastructure, to create and reconstruct the main directions of highways and high-speed railways, inland waterways, airports, to eliminate gaps and bottlenecks in the transport network, especially in the eastern part of the country [Solodkiy, 2022]. Development of approaches to major transportation hubs will create infrastructure for potential growth points development.

Conclusions

The role of infrastructure sectors in the formation and development of the region as an object of management and multilevel production system is increasing. The complexity of economic relations requires the modernization of transport infrastructure facilities [Efimova, 2007]. In this regard, the development of infrastructure sectors at the regional level is one of the priority directions of public policy [Vysotskaya, Gokzhayeva, Kopycheva, Tyaglov, 2012].

The increasing role of transport infrastructure is connected with the increasing demands of consumers to the quality of its provision. Improvement of quality is possible by increasing the capital intensity of the transportation system. In turn, investments allow to reduce the costs of its functioning, provide adaptation to the requirements of production, contribute to the emergence of structural shifts in the territorial structure of the economy. The problem of mismatch between the country's needs and the level of infrastructure provision is acute in the sphere of passenger transportation. Despite the growth of cities, passenger transportation by public transport is decreasing This situation is caused by the growth of motorization, resulting in increased traffic flows due to the remoteness of residential areas from established places of employment and inadequate capacity of urban streets and roads. The high dynamics of automobile traffic poses serious challenges in terms of increasing traffic hazards, monetary transportation costs and longer travel times.

The creation of high-speed passenger traffic infrastructure will reduce congestion on the roads and, at the same time, increase the mobility of the population, which was growing steadily until 2020 (22.2% growth between 2011 and 2019: from 3,513.2 to 4,294.5 passenger-kilometers per person), but after the crisis has not yet returned to the pre-pandemic level: in 2022, the indicator was 3,464.8 passenger-kilometers per person.

Priorities for the development of the country's transport complex have been approved by the Government in the "Transport Strategy of the Russian Federation for the period up to 2030 with a forecast for the period up to 2035" and envisage increasing spatial connectivity and accessibility of territories, mobility of the population and domestic tourism, development of multimodal logistics, digital transformation of the industry through the introduction of new technologies.

The first goal is "the formation of a common space on the basis of balanced advanced development of effective transport infrastructure". Its implementation will strengthen the links between regions,

reduce the level of structural disproportions, involve new territories in the economic turnover through new transport links, strengthen the competitiveness of various industries, and generate country's economy sustainable growth. The development of transport infrastructure should reach a qualitatively new level in conjunction with the goods transport technological infrastructure, information environment of interaction between different types of transport.

The increasing complexity of the transportation services market and the integration of transportation and logistics segments have led to the formation of information and logistics and goods distribution systems, within which transportation management is of key importance. In this regard, the development of transport corridors is conditioned by the efficient operation of the system of transportation control centers and transport hubs.

References

1. Vysotskaya T.A., Gokzhayeva E.B., Kopycheva J.Y., Tyaglov S.G. (2012) *Razvitie predprinimatel'skoj aktivnosti v infrastrukturnyh sektorah regional'noj ekonomiki* [Development of Entrepreneurial Activity in Infrastructural Sectors of Regional Economy]. Moscow, "Vuzovskaya kniga" Publ., 188 p.
2. Efimova E.G. (2007) *Transport v mirovom hozyajstve* [Transport in the World Economy]. Moscow, "Ankil" Publ., 351 p.
3. Livshits V.N. (1986) Sistemnyj analiz ekonomicheskih processov na transporte [System Analysis of Economic Processes in Transportation]. Moscow, "Transport" Publ., 240 p.
4. Oreshin V.P. (1985) *Infrastruktura v sisteme planovogo upravleniya regional'noj ekonomikoj* [Infrastructure in the System of Planned Management of Regional Economy]. Moscow, "Lomonosov Moscow State University" Publ., 84 p.
5. Penshin N.V., Bychkov V.P. (2007) *Gosudarstvennoe regulirovanie avtotransportnoj deyatel'nosti* [State Regulation of Motor Transport Activity]. Moscow, "Academic Project" Publ., 186 p.
6. Razdorozhny A.A. (2009) *Ekonomika otrasli (avtomobil'nyj transport)* [Economics of Industry (Automobile Transport)]. Moscow, "RIOR" Publ., 316 p.
7. Rykalina O.V. (2021) Razvitie regional'noj infrastruktury i svyazej mezhdu okrugami Rossijskoj Federacii [Development of Regional Infrastructure and Links between Districts of the Russian Federation]. Moscow, "INFRA-M" Publ., 228 p.
8. Solodkiy A.I. (2022) *Transportnaya infrastruktura* [Transport Infrastructure]. Moscow, "Yurait" Publ., 290 p.
9. Skrynnik A.M. (2016) *Sistema upravleniya infrastrukturoj vodnogo transporta* [System of Management of Water Transport Infrastructure]. Rostov-on-Don, "Mini Tape" Publ., 338 p.
10. (2022) *Transport v Rossii: statisticheskij sbornik* [Transport in Russia: Statistical Collection]. Moscow, 101 p.
11. Fedko V.P. (2000) *Rynochnaya ustojchivost' promyshlennosti (teoretiko-metodologicheskij aspekt)* [Market Sustainability of Industry (theoretical and methodological Aspect)]. Rostov-on-Don, "Rostov State Academy of Economics" Publ., 284 p.

Транспортное обеспечение социально-экономического развития России

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Аннотация

Конкурентоспособность экономики страны, реализация ее транзитного потенциала и качество жизни ее граждан в значительной степени зависит от эффективности работы транспортного комплекса. Роль инфраструктурных секторов в формировании и развитии региона как объекта управления и многоуровневой производственной системы возрастает. В связи с этим развитие инфраструктурных секторов на уровне регионов является одним из приоритетных направлений государственной политики. В статье проведен анализ ключевых показателей транспортной обеспеченности экономики федеральных округов России. Выявлено, что приоритетным направлением развития железнодорожного транспорта является модернизация и наращивание соответствующей инфраструктуры для осуществления прямых российских поставок широкого спектра промышленных товаров массового потребления, удобрений, металлов, продукции химической промышленности до портов Персидского залива и в дальнейшем до конечных точек назначения в Индии, Юго-Восточной Азии, на Ближнем Востоке, в Африке и Китае. Международный транспортный коридор «Север – Юг» становится полноценной альтернативой другим ключевым международным транспортным коридорам: перевозкам через порты Азово-Черноморского

бассейна или через «Восточный полигон». Проблема несоответствия потребностей страны и уровня инфраструктурного обеспечения остро стоит в сфере пассажирского транспорта. Несмотря на рост городов, перевозки пассажиров общественным транспортом снижаются, что напрямую связано с растущей автомобилизацией, вызывающей увеличение транспортных потоков, с несоответствием пропускной способности городских улиц и дорог. Высокая динамика автомобильного трафика порождает серьезные проблемы, связанные со снижением безопасности дорожного движения, увеличением транспортных расходов в денежном выражении и длительности поездок. Создание инфраструктуры высокоскоростного пассажирского движения позволить снизить загруженность на дорогах и, в то же время, повысить мобильность населения.

Для цитирования в научных исследованиях

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Ключевые слова

Транспортная инфраструктура, транспортная обеспеченность, транспортные коридоры, федеральные округа, пропускная способность.

Библиография

1. Высоцкая Т.А., Гокжаева Е.Б., Копычева Ж.Я., Тяглов С.Г. Развитие предпринимательской активности в инфраструктурных секторах региональной экономики. М.: Вузовская книга, 2012. 188 с.
2. Ефимова Е.Г. Транспорт в мировом хозяйстве. Анкил, М.: Анкил, 2007. 351 с.
3. Лившиц В.Н. Системный анализ экономических процессов на транспорте. М.: Транспорт, 1986. 240 с.
4. Орешин В.П. Инфраструктура в системе планового управления региональной экономикой. М.: Московский государственный университет им. М.В. Ломоносова, 1985. 84 с.
5. Пеньшин Н.В., Бычков В.П. Государственное регулирование автотранспортной деятельности. М.: Академический проект, 2007. 186 с.
6. Раздорожный А.А. Экономика отрасли (автомобильный транспорт). М.: РИОР, 2009. 316 с.
7. Рыкалина О.В. Развитие региональной инфраструктуры и связей между округами Российской Федерации. М.: ИНФРА-М, 2021. 228 с.
8. Солодкий А.И. Транспортная инфраструктура. М.: Юрайт, 2022. 290 с.
9. Скрынник А.М. Система управления инфраструктурой водного транспорта. Ростов-на-Дону: Мини тайп, 2016. 338 с.
10. Транспорт в России: статистический сборник. М., 2022. 101 с.
11. Федько В.П. Рыночная устойчивость промышленности (теоретико-методологический аспект). Ростов-на-Дону: Ростовская государственная экономическая академия, 2000. 284 с.