Retrospective and future outlook of the Russian transport performance

Natalia Romanova

1Financial University under the government of the Russian Federation, 49, Leningradsky Ave., 125167 Moscow, Russian Federation

Abstract. The article highlights issues related to the topic of transport, its role in the state, and its place in the economy. The transport system, including the global one, is characterised as one of the fundamental spheres of the economy and society. Attention is paid to the main indicators characterising the transport system. The main part of the material is devoted to the assessment of Russian transport in recent hindsight 2017-2021, as well as the indicators that are targets for Russia's transport in the future. The changes in the dynamics of the indicators are presented, as well as the reasons for the decrease in some of them. All the indicators are presented in tables, under which a short commentary on their changes is given. The article considers transport not only in terms of its main function, i.e. providing interconnection between states, companies, etc., but also as a productive transport involved in business processes. Furthermore, a list of factors constraining the development of the Russian transport system during the period under analysis is compiled. It is also shown that all of them were taken into account when such an important document for the country as the Transport Strategy until 2030 and the forecast until 2035 was being drawn up. The indicators included in this document are presented in two models: a conservative model and a baseline model. The document is designed in such a way as to ensure the future development of Russian transport.

1 Introduction

One of the most important components of the global economy is transport, which ensures interaction between states and companies from different countries. Organisation and organisation of states, the formation of infrastructure and logistics lines cannot be achieved without the use of transport.

If we talk about the global transport system, we can note the almost century-long period during which it was created. However, it is also important to emphasise that not all states have developed in the same way. Transport has not developed and developed in the same way in different countries, owing to a variety of circumstances and phenomena, including natural disasters, wars and epidemics.

The global transport system has particular characteristics. These include the length of
links, the quality and density of transport lines, the number of citizens working in transport, the volume of freight traffic, passenger traffic, etc.

At present, the world transport system is a service industry. It is this sector that ensures the transportation of various goods and passengers. Today it is impossible to compare modern cargo types with the ones transported at the beginning of the last century. At that time grain, salt, tobacco, cloth, etc. were the main cargoes. The development of transport routes and types of transport at that time significantly limited the transportation of oversized and heavy goods. The concentration of production and population in certain territories was of no small importance. In big cities of the world with a great number of manufactories, companies, factories, the transport system developed fast, and in cities with slow development the transport connection was limited.

Nowadays the volume of freight and passenger traffic has reached unprecedented levels, and modern modes of transport allow a minimum amount of time to be spent on transporting goods and passengers. Added to this is the fact that an important consideration for both sellers and buyers of goods is the desire to reduce the cost of transporting goods.

In Russia, transport plays a special role. Since the main purpose of Russian transport is to connect large territories and create production links between regions and businesses, the development of transport links is partly strategic. It is also important to emphasise that territorially Russia is the largest country in the world with an area of more than 17 million square kilometres. It goes without saying that it is impossible to travel between regions, cities, and settlements without transport. The use of all modes of transport allows, first of all, the transportation of various cargoes, as well as the transportation of passengers.

2 Main Part

Practice shows that transport is involved in the production process of any enterprise as it transports raw materials, semi-finished products, components, finished goods, and this, in turn, is a prerequisite for public production. It is known that the business process of production of many products is time-consuming and quite complex in terms of its manufacture. A product is ready and usable only when it is delivered to its final destination. The use of transport throughout the entire chain of production and marketing, from the beginning of the business process where raw materials and supplies arrive for processing through to their sale as a commodity, is a legitimate use.

It is important to stress that the role of transport is not limited to its primary function of transporting goods and commodities. In many businesses, production processes cannot usually be carried out without the direct involvement of specialised transport. Furthermore, transport is heavily involved in work areas such as warehouses and landfills for the storage of heavy products, for example, reinforced concrete products. Internal railway lines are also built and used for this type of production, which are operated by the company itself. Products are transported in special railway wagons on the railroad bed to centralised railway lines and are reloaded for further transport to customers and buyers.

It is noted that more than 10% of Russian citizens work in the Russian transport sector. The cargo turnover structure of Russian transport consists of:
- railway;
- automobile;
- maritime;
- inland waterways;
- pipeline.

In the Russian Federation, volumes transported by rail and pipeline account for the largest share of total traffic. For example, in 2021, rail transport in the Russian Federation accounted for 46.4%, while road transport accounted for 5.0%, sea transport 0.8%, inland
waterway transport 1.2%, and pipeline transport 46.6%. The tonnage, as well as freight turnover, increased to a greater extent in 2021 for air transport by 25.7% and pipeline transport by 7.5%.

Table 1 shows retrospectively the cargo turnover in trillion t-km and passenger turnover of public transport in billion passenger-kilometres in Russia for 2017-2021.

**Table 1.** Russian transport freight and passenger turnover indicators for 2017-2021. [1-3].

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<tbody>
<tr>
<td>1.</td>
<td>Transport cargo turnover, trillion tonnes-km</td>
<td>5.50</td>
<td>5.60</td>
<td>5.70</td>
<td>5.39</td>
<td>5.69</td>
</tr>
<tr>
<td>2.</td>
<td>Public transport turnover, billion passenger-kilometres</td>
<td>560.2</td>
<td>593.6</td>
<td>626.1</td>
<td>357.1</td>
<td>476.2</td>
</tr>
</tbody>
</table>

Table 1 was compiled by the author based on information from Sources: Industrial production in Russia. Official publication, Rosstat, 2021, Socio-Economic Situation of Russia. Rosstat, Moscow, 2021, Transport of Russia, Ministry of Transport of the Russian Federation, Information and Statistical Bulletin 2019 and 2020.

The figures in Table 1 show the following: in 2018, cargo turnover was up compared to the previous year, 2017. The increase was 102.7%, based on the fact that cargo turnover data is given in t-km. Then, in 2019, this figure increased again compared to the previous year's figure. The increase was 101%. For 2020, it can be seen that the situation with the transport cargo turnover indicator has changed significantly. There was a decrease in cargo turnover to the level of 5.39 trillion tonne-kilometres. The fall in the indicator was expressed by 95%. It should be noted here that this period is a period of pandemic COVID-19. Not only in Russia but worldwide, the situation was difficult, as almost all countries had closed their borders and even within countries travel was severely restricted. Businesses, households and citizens were all affected. The indicator 'freight transport' is not the only one in terms of decline. In the transport sector, the main indicators are passenger turnover of public transport, transport of cargo, transport of passengers by all modes of transport, etc. The 2021 results show that the transport cargo turnover indicator has been restored to 5.69 trillion tonne-kilometres. If, for example, we consider the situation with air transport alone in the world, then according to the International Air Transport Association (IATA) the rate of decline in global passenger turnover (measured in passenger-kilometres) in 2020 is 65.9%, which is a record figure [4].

The Public Transport Passenger Index increased to 560.2 billion passenger kilometres in 2017, to 593.6 billion passenger kilometres in 2018 and to 626.1 billion passenger kilometres in 2019 - each up between 6% and 7.9% on the previous year - and these were quite good results. For 2020, however, the figure was reduced significantly to 357.1 billion passenger-kilometres, a decline of 57.6%. The main reason for this decline in 2020 was the same COVID-19 pandemic. While freight turnover has almost recovered by the end of 2021, passenger turnover remains lower than in the previous four years.

In Russia's transport industry, the coronavirus pandemic has hit airlines: in 2020, air passenger traffic declined by 46% [5]. On this occasion, there was a statement by the Deputy Prime Minister of the Russian Federation A. Belousov, who described 2020 as a particularly difficult year for the country's transport system. He noted that passenger traffic in 2020 has fallen by more than 42%. It was also noted that water transport was down 31.8%, road transport down 28.6% and rail transport down 27.1%. Before the pandemic, the growth of the global economy was seen as the driver of transport volumes and passenger traffic in Russia. In addition, increasing domestic demand for goods and services in Russia motivated the growth of transport freight and passenger volumes.
The indicators for "Transportation of freight by all modes of transport" and "Transportation of passengers by all modes of transport" should be highlighted separately. In Table 2 these indicators are presented on the basis of Rosstat's statistical compilation "Transport in Russia" official edition, as well as on the basis of the Information and Statistical Bulletin of the Ministry of Transport of the Russian Federation for January-December 2019, January-December 2020, January-December 2022.

Table 2. Transport freight and passenger transportation by all modes of transport in Russia for 2017-2021. [1–3]

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Transport of goods by transport, million tonnes</td>
<td>8071.0</td>
<td>8145.5</td>
<td>8301.8</td>
<td>7845.2</td>
<td>8171.0</td>
</tr>
<tr>
<td>2.</td>
<td>Transportation of passengers by all modes of transport, million people</td>
<td>18484.0</td>
<td>17811.5</td>
<td>17547.3</td>
<td>13073.3</td>
<td>13718.0</td>
</tr>
</tbody>
</table>

Table 2 was compiled by the author on the basis of information from Sources: Industrial production in Russia. Official publication, Rosstat, 2021 and Socio-Economic Situation of Russia. Rosstat, Moscow, 2021, Transport of Russia, Ministry of Transport of the Russian Federation, Information and Statistical Bulletin 2019 and 2020.

Based on the data in Table 2, the following can be commented on: the Transport Freight indicator showed a steady growth from 2017 to 2019 inclusive of 8071.0 million tonnes, 8145.5 million tonnes and 8301.8 million tonnes respectively. The drop in this figure to 7,845.2 million tonnes occurred in 2020. The main reason for this is still the COVID-19 pandemic, which caused almost all indicators of the Russian transport system to decline. In 2021 this indicator was not restored to the previous year's level.

As for the passenger transport by all modes of transport over five years, the picture is somewhat different. In 2018, the figure was 17811.5 million, down by 672.5 million compared to the previous year. A further decrease was also noted in 2019, to a level of 17547.3 million travellers. In 2020, the indicator "passenger transport by all modes of transport", the year of the COVID-19 pandemic, fell to a level of 13073.3 million, down 4738.2 million from 2018 and 4474 million from 2019. In 2021, this figure has not been restored to the level of 2018 and 2019.

At present, the question related to the further development of transport in Russia remains relevant. It is important to understand whether transport freight turnover and passenger traffic will increase, and how growth can be ensured.

In 2021, the Transport Strategy until 2030 and with a forecast until 2035 (hereinafter referred to as the Strategy) was adopted. The Strategy was developed in accordance with a number of official documents: Federal Law "On Strategic Planning in the Russian Federation", Presidential Decree No. 204 of May 7, 2018 "On National Goals and Strategic Development Objectives of the Russian Federation for the period until 2024", etc. [6].

Describing the state of the Russian transport system in recent years, we can talk about real difficulties in this area. It is advisable to note the following as the main problems hindering the stable development of transport infrastructure in Russia:

- lack of funding, specific climatic conditions, chronic underdevelopment of the transport network in the regions, etc.
- difficulties related to the construction of road and rail networks due to the vastness of the territory and population density figures;
- insufficient network of high-speed lines;
- availability of railway tracks requiring immediate maintenance and repair;
- the rate of adoption of new technologies in transport remains low;
- In maritime transport, it is noted that the share of vessels older than 20 years is 86% for passenger vessels and 94% for cargo vessels;
- insufficient development of inland waterway transport infrastructure, caused by chronic underfunding in this area;
- high wear and tear on the airfield infrastructure;
- low capacity to develop and improve automation and digitalisation of logistics and customs transport services in export operations;
- inability to significantly reduce travel times for freight and passengers due to insufficient development of motorways;
- lack of implementation of projects to introduce cycle lanes for cyclists;
- lack of sufficient infrastructure for pedestrian traffic in some cities and towns;
- the high cost of air travel compared to the low average income of citizens;
- high dependence of domestic airlines on foreign partners;
- etc.

This is just a small list of complex issues that need to be addressed by the national government and transport company managers in the future.

Given the gross domestic product growth rates envisaged in the baseline and conservative scenarios for the Transport Strategy of the Russian Federation to 2030 with an outlook to 2035 (Table 3), changes in freight and passenger turnover figures for the same periods can be assessed as cautious.

**Table 3.** Growth rate of gross domestic product in the baseline and conservative scenarios in the baseline and conservative scenarios of the Transport Strategy of the Russian Federation until 2030 with a forecast for the period up to 2035, percent [6].

<table>
<thead>
<tr>
<th>Script</th>
<th>2019-2024 years</th>
<th>2025 - 2030 years</th>
<th>2025 - 2030 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>3</td>
<td>3.1 – 3.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Conservative</td>
<td>2.5</td>
<td>2.5-2.6</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Given the GDP growth rates in each period presented in Table 3, it is useful to consider which indicators, as the main ones characterising domestic transport, are reflected in the Strategy.

**Table 4.** Forecast of freight traffic under the scenarios of the Transport Strategy of the Russian Federation until 2030 with a forecast for the period until 2035, million tonnes [6].

<table>
<thead>
<tr>
<th>Freight transport by mode of transport</th>
<th>2019</th>
<th>2024</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total freight traffic (excluding pipeline transport)</td>
<td>7122</td>
<td>7516</td>
<td>7898</td>
<td>8218</td>
</tr>
<tr>
<td>Basic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total freight traffic (excluding pipeline transport)</td>
<td>7122</td>
<td>7633</td>
<td>7971</td>
<td>8342</td>
</tr>
</tbody>
</table>

The data in Table 4 suggest that under both the conservative and the baseline scenarios, total freight traffic (excluding pipeline transport) for the planning period from 2024 to 2035 will increase by at least 4% annually. In planning these figures, the following target aspects have been taken into account:
- improving efficiency and extending the range of logistics services;
- vehicle renewal;
- ensuring transport safety;
- development of suburban railway transport;
- ensuring digitalisation of transport infrastructure;
- development of sectoral science and education in the transport sector;
- introduction of new technologies aimed at reducing the negative environmental impact of the transport sector;
- and more.

Next, we can consider how the Strategy presents long-distance passenger transport volumes across all modes of transport in the conservative and baseline scenarios.

**Table 5.** Volume of long-distance passenger traffic by all modes of transport in the conservative and baseline scenarios, million passengers per year [6].

<table>
<thead>
<tr>
<th>Type of transport</th>
<th>2019</th>
<th>2024</th>
<th>2030</th>
<th>2035</th>
</tr>
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<tbody>
<tr>
<td>Conservative</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>By all means of transport</td>
<td>395</td>
<td>411</td>
<td>476</td>
<td>520</td>
</tr>
<tr>
<td>Basic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By all means of transport</td>
<td>395</td>
<td>420</td>
<td>489</td>
<td>540</td>
</tr>
</tbody>
</table>

Table 5 shows that long-distance passenger transport volumes across all modes will grow by at least 10% in both the conservative and baseline scenarios over the next decade.

In planning these figures, target aspects were taken into account, such as:
- radical improvement in road infrastructure;
- increasing the average age of passenger locomotives;
- increased air transport mobility;
- increased air mobility of the population;
- development of a system of accessibility and quality of transport services for the population in accordance with social standards;
- repair and reconstruction of roads;
- increased investment in passenger transport;
- and others.

**3 Conclusions**

To summarise in a retrospective assessment the main indicators characterising Russian transport, as well as the projected indicators of the development of Russia's transport system, the following can be noted.

1. In the period from 2017 to 2021, taken as analysed in the article, the development of Russia's transport system has progressed at a relatively steady pace, not counting 2020 as the year of sharp decline due to the COVID-19 pandemic.

2. The rate of growth of the domestic transport system in the period under review, from 2017 to 2021, could have been higher if the factors that negatively affect the development of transport could have been quantitatively reduced and the problems faced by the transport system could have been resolved in a timely manner. Obviously, these are very challenging tasks.

3. One might have expected that, having successfully tackled the COVID-19 pandemic, the Russian Federation would have the opportunity to deliver growth in key indicators to 2019 levels, but as it turned out, the announcement of sanctions on the Russian Federation has exacerbated an already difficult situation in the Russian economy. However, the strategy shows that, despite a long series of constraints, the growth and development of the Russian transport sector is projected.

It can be assumed that at some point in time it will be necessary to adjust individual indicators, but in any case, the Transport Strategy to 2030 and the 2035 forecast will be implemented in Russia.
References

1. *Industrial production in Russia. Official publication* (Rosstat, Moscow, 2021)
2. *Socio-economic situation in Russia* (Rosstat, Moscow, 2021)
4. *International Air Transport Association (IATA)* (2021)