
Development Prospects of the Transport Infrastructure of Russia in the Conditions of Development of the Market of Transport and Logistic Services

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Abstract:

The paper is devoted to a critical analysis of the current state and development prospects of the transport infrastructure of the Russian Federation in the context of transport and logistics services. The share of through haulage in the total volume of export-import transactions has been estimated. At the same time, the right choice of methods of scientific research directly affects the success of solving the scientific problem, where the main feature of the modern economy is the transition from managing objects to managing flows.

The main objective is to identify the problems of functioning of transport and transport infrastructure in the context of the largest "players" in the investment market of Russia, in the development of a competitive transport and logistics system of the state and its regions based on integration and innovative logistics technologies of the main participants in the supply chain operating in the Russian regions as well as corridors passing through the territory of Russia. These trends can be traced both in theoretical studies and in the practice of carrying out entrepreneurial activities.

We use empirical methods of comparison, measurement, description, interpretation; theoretical methods of formal and dialectical logic.

Working in difficult conditions, Russia should become a basic transport and logistics center. It needs to improve its logistics infrastructure and technologies for logistics organization, reducing costs within supply chains by optimizing customs clearance processes and eliminating legislative barriers. Conclusions: transport development should be developed not as a set of individual elements in the form of transport, transport infrastructure, and transport corridors, but as a single transport and logistics network.

Keywords: international consignments, international transport corridors, through haulage, Russian Federation.

JEL Classification: L62, L91.

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1. Introduction

In Russia, as in other developed countries, transport is one of the leading sectors of the economy; it is an integral part of the infrastructure of production and society. Today, Russia offers the world community not only oil, gas, and metal, but also a new national product – the export of transit transport services. Russia is ready to implement this product on mutually beneficial terms, together with foreign partners (Osipov *et al.*, 2016). The creation and development of international transport corridors are necessary not only from a commercial point of view; they also have some economic, political and technological significance. Due to international transport corridors, it is possible to synchronize the exchange of goods between countries, reduce the cost of transportation, and increase the possibility of developing the transport infrastructure (Kuzmenko *et al.*, 2013).

International transport corridors and transport infrastructure are an integral part of the international logistics infrastructure and help to achieve some greater efficiency of the transport process by applying innovative advances in technology and transportation process. At the same time, there is correlation dependence between the quantity and quality of the transport infrastructure and the level of economic development. According to ROSDORNII (Federal Autonomous Institution "Russian Road Research Institute") (ROSDORNII, 2016), a high density of transport infrastructure and strongly connected networks are associated with a high level of development. When transport systems are effective, they provide economic and social opportunities and benefits that lead to positive effects, such as an increased access to markets, increased employment and the attraction of additional investments. When transport systems are not sufficiently developed in terms of capacity and reliability, they can result in economic costs, such as suppressed or unseized opportunities, and reduce the quality of life (Osipov, 2013). In addition, the impact of transport is not always predictable, and some unforeseen or unintended consequences may occur.

2. Methodology

In the course of investigations of the transport infrastructure of the Russian Federation and estimating the share of through haulage in the total volume of export-import transactions in the context of development of the market for transport and logistics services, we collected, reviewed and classified some statistical materials and data, which made it possible to identify the obstacle to the implementation of logistics in the transport process To process the results of the study, some statistical methods were used: collation and grouping of data, the method of index numbers, correlation and regression analysis, table and graph methods. The methodological basis of the research was the systemic approach, cause-effect analysis, and logical-mathematical modeling. The information base of the study was the analytical and statistical materials of the Federal State Statistics Service and its territorial subdivisions, the data of the Ministry of Transport of the Russian Federation,

normative acts, forecasting, analytical, statistical and conceptual materials of relevant departments (air cargo agency, railway transport agency); these materials are contained in special scientific literature and databases. The theoretical basis is the works of leading Russian and foreign researchers and experts in the field of theory and methodology who link logistics processes in various functional areas.

3. Results

3.1 Current trends and development prospects of Russia's transport infrastructure

International business is currently undergoing a period of rapid transformation. The tendencies of globalization, integration of logistics and development of information and communication technologies lead to the restructuring of international trade models and, consequently, real trade flows. Such restructuring promotes economic growth, more efficient allocation of resources, increased freedom of choice for consumers, as well as increased competition (Veselovsky *et al.*, 2017). In modern conditions in the regions of Russia, the development of transport and logistics complex is traditionally financed from the budget, so attracting private investments is difficult, and the state has a shortage of funds in the conditions of the economic crisis not only to finance transport and logistics complex but even to implement new social programs.

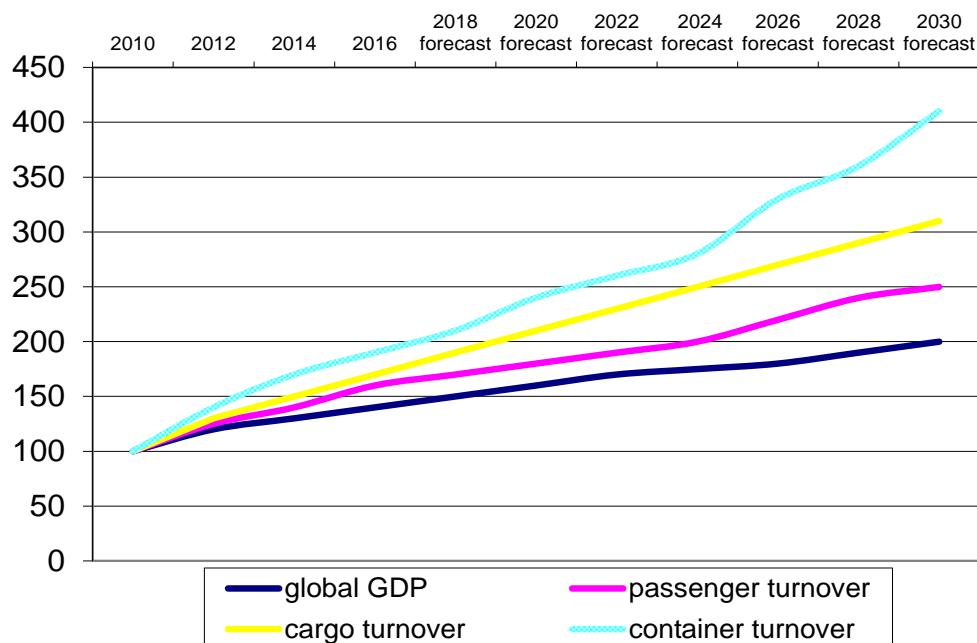
According to the Global Competitiveness Report 2015-2016 concerning the quality of transport infrastructure development in the international rating, Russia ranks 35th out of 140 countries (World Economic Forum, 2015). Russia ranks 123rd in the level of road infrastructure development, 24th – in the railway infrastructure, 75th – in the quality of port infrastructure, 77th – in the air transport infrastructure. Today, the country's economic development directly depends on the development of the transport and logistics complex. The reputation of regions of the country among investors and some financial and economic factors (the level of taxation, the regional level of inflation, availability of credit resources) determine the amount of investment in the transport and logistics complex. These factors increase its availability and mobility for enterprises situated in this territory.

In accordance with the government's edict No. 98-r of January 27, 2015, the main factors that influenced the development of the transport infrastructure market in 2015-2016 were "...some negative macroeconomic changes and increased geopolitical risks, which led to revision of the volume of state financing and changes in the dynamics of domestic and external demand for transport services", in accordance with the plan of measures to ensure sustainable development of the economy and social stability in 2015. The Russian market for international road transport has a high level of intensity in Europe. A highroad service is carried out with 45 countries; a quarter of Russia's foreign trade turnover is provided by motor transport. According to the research conducted by Gazprombank, private investment

in the transport infrastructure of the country up to 2020 may amount to \$25-40 billion. The great sum of money will be invested in the construction of roads – 45%, railway transport – 20%, considering the project of high-speed network and the Underground Railroad, pipelines – 30%, the share of ports and airports will be 5% (Gazprombank, 2014).

In the short term, investment increasing in logistics infrastructure creates new jobs, stimulates economic growth in the medium term, and reduces transport costs for enterprises as well as improves the living standards. According to the estimates of McKinsey, "...an additional 1% of GDP investment in infrastructure will generate 3.4 million new workspaces in India, 1.5 million workspaces in the United States or 1.3 million ones in Brazil". Given the similarity of economic indicators of Brazil and Russia, the number of workspaces that are going to be created in Russia, most likely, will also coincide with those of Brazil, and this is 1.7% of the total economically active population of the country. The total investment in the transport infrastructure of Russia is about 0.3 percentage points of growth to GDP (Figure 1).

Figure 1. Index of growth in global GDP and indicators of the transport sector.

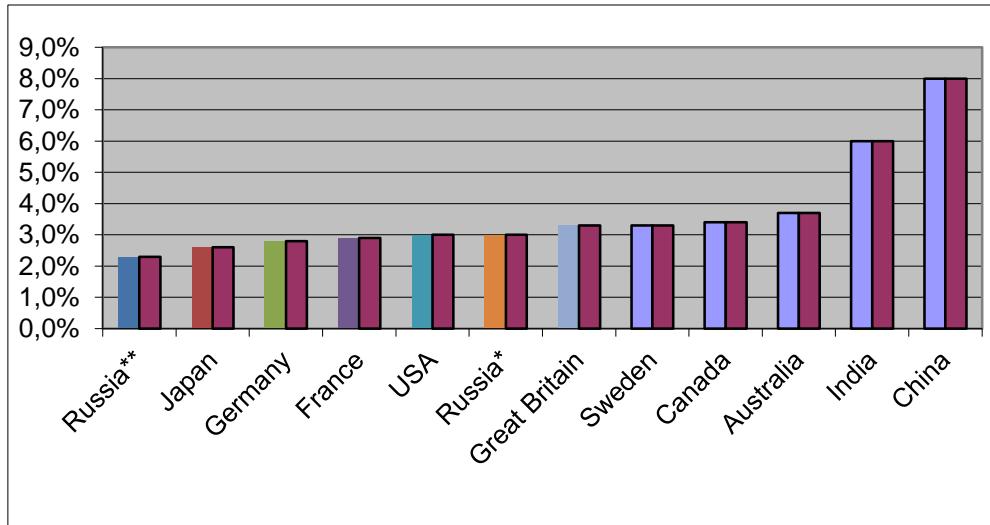


Source: Based on the data of OECD

According to McKinsey estimates, countries with the developed infrastructure spend on average 2.5-3% of GDP annually to maintain and develop it. Russia's expenditures also make up about 3% of GDP considering investments in pipeline transport. Without it (only roads and railways, airports and ports), the share of

expenditures from GDP in recent years has reached 2.3%, although it was less than 1% in the mid-2000s (Figure 2).

Figure 2. Investments in the transport infrastructure, % of GDP



Note: * Including pipeline transport; ** Excluding pipeline transport.

Source: (Gazprobank, 2014).

In Russia, many federal and regional special programs dedicated to the development of transport infrastructure have been developed. The decrease in investment to GDP after 2018 is due to the completion of major infrastructure projects, but it is quite possible that new projects will appear (Table 1).

Table 1. Estimation of the total volume of investments in transport infrastructure, billion rubles.

	2015	2016	2017 Forecast	2018 Forecast	2019 Forecast.	2020 Forecast
Railways	277.2	277.1	277.4	168.2	168.5	168.3
Federal roads	495.3	640.3	714.1	664.3	732.0	791.2
Regional roads	470.2	493.1	518.0	544.0	571.1	600.0
Pipelines	869.1	861.2	887.1	848.0	752.1	671.2
Sea ports	88.1	59.0	47.0	36.3	20.0	20.1
Moscow-Kazan	50.2	250.1	300.2	300.0	100.0	0
Underground railways	150.0	141.1	125.1	125.2	126.2	127.1
Airports	47.0	52.0	56.0	57.0	57.0	54.0
Total	2,446.1	2,774.9	2,924.9	2,744.0	2,527.9	2,430.9
% of GDP	3.2%	3.4%	3.3%	2.8%	2.4%	2.2%
Excluding piping	1576	1912	2037	1894	1775	1760
% of GDP	2.2%	2.3%	2.3%	1.9%	1.7%	1.6%

Source: according to (Ministry of Transport of the Russian Federation, 2017).

3.2 Analysis of the Russian market of transport and logistics services

Transport in the overall economy of the country is a basic industry that creates normal functioning and development of other industries for their interconnection, interaction, and development. The main function of transport is both meeting the demand for transportation of goods for business and timely service of suppliers and consumers with flextime work considering fluctuations in market economy conditions and uncertain production needs in transport services (Pecherskaya, 2014; Ratnasih 2017). Therefore, for the effective functioning of the economy, it is necessary to form a transport and distribution system in the subjects of the Russian Federation by means of creation of transport and logistics centers (TLCs) in intensive directions of product (cargo) flows. Market tendencies in international transportation concerning information interaction tend to create and integrate information systems of logistics partners.

Let us analyze the condition of the market for the provision of transport and logistics services. The structure of the Russian market of transportation and logistics services for 2015 is in Table 2.

Table 2. Structure of the Russian market of transportation and logistics services for 2015.

Types of logistics services	Value, %
Managerial logistics	1%
Freight transport	87%
Forwarding services	9%
Warehousing and distribution	3%
Total:	100%

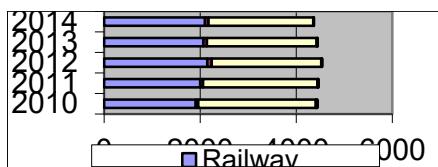
Source: It was compiled according to the data of Federal State Statistics Service (Federal State Statistics Service, n.d.).

The main task of the transport and logistics market in the provision of services is a competent and optimal development of a plan for the transit of goods. Undoubtedly, it is necessary to determine the cargo route (reducing time in transit, therefore, cutting costs) (Karpova, 2011). Transport logistics deals with the issues that are related to the optimal transportation of cargo for the achievement of the best result. Let us analyze the movement of goods in the country. Product distribution by modes of transport is presented in Figure 3 for the analyzed period of 2010-2015.

The data given in Table 3 allow us to conclude about an increase in transit of goods by all types of transport, with one exception for 2014. The total flow of cargo in 2013 was 5,084 billion tonne-kilometer, and in 2014 – 5,077 billion tonne-kilometer. This reduction is associated with the deterioration of Russia's economic and political relations with the West and the imposition of sanctions against Russia. This decrease, first of all, is due to the fact that many international transport corridors pass through Russia, and the introduction of sanctions has reduced the volumes of

cargo transportation. However, the maximum share of commercial cargo transportation in 2015 was carried out by railway transport in the volume of 1410 million tons (industrial railroad transport – 507.4 million tons, railway transport of general use – 902.6 million tons), road transport – 1,099 million tons.

Figure 3. Analysis of the transit of goods across Russia by various modes of transport (2010-2015).



Source: According to (Ministry of Transport of the Russian Federation, 2017).

In 2014-2015, there was a reduction in traffic volumes for all types of transport, with the exception of the sea, in which there was an increase of 106%. The volume of commercial traffic in the period from 2014 to 2015 is presented in Table 3.

Table 3. Carriage by mode of transport (million tons)

Mode of transport	January-September 2015	January-September 2014	January-September 2015, % by January-September 2014
Marine	12.426	11.644	105.9
inland waterway	95.72	96.93	98.8
Air	0.787	0.753	104.6
Public railway	912.6	915.8	98.6
Industrial Railway	507.4	524.6	98.6
Road	1,079.7	1,188.3	92.5

Source: (Ministry of Transport of the Russian Federation, 2015).

All data concerning statistics and forecasts for the development of the Russian market show that it is not necessary to expect an increase in the volume of the logistics services market due to the increase in GDP, imports, and exports. Improvement of companies' activity in the market is possible only due to the redistribution of the client base of companies that have left the market, consolidation of business in general, and cases of increased exports, imports of various goods and the continuing growth of the Internet commerce market (Kuzmenko and Turlaev,

2015). Today, Russia does not have a sufficiently developed transport and logistics infrastructure, so most cargo flows try to bypass Russia's borders using a not optimal route to the destination from the point of view of distance; that is why the Russian economy loses sufficiently large amounts of financial resources.

In the manufacturing complex of Russia, the level of logistics costs is one of the highest in the world. The total external and internal costs for transportation services and logistics in Russia are about 20% of GDP, in China and Europe – 7-8%, according to a study by the Chamber of Commerce and Industry of the Russian Federation and BCG (Russian Logistics: New Ways of Potential Fulfillment, 2014). The behavior pattern of cargo transportation in 2015 compared with the previous year was as follows. Motor freight transportation decreased most of all (-7%), then went railway transport (-1.1%) and inland waterways (-0.8%). The ranking of transport companies, as expected, was headed by JSC Russian Railways; its revenues from transportation and logistics were 1,215 billion rubles, 91% of revenues from transportation and logistics services were generated by freight and post, the remaining 9% were provided by rental vehicles and infrastructure. In addition, the Russian Railways holding company was represented in the ranking by the Federal Freight Company (sixth place), Transcontainer (seventh place), Russian Railways Logistics (12th place), Reitransavto (25th place) and Refservis (41st place) (Table 4).

Table 4. Top 10 of dynamically developing companies based on the results of transport and logistics activities in 2015

Comp any's place	Place in the total transport logistics complex ranking	Company name	Russian National Classifier of Ownersh ip Patterns	Rate of increase of total revenue in 2015/2014, %	Proceeds from activities of the transport logistics complex for 2015, million rubles	Revenu e for 2015, million rubles
1	49	PAO Novorossiysk ship-repairing yard	Private property (16)	102	2,054	2,093
2	23	PAO United Carriage Company research-and-production corporation	Property of foreign legal entities (23)	147	9,643	42,088
3	39	OAO Donrechflot	Private property (16)	38	2,762	2,775

4	13	PAO Novorossiysk Commercial Seaport		69	23,623	24,105
5	33	PAO Murmansk Commercial Seaport	Private property (16)	48	3,937	6,924
6	9	Sovfrakht	Joint private and foreign ownership (34)	52	36,499	36,499
7	12	AO Russian Railways Logistics	Mixed Russian property with a share of federal ownership (41)	46	21,866	21,866
8	28	AO Novoroslessexport	Private property (16)	30	4,231	4,307
9	38	AO Management of technological transport	Private property (16)	34	2,343	2,877
10	21	SPSR Express	Property of foreign legal entities (23)	17	6,057	6,057

Source: <http://expert.ru/ratings/reiting-transportno-logisticheskikh-kompanij/>

According to the Ministry of Transport, the decrease in the volume of haulage by road is due to a decrease in production in the construction sector (93% by 2014), foreign trade (exports – 68.2%, imports – 63%), and compression of consumer demand and trade (90% by 2014).

4. Discussion

The importance of logistics in international business is difficult to overestimate. The consistent pattern of globalization contributes to the development of logistics systems. Modern international logistics is directly connected with the management of interstate supply chains, which are the basis of international trade and represent a

complex sequence of coordinated actions (Kinra, 2015). The uneven level of development in many countries interferes with the effective development of international logistics (Rodrigue, 2012). Russia has a special place in the system of international logistics. Many countries are interested in Russia as a partner in foreign economic activity and their interest is growing despite many obstacles. Over the past decade, Russia's logistics policy has seen many changes aimed at qualitative improvement of both domestic and international economic activity (Delbufalo, 2012; El-Chaarani, 2014).

Modern cargo and warehouse terminals were built up, new railway stations were opened, the state of roads was improved, and the work of the banking system related to the implementation of foreign exchange operations was established. Despite all these positive changes, the Russian sphere of logistics chains still lags far behind many developed countries. The transport and logistics market in Russia is in a difficult situation. The reason for these negative phenomena is the reduction in production in most sectors of the country's economy, and, therefore, the reduction of freight traffic. The decrease in traffic volumes occurs most in the railway and road transport (Ministry of Transport of the Russian Federation, 2017). These days, there is an intensification of interspecific transport competition, because of which some shipper customers increase the requirements for the quality and completeness of services of logistics operators, as well as the level of their transportation and logistics costs. The importance of transport of the regional transport and logistics complex in the economy is great (Afanas'yeva, 2015; Papanastasiou and Fourlas, 2016; Arvanitis *et al.*, 2012). Economic development is associated with an increase in the well-being of society through appropriate social, political and economic conditions. Therefore, the Transport Strategy of Russia for the period up to 2030 developed by the Ministry of Transport of the Russian Federation provides the following:

- creation of a basic transport network without bottlenecks and holes;
- elimination of disparity in the level of development of the country's regional transport infrastructure;
- implementation of priority infrastructure projects that ensure the unity of the country's transport infrastructure;
- development of the transport network based on national transport corridors;
- convergence of national transport corridors with international transport corridors of European and Asian transport systems.

The developed Transport Strategy of the Russian Federation until 2030 was a reference point for entering the world transport community, increasing the export of transport services and implementing the transit potential of the country in the International Transportation Corridor system (Table 5).

When the economy moves to an innovative development path, the logistics infrastructure becomes the main factor of the country's socio-economic growth,

which ensures the unity of the economic space, improves transport and economic ties, provides rationalization of the location of logistics and production facilities, improves the efficiency of the use of natural resources and the social and economic potential of the regions, develops entrepreneurship and expands international cooperation by entering Russia into the world economy as an equal partner.

Table 5. Target indicators for the implementation of the Transport Strategy

Target standards (indicators)	2015	2020 forecast	2025 forecast	2030 forecast
The Logistics Performance Index by the World Bank (LPI), ranking	80.1	52.0	35.0	20.0
Development of transport and logistics infrastructure, place in the World Bank ranking	69.2	54.1	38.0	25.0
Fulfillment of obligations and reliability of delivery of goods by logistics providers, place in the World Bank ranking	75.1	60.1	45.5	30.0
Reduction of the total logistics costs of goods circulation, % of GDP	20.1	17.0	13.5	10.1
Reduction of the share of transport costs in total logistics costs, % of total logistics costs	83.1	80.0	72.0	67.1

Source: (Transport strategy of the Russian Federation until 2030, 2008)

5. Conclusion

According to the LPI calculated by the World Bank in 2016, Russia ranks 99th place (among 160 countries), which is calculated on the basis of a worldwide survey of global freight forwarding companies and express carriers (<http://total-rating.ru/1848-indeks-effektivnosti-logistiki-2016.html>). The index helps countries identify problems and find opportunities and increase the efficiency of logistics. At the same time, the activity of the Russian customs on a scale from one to five is now estimated at 2.69 points, infrastructure development – at 2.20 points. The main problems of the development of domestic logistics are:

- overcoming some administrative barriers in the reconstruction and construction of new transport corridors in the regions;
- absence or insufficiency of warehouse premises of "A" and "B" class in the subjects of the Russian Federation;
- insufficient level of development of transport infrastructure;
- lack of 3PL and 4PL providers.

More than 100 transport logistic centers operate in the countries of Western Europe, Germany, France, and the Netherlands, which allows European countries to

efficiently reallocate their cargo flows both in the domestic and foreign markets (Veselovsky *et al.*, 2016). In Russia, the number of transport logistic centers is much smaller and most of them are in Moscow and St. Petersburg. The Russian logistics market is characterized by low transparency and limited logistics know-how. Many companies have high costs for storage and transportation.

However, the volume of construction of transport logistic centers in the regions is gradually increasing. The most important logistics centers in Russia are Moscow and St. Petersburg ones. But there are some others, such as Samara, Nizhny Novgorod, Kazan, Yekaterinburg, Novosibirsk, and Rostov, which become increasingly important in the regions as logistics centers due to the growth of retail trade and industry (Kuzmenko and Turlaev, 2015; Breckova, 2016). However, for the qualitative growth of the logistics services industry, it is necessary to improve the management system of logistics companies. Today, Russia should use its geographical advantage developing the logistical potential of the regions. It is necessary to reorient the world cargo flows qualitatively through the creation of TLCs on the way of international transport corridors in the regions, as well as through the development of infrastructure for the formation of a new international transportation corridor in the territory of the Russian Federation.

The world's experience has shown that the focus in design and operation of logistics centers is shifting towards the use of methods and models of multimodal logistics, optimization of supply chains, decision-making under risk and uncertainty of input data, modeling of logistics business processes. Transportation development should be implemented not as a set of separate transport corridors, but as a single transport and logistics network.

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