# INTERNATIONAL ASPECTS OF TRANSPORT INFRASTRUCTURE DEVELOPMENT

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***ABSTRACT***

*Transport is one of the largest basic sectors of the economy, an important part of the production and social infrastructure. Transport communications* are *the material basis for state's integration into the global economic system. Transport infrastructure and transport services should meet the needs of providing countries, regions and industries with economic links, best responding to the priorities of social and economic development. The emergence of new communication routes, seaports, airports, and improved transport technologies opens up new opportunities for the development of the world economy. In the development of world transport system, it is necessary to consider the influence many different factors. The unification of the international legal framework of transport activities; the increasing concentration of the transportation and processing of cargoes in the system of international transport corridors and portals. They form a single global transport infrastructure; high level of standardization of transport equipment and technologies; integration of various types of transport, development of intermodal transport; creation of multidisciplinary international transport integration transport holdings business. It is possible to become one of the leaders of the global economy only by switching to an intensive, innovative type of development. This path requires new strategic decisions to develop the transport sector in the long term. The transport strategy determines the state's position on creating conditions for social and economic development. An important task is to improve the quality of transport services, reduce the total costs of society that depend on transport, increase the competitiveness of the domestic transport system, and strengthen the innovative, social and environmental orientation of the transport industry. Increasing the competitiveness of the transport complex, developing the export of transport services and realizing the transit potential contribute to strengthening state's position in the global transport system. In the first part of the article, the logistics features of the formation of transport macro systems and international transport corridors are considered. The second part is devoted to the analysis of the main trends in the development of the world transport and logistics system. In the third part, the influence of transport infrastructure development on the economy of the region, as a whole, is shown on the example of a single country.*

***Keywords:*** *international transport corridors, the transport infrastructure, the transport services, the transport complex, the transport communications, the transport strategy*

## 1. INTRODUCTION

Transport is an important sector of the economy, an integral part of the production and social infrastructure. Transport communications form the material basis of the state 's integration into the global economic system. Transport infrastructure and transport services should meet the needs of providing countries, regions and industries with economic links, best responding to the priorities of social and economic development. The emergence of new communication routes, seaports, airports, and improved transport technologies opens up new opportunities for the development of the world economy. The global transport infrastructure is formed on the basis of integration of services of various types of transport, development of intermodal transport, cargo processing in the system of international transport corridors, creation of multi-profile international transport holdings, integration of the transport business [1]. The development of the world transport system is influenced by such factors as: international unification of the legal framework for transport activities; high level of standardization of transport equipment and technologies; creation of new international transport corridors. Transportation is how a product is sold and purchased, i.e. it acts as a commodity and has a consumer value. The movement of goods and people can be considered as a product of transport, but it has its own characteristics:

1) transport Products do not have a material form, but they are material in nature, since material resources are spent during the movement: rolling stock and maintenance equipment are worn out, transport workers ' labor;
2) transport, as a product, must have reserves of capacity and carrying capacity in transportation under any conditions. This feature of transport logistics corresponds to the logistics function-warehousing;
3) transport products are additional transport costs that are associated with the movement of goods, and related to the cost of circulation;
4) the cost of transport products is included in the final cost of transported products;
5) production of transport products takes place outside the transport company.

Transport should be used in such a way that the transport costs are the lowest, all other things being equal, and the mode of transport used for transportation is the one that is most efficient for this type of product and distance. Transport support covers the sphere of production, circulation and consumption of products. For foreign trade, transport services are necessary in order to fulfill an international contract of carriage with appropriate quality and certain economic efficiency. Efficiency of transport services is determined by minimizing transport and forwarding costs when considering various transport options. The quality of transportation is determined by such indicators as: delivery time, cargo safety, cargo mass in transit, etc. All large companies, and in the first place, transnational corporations participate in business outside their own country. Logistics is used to move goods produced in one country for sale to another country in order to make a profit. Logistics becomes international when the supply chain crosses national borders. Global logistics is used for integrated operations carried out internationally. The role of commercial logistics in modern competition is growing [2]. The world transport and logistics system, is a complex of vehicles and companies, as well as communication routes between countries, which is an element of the modern global economy. Within the framework of regional economic integration, regional transport systems are being formed. Regional transport systems are created with the aim of overcoming the technological and legal differences between the national transport systems of countries belonging to the regional association. Examples of regional integration associations are the –– Customs Union within the framework of the Eurasian Economic Union; North American Free Trade Area - NAFTA (North America Free Trade Agreement between Canada, Mexico and the USA.); European Union.

Within the framework of regional transport systems, steps are being taken to create transport corridors to ensure the unhindered transportation of large volumes of goods in the main areas of trade within the framework of the association; legal, technological and organizational barriers are removed when vehicles cross national borders; uniform standards of national transport systems, etc. are adopted. An international transport corridor is a corridor that connects two or more neighboring states, and passes through several transit states. Examples of international transport corridors:

- system of transport corridors of the European Union - TEN-T network (Transeuropean Network - Transport);
- Pan-European system of transport corridors - covers mainly the region of Central and Eastern Europe;
- The international transport corridor "TRACECA" - the transport corridor Europe - Caucasus - Asia.

## 2. ANALYSIS OF THE MAIN TRENDS OF DEVELOPMENT OF THE WORLD TRANSPORT AND LOGISTICS SYSTEM

The state and development trends of the global transport system directly depends on international trade. The larger the volumes of exports and imports of individual states, the more important is the development of transport infrastructure.

### 2.1. The current state of world trade

World trade is in slow mode. After a quick recovery from 1.3% growth in 2016 to 4.5% in 2017, the average growth in world exports and imports slowed to 2.8% in 2018. In 2019, growth will slow down even more, and this indicator turned out to be 2.6 percent lower than the WTO forecast. The slowdown in trade growth is often associated with increased technological tension between China and the United States, with disruptions caused by this confrontation [3]. The global economy has slowed, developing countries produce 60% of world GDP due to the growth of East Asia, China and India. Inequality in income distribution is growing, contradictions are accumulating, which are expressed in the form of complex inter-regional trade agreements. By the end of 2020, according to IMF economists, world trade will stop growing, having lost almost 700 billion dollars, or 0.8% of world GDP. Speaking in numbers, they expected growth of world GDP in the amount of 97 trillion. USD, and received only 90 trillion. USD. However, not even its size is important here, but growth and speed (Figure 1).

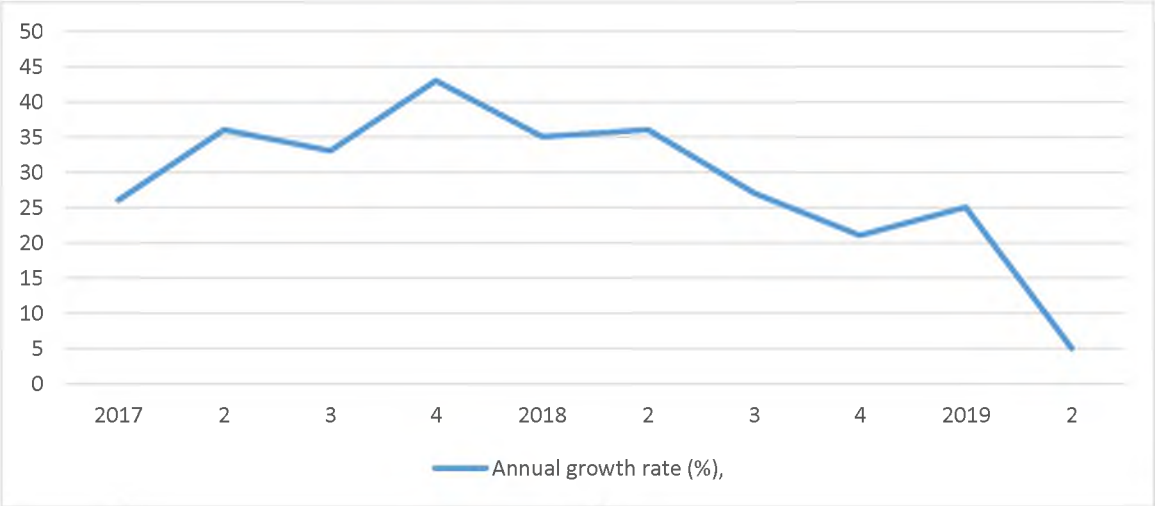


*Figure 1: Total, Annual growth rate of world trade (%), 01.2017 – 02.2019 [4]*

Deutsche Bank analysts have found yet another confirmation of the impending crisis. An alarm for German bankers was the decline in the shares of the American logistics company FedEx. The value of these shares has traditionally been seen as a leading indicator of a slowdown or decline in world trade. FedEx net profit fell at the beginning of 2020 by almost 21.6%. The reason was the weak performance of the delivery service. The fact is that FedEx has a large geographical coverage, and the revenues of this American company are largely dependent on the transportation of expensive goods. The trade and technological war between the United States and China affected the carrier's profits. Global container shipments are expected to decline. A report by the International Monetary Fund (IMF) identifies risks to global supply chains: further increase in tariffs between the US and China; an increase in US tariffs in the automotive industry and BREXIT without agreement. These factors will weaken investment, cause disruptions in global supply chains and seriously slow down global growth [4]. In 2020, the global economy can show almost zero growth. This conclusion was reached by experts from the Institute of International Finance (IIF). Experts explain their assessment by the large-scale spread of coronavirus, which led to a drop in trade and production in the world. There is a high likelihood of an economic downturn in the United States, Japan, and Eurozone countries. As a result of the pandemic, there is an outflow of capital from financial markets, the volumes of industrial production and trade, passenger and freight transportation are reduced. There is a violation of economic relations and demand both within countries and in the international arena [5].

**2.2. Development trends of the global transport system as a service sector**

The global market for services is a sphere of exchange of services between countries and is an integral part of international economic relations. One of the most important laws of economic development around the world is the relationship of economie growth and the increasing role of services in the national economy. The service sector has grown into the largest sector of the economy: it accounts for 62-74% of global GDP, as well as 63-75% of the total number of employees, in addition, it contributes to the growth of technical equipment of labor, the introduction of more advanced technologies. According to the World Bank, commodity exports over 10 years, from 2006 to 2016, increased by 32% and currently stands at 16 trillion. dollars, over the same period, world exports of services grew by 64% and reached 4.77 trillion. dollars. After strong growth of 7.9 percent in 2017 and 7.7 percent in 2018, growth in global trade in services slowed by 2.7 percent in 2019. In 2018, global trade in services was estimated at $ 5.8 trillion, representing a quarter of total exports and 7 percent of global GDP. In 2019, it reached 6.0 trillion US dollars. [6]

| **Service category** | **Exports Value (Billions of US$)** | | **Annual growth rate %** | **Imports Value (Billions of US$)** | | **Annual growth rate %** | **Balance Value (Billions of US$)** | |
|---|---|---|---|---|---|---|---|---|
| | **2013** | **2018** | | **2013** | **2018** | | **2013** | **2018** |
| Total services | 1 394 | 1 738 | 9.3 | 1745 | 2118 | 8.1 | 352 | 380 |
| Transport | 306 | 346 | 8.4 | 573 | 579 | 9.6 | 267 | 232 |
| Travel | 473 | 559 | 7.2 | 423 | 648 | 6.7 | 50 | 89 |
| Others | 615 | 833 | 11.1 | 749 | 892 | 8.1 | 135 | 59 |

*Table 1: Trade in services by service category (Developing economies)*

| Service category | Exports Value (Billions of US$) | | Annual growth rate 2018 | Imports Value (Billions of US$) | | Annual growth rate 2018 | Balance Value (Billions of US$) | |
|---|---|---|---|---|---|---|---|---|
| | 2013 | 2018 | % | 2013 | 2018 | % | 2013 | 2018 |
| Total services | 3310 | 3970 | 6.8 | 2787 | 3327 | 7.0 | 523 | 642 |
| Transport | 590 | 624 | 6.4 | 571 | 606 | 8.1 | 19 | 18 |
| Travel | 693 | 844 | 7.0 | 605 | 701 | 7.7 | 89 | 144 |
| Others | 2026 | 2501 | 6.8 | 1612 | 2021 | 6.4 | 415 | 480 |

*Table 2: Trade in services by service category (Developed economies)*

In 2018, international sales of services accounted for more than 10 percent of GDP in many countries in Europe, Central America, the Caribbean, and Southeast Asia. In contrast, in much of South America, West and Central Africa, and West and East Asia, service exports accounted for less than 3 percent of GDP. Transport and tourism services dominate the export of services from developing countries. The role of transport in the service sector is constantly increasing. For many products traded in global value chains, a one-day delay is equivalent to a 1 percent tariff increase. Improving customs clearance procedures and border controls, increasing competition in the field of transport and logistics services, improving the structure of ports and managing them can reduce trade costs associated with time and uncertainty factors and mitigate the impact of adverse factors due to geographical remoteness. The expansion of trade between Asian countries as a result of the transfer of low-cost industries from China to other neighboring countries in East and South Asia could help increase shipping. As China moves to more sophisticated manufacturing operations within global value chains, new trade opportunities open up for other countries [7]. Participation in agreements providing for deep integration can give an impetus to institutional and economic policy reforms, especially if these measures are complemented by technical and financial assistance. According to Johnson and Noguera 2017, preferential trade agreements concluded by the European Union and other similar agreements, especially deep ones, play an important role in reducing the ratio of bilateral value added to gross exports, which indicates an increase in global decentralization of production [8]. Entering markets through trade liberalization helps countries expand their markets and gain access to the resources needed for production. So, for example, a large-scale reduction of tariffs carried out unilaterally in Peru in the 2000s is associated with accelerated productivity growth, increased volumes and diversification of exports within the framework of the GSCC [9, 10]. As the relationship between the economy of goods and the economy of services is becoming closer, it is necessary that the reform of the service policy — transport, and a number of business services — be an integral part of the SSCP promotion strategy. [11] Liberalization of domestic and foreign trade can solve the problem of the narrowness of the domestic market, freeing companies and farms from limited domestic demand and domestic resources. Improving the transport and communications infrastructure, as well as introducing competition in these sectors, can eliminate the difficulties associated with geographical remoteness [12]. In many countries, improved transport connectivity through improved transport infrastructure linking manufacturing or agriculture to global markets could contribute to economic growth and increased trade. These changes have a beneficial effect on the transport of containerized and dry bulk cargo. At the same time, expanding land transportation between China and Europe, which are already actively used for the delivery of expensive express cargoes that were previously transported by sea, can lead to a reorientation of some cargo flows from sea transport to rail. Pipelines built as part of the One Belt, One Way Initiative can also inhibit the growth of maritime transport of related goods (Hellenic Shipping News, 2017) [7].

One of the main risks in the field of trade policy is associated with an increase in protectionism. In this regard, United States decisions to withdraw from the Trans-Pacific Partnership Agreement, revise the North American Free Trade Agreement, and reevaluate other existing trade agreements can be noted.[14]

## 3. PARTICIPATION OF RUSSIA IN THE INTERNATIONAL TRANSPORT AND INFRASTRUCTURE PROJECTS

The intensification of global competition, which covers the markets for goods, services, and capital, has led to the restructuring of the world economy. The balance between economic centers is changing, and the role of regional economic unions is growing. This entails a change in national and world freight flows, increases the requirements for the quality of transport services. Russia seeks to become one of the leaders of the global economy, due to the transition to an intensive, innovative type of development. This path requires the adoption of new strategic decisions for the development of the transport complex for the long term. The main directions of development of the transport and logistics system of Russia are defined in the Federal Target Program "Development of the Transport System of Russia" and in the Transport Strategy of the Russian Federation for the period until 2030. [15] Implementation of the measures outlined in the Program ensures the development of a modern and efficient transport infrastructure, increasing the competitiveness of the Russian transport system and realizing the country's transit potential; increasing the competitiveness of international transport corridors. As a result of the implementation of the Program: the volume of export of transport services will reach 16.8 billion US dollars. The volume of transit traffic will reach 2 million tons per year; cargo transshipment in seaports will reach 966.1; the proportion of the length of sections of the railway network, where there are restrictions on throughput and transport capacity, will be reduced to 12 percent; the proportion of the length of public roads of federal importance that meet regulatory requirements will increase to 85.3 percent [16]. Currently, 40 major road construction projects are underway, with a total value of 2767.5 billion rubles. The largest of them: the international highway "Meridian" (Shanghai - Hamburg). The transport corridor with a length of more than 8.4 thousand km Europe - Western China should pass through the territories of Germany, Poland, Belarus, Russia, Kazakhstan, China and be built by 2023. The need for its construction is caused by an increase in trade between the EU countries and China, which reached 467 billion euros. Currently, freight traffic between the EU and China is carried out through the Suez Canal. (Figure 2).


*Figure 2: «Meridian» Motorway (Shanghai - Hamburg)*

The length of the sea route is 24 thousand km, and the delivery time takes 40-50 days. The new land route will take on some of the goods that are delivered today via the Suez Canal and the

Northern Sea Route, as well as via the Trans-Siberian Railway. Thanks to the international «Meridian» project, it will be possible to reduce the speed of delivery of goods from Europe to Asia by almost 5 times - up to 11 days and ensure a high level of security. The road will meet the characteristics of the highest technical category with 4-lane traffic. Throughout its entire length, it is planned to install electric lighting lines. The track will be fully paid. In 2015, a very large project began of a radical reconstruction of the A-181 Scandinavia federal highway, as a result of which this road connecting St. Petersburg with the border with Finland should receive instead of the current two at once from 4 to 6 lanes with a dividing lane as well as multi-level interchanges. The estimated cost of the project is 100 billion rubles. The deadline for the project is 2022. The cargo turnover of the ports of the Far East basin is about 26.37% of the total cargo turnover of the ports of Russia. All the main ports of the Far Eastern basin demonstrate an increase in transshipment. The process of modernization of many ports is being carried out, which will increase their throughput and increase cargo turnover. Currently, 85% of export and 45% of import freight traffic is carried out by sea transport of the Far East, by rail (respectively) - 13% and 45%, by river - 2% and 5%. The most important priority in the development of transport infrastructure at the moment, is the establishment of communication between the territories of the Far East and northeast of China. The most important Far Eastern project was the creation of the international transport corridors Primorye-1 and Primorye-2. The Primorye-1 corridor connects the Chinese Harbin with the Russian ports of Vladivostok, Nakhodka and Vostochny in the Primorsky Territory. Primorye-2 is a route from the border Chinese city of Hunchun to the nearby Russian ports of Posyet and Zarubino. It is estimated that by 2030 the freight turnover of the Primorye-1 and Primorye-2 corridors could reach 45 million tons. The construction of the Hyperloop superfast transport system between the port of Zarubino and the PRC border has begun. The investment project "The Big Port of Zarubino" with a total value of 154 billion rubles involves the expansion of the existing port in Trinity Bay in the Primorsky Territory, 18 km from the border with China. It is planned that grain, containers, bulk cargo, rolling (ro-ro) and others will be loaded through the port. Up to 60% of the cargo turnover will be in transit traffic from the northern provinces of the China to the southern ones. [1]

| **Large transport projects** | **Number of projects** | **Project cost billion rubles** |
|---|---|---|
| Highways Projects | 40 | 2767,5 |
| Railways | 20 | 1154,4 |
| The largest bridges | 5 | 269,2 |
| Seaports | 7 | 428,1 |
| Airports | 7 | 244,3 |
| Pipelines | 3 | 1850,0 |
| Total: | | 6713,5 |

*Table 3: Large transport and logistics projects in Russia*

The Northern Sea Route is the shortest sea route between the European part of Russia and the Far East. The legislation of the Russian Federation defines it as “the historically established national unified transport communication of Russia in the Arctic”. The length of the Northern Sea Route, from the Kara Gate to Providence Bay, is about 5600 km. An alternative to the Northern Sea Route - transport arteries passing through the Suez or Panama Canals are 12,840 nautical miles. The development of a basic transport network is envisaged on the principles of national transport corridors that are interfaced with European and Asian transport systems. The introduction of a logistics approach to the implementation of the strategy will ensure the acceleration and continuity of the movement of material flows, a 30% reduction in distribution costs, and the compliance of the logistics service with international standards.

## 4. CONCLUSION

The main trends that determine further prospects for the development of transport infrastructure and transport services:

- Uncertainty of demand has a negative impact on the implementation of transport infrastructure projects and the volume of transportation. This is due to the widespread risks of a geopolitical and economic nature, the COVID-19 pandemic pursued by trade policy, as well as some structural changes.
- The autarkic policies of many states and increasing protectionist sentiments can undermine global economic growth, limit trade flows and change their direction.[5]
- There is a deterioration in the market for shipping. The reason is the strengthening of the consolidation process in linear shipping in the form of mergers and alliances. Low demand for transportation and excess supply of tonnage in a market dominated by mega containers.
- The participation of developing countries in global value chains has played a role in increasing their share in global freight transport.
- By 2023, the aggregate average annual growth rate of dry bulk cargo transportation will amount to 4.9%, and container cargo - 6%, in particular due to an increase in the import of metal ores and a steady increase in transportation on non-main routes.
- The expansion of trade between Asian countries as a result of the transfer of low-cost industries from China to other neighboring countries of East and South Asia can also increase shipping. As China moves into more sophisticated manufacturing operations within global supply chains, new trade opportunities open up for other countries.
- More than 100 major transport projects are currently being implemented in Russia. These are projects in the field of construction of roads and railways, construction of seaports and airports, bridges and pipelines
- The intensiflcation of global competition in the markets for goods, services, and capital has led to the restructuring of the world economy. The balance between economic centers is changing, and the role of regional economic unions is growing. This entails a change in national and world freight flows, increases the requirements for the quality of transport services.

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