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Research Report

FEASIBILITY STUDY FOR THE DEVELOPMENT OF TRANSPORTATION ON THE SAIMAA CANAL AND POSSIBLE SWITCHING OF TRANSBOUNDARY CARGO TURNOVER FROM ROAD AND RAILWAY TRANSPORT TO WATER TRANSPORT (final)

LIMITED LIABILITY COMPANY



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ABSTRACT

Report 72 pages, 19 tables, 13 figures, 18 references

COMMERCIALIZATION OF TRANSPORTATION, INLAND WATER TRANSPORT, RAILWAY TRANSPORT, ROAD TRANSPORT, CARGO EXPORT, CARGO IMPORT, SAIMAA CANAL

The goal is to identify measures to switch cargo flows from road and railway transport to water transport using the Saimaa Canal.

Tasks:

- analysis of the general structure of cargo transportation between Russia and Finland for 2014-2020;
- determination of priority measures for switching cargo turnover from road and railway transport to water transport;
- development of scientific and practical recommendations for switching transboundary cargo turnover between Russia and Finland to inland waterway transport.

The object of the research is the cargo turnover between Russia and Finland, the subjects and regulatory documents that ensure this cargo turnover.

The subject of the research is measures to intensify cargo turnover through the Saimaa Canal, including through recommendations for changing the regulatory framework.

The results of the work are the results of a comparative analysis of various types of transport, the composition and structure of tariffs for the transportation of goods by water, tools for the development of water communications can be used to formulate recommendations for switching cargo turnover between Russia and Finland to inland water transport.

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INTRODUCTION

This report is a part of the Scientific Report for the Federal State Budgetary Educational Institution of Higher Professional Education “Admiral Makarov State University of Maritime and Inland Shipping” according to Contract № D-53-2020 of 16.03.2020.

This scientific work is executed within the framework of international project “Future potential of inland waterways” (“INFUTURE”) in conformity with Cross-border cooperation program with financing from the EU, the Russian Federation and the Republic of Finland.

Russia ranks third in the ranking of Finland's partner countries (first and second places are occupied by Germany and Sweden), which is reflected in the level of cargo turnover between our countries.

In 2019 the trade turnover between Russia and Finland, according to the Federal Customs Service of the Russian Federation, amounted to 13,564,487,777 USD, having decreased by 8.05% (1,187,668,606 USD) compared to 2018¹. General cargoes are transported between countries every day; many of them are in transit. Loyal conditions allow to purchase goods in Europe and deliver them to Moscow through the Finnish customs.

In this regard, the analysis of cargo transportation and their possible development is one of the topical areas of the research.

In particular, the search direction for optimization is the assessment of the possibilities for the use of various types of transport, which carry goods between Russia and Finland.

The rapid development of road transport in recent years has led to the fact that today, mineral raw materials, construction materials, metal products and other goods, which traditionally were bound to towards rail and river transport, are transported by trucks over long distances. The routes of heavy-duty trucks reach three or

¹ Official website of the Federal Customs Service of the Russian Federation // <https://customs.gov.ru/folder/511>

even five thousand kilometers. As a result, colossal damage is inflicted not only to the environment, but also to the country's road network.

Many European countries also face similar problems, and even at the EU highest level are involved in its solution. To stimulate the redistribution of cargo flows to sea and river transport, the EU countries have adopted a number of consistent and targeted directives for switching transport from road to rail and inland waterway transport. By 2030 it is planned to switch 30% of intercity road transport to more ecological transport modes. In accordance with the EU transport policy until 2050, about a third of all road cargo transport over a distance of more than 300 km shall be switched to rail and river transport.

It is advisable to project these trends onto the logistics system of Russia, especially in terms of the movement of goods between Russia and Finland, which is one of the largest economic entities in the European market, since the European experience has repeatedly proved the effectiveness of its actions.

Thus, the purpose of this research work is to determine measures for switching the cargo flows from road and railway transport to water transport using the Saimaa Canal.

To achieve this goal, the following tasks were set and solved:

- analysis of the general structure of cargo transportation between Russia and Finland for 2014-2020;
- analysis of the composition and structure of imports between Russia and Finland;
- analysis of the composition and structure of exports between Russia and Finland;
- identification of the most attractive federal districts of the Russian Federation and constituent entities of the Russian Federation in terms of cargo turnover with Finland;
- determination of priority measures for switching cargo turnover from road and railway transport to water transport;
- economic assessment and calculation of the composition and structure

of tariffs for the transportation of goods by road, railway and water transport;

- comparative characteristics of the port structure of the main logistics entities of the Saimaa Canal;
- assessment of the positive and negative aspects of using the Saimaa Canal for the transport of goods between Russia and Finland;
- assessment of the peculiarities of customs transit in relation to goods transported by water transport;
- development of scientific and practical recommendations for switching transboundary cargo turnover between Russia and Finland to inland waterway transport;
- analysis of the main regulatory legal acts for switching cargo turnover to transportation by water transport.

The proposals reflected in this work are of a recommendatory nature, but, according to the authors, they are a set of measures, in the implementation of which it is possible to talk about switching part of the cargo flows between Russia and Finland to water transport.

1. ANALYSIS OF STATISTICAL DATA ON CARGO TRAFFIC BY ROAD, RAILWAY AND INLAND WATERWAY TRANSPORT BETWEEN RUSSIA AND FINLAND

1.1. Analysis of cargo flows by main modes of transport

The following databases were used as the main data sources for the analysis of cargo traffic between Russia and Finland.

1. Data from the Federal Customs Service of Russia.

Detailing was carried out according to the following factors: constituent entity of the Federation, direction of movement (import/export), country of destination/origin, TN VED (Goods Nomenclature for Foreign Economic Activities of the Russian Federation, 10 characters), month, net weight, statistical value (in USD), the number of goods in additional units of measurement (pieces, liters, meters, etc.).

2. International trade data EuroStat.

Detailing was carried out according to the following factors: country of origin, country of destination, direction of movement (import/export), country of destination/origin, TN VED (6 characters of the TN VED - indicating the type of cargo movement, 8 characters of the TN VED - without specifying the type of cargo movement), month, net weight, statistical cost (in USD), quantity of goods in additional units of measurement (pieces, liters, meters, etc.), mode of transport.

This detailing allows to comprehensively study the composition and structure of cargo traffic between Russia and Finland, identify weak points and "points of growth", which will further make it possible to formulate recommendations for their optimization.

The period for which the data was taken is from January 2014 to December 2020 inclusive.

Data on import and export of goods between Finland and Russia according to Eurostat data are presented in Table 1.²

² Eurostat EXTRA EU trade since 2000 by mode of transport (HS6) (DS-043328) (statistics of international trade with detailing by transport mode and commodity items at the level of 6 characters of the Harmonized System). Source: https://ec.europa.eu/eurostat/estat-navtree-portlet-prod/BulkDownloadListing?sort=1&dir=comext%2FCOMEXT_DATA%2FTRANSPORT_HS

Table 1. - Volumes of import and export of goods between Finland and Russia for 2014-2019, in mln. EUR

| Period of time | Export volume from Russia | Import volume into Russia |
|----------------|------------------------------|------------------------------|
| Q1 2014 | 1974.97 | 1019.84 |
| Q2 2014 | 2111.69 | 1204.80 |
| Q3 2014 | 1936.32 | 1168.03 |
| Q4 2014 | 1514.33 | 1070.10 |
| Q1 2015 | 1477.56 | 658.17 |
| Q2 2015 | 1040.22 | 783.48 |
| Q3 2015 | 1409.39 | 800.89 |
| Q4 2015 | 1245.37 | 776.68 |
| Q1 2016 | 998.93 | 567.01 |
| Q2 2016 | 1407.17 | 723.39 |
| Q3 2016 | 1428.63 | 730.67 |
| Q4 2016 | 1676.42 | 830.48 |
| Q1 2017 | 2209.20 | 730.49 |
| Q2 2017 | 1797.57 | 819.96 |
| Q3 2017 | 1737.28 | 859.21 |
| Q4 2017 | 1797.97 | 882.25 |
| Q1 2018 | 2091.57 | 729.20 |
| Q2 2018 | 2063.40 | 812.73 |
| Q3 2018 | 2231.33 | 754.58 |
| Q4 2018 | 1991.09 | 907.83 |
| Q1 2019 | 1968.76 | 728.75 |
| Q2 2019 | 2117.14 | 965.79 |
| Q3 2019 | 2044.66 | 971.64 |
| Q4 2019 | 2059.43 | 848.25 |
| Q1 2020 | 2475.10 | 617.10 |
| Q2 2020 | 1245.90 | 675.30 |
| Q3 2020 | 1452.20 | 758.50 |

| Period of time | Export volume from Russia | Import volume into Russia |
|----------------|------------------------------|------------------------------|
| Q4 2020 | 1933.10 | 846.30 |
| Grand total | 49436.70 | 23241.40 |

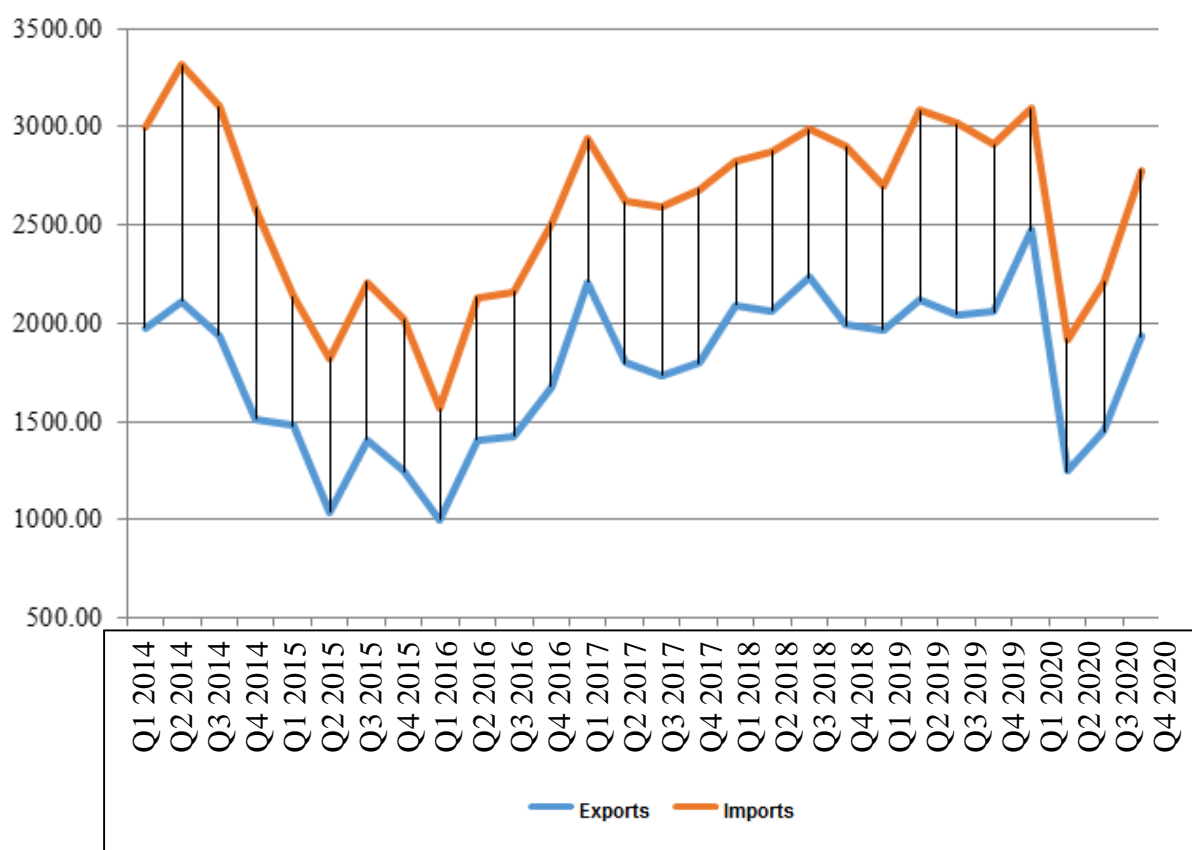


Figure 1– Dynamics of imports and exports between Russia and Finland in 2014-2020

The analysis of the last five years showed a significant drop in the volume of cargo traffic in 2015, when, due to the crisis reasons at the end of 2014, the cost of transported goods decreased 1.4-1.7 times. This affected both exports and imports of goods between the countries.

Although since that time the volume of cargo turnover has gradually increased and by the end of 2019 began to reach the pre-crisis values of the level of 2014, the pandemic of 2020 led to a significant decrease in the volume of cargo turnover.

At the same time, it is interesting to analyze the import-export of goods by

year and compare them with each other. The results of this comparison are shown in Table 2.³

Table 2. - Comparison of the volumes of import and export of goods between Russia and Finland for 2014-2019

| Year | Export from Russia, mln. EUR | Import to Russia, mln. EUR | The difference between exports and imports, mln. EUR | Relative difference between exports and imports, % |
|------|------------------------------|----------------------------|--|--|
| 2014 | 7537.31 | 4462.77 | 3074.54 | 40.8% |
| 2015 | 5172.53 | 3019.22 | 2153.32 | 41.6% |
| 2016 | 5511.15 | 2851.54 | 2659.61 | 48.3% |
| 2017 | 7542.02 | 3291.90 | 4250.12 | 56.4% |
| 2018 | 8377.38 | 3204.35 | 5173.03 | 61.7% |
| 2019 | 8189.98 | 3514.42 | 4675.56 | 57.1% |
| 2020 | 7106.30 | 3402.78 | 3703.52 | 52.1% |

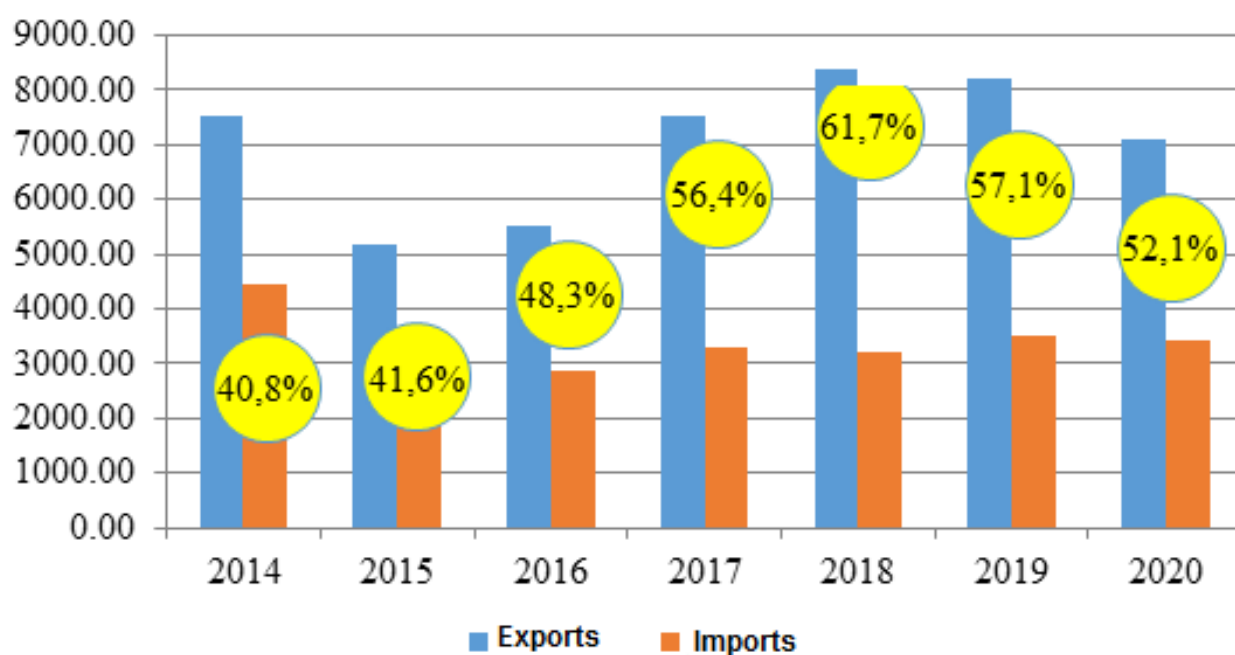


Figure 2. – The ratio of imports and exports between Russia and Finland in 2014-2020

³ Eurostat EXTRA EU trade since 2000 by transport mode (HS6) (DS-043328) (statistics of international trade with detailing by transport mode and commodity items at the level of 6 characters of the Harmonized System). Source: https://ec.europa.eu/eurostat/estat-navtree-portlet-prod/BulkDownloadListing?sort=1&dir=comext%2FCOMEXT_DATA%2FTRANSPORT_HS

As can be seen from the presented graph, the main growth in cargo turnover was attributed to the export of goods from Russia to Finland, while the export of cargo turnover was noticeably fall behind in terms of growth rates. At the end of 2019, the volume of cargo traffic did not even reach the values of 2014.

Thus, over the past three years, there has been a significant excess of export volumes over the volume of imports of goods between Russia and Finland, in 2018 this value reached 61.7%, which is one and a half times higher than the pre-crisis difference.

It can be concluded that there is a significant excess of the volume of exports of goods from Russia over the volume of imports.

The reasons for this excess may be the following factors.

1. Increase in the value of EURO (EUR).

One of the main factors was the sharp change in the exchange rate.

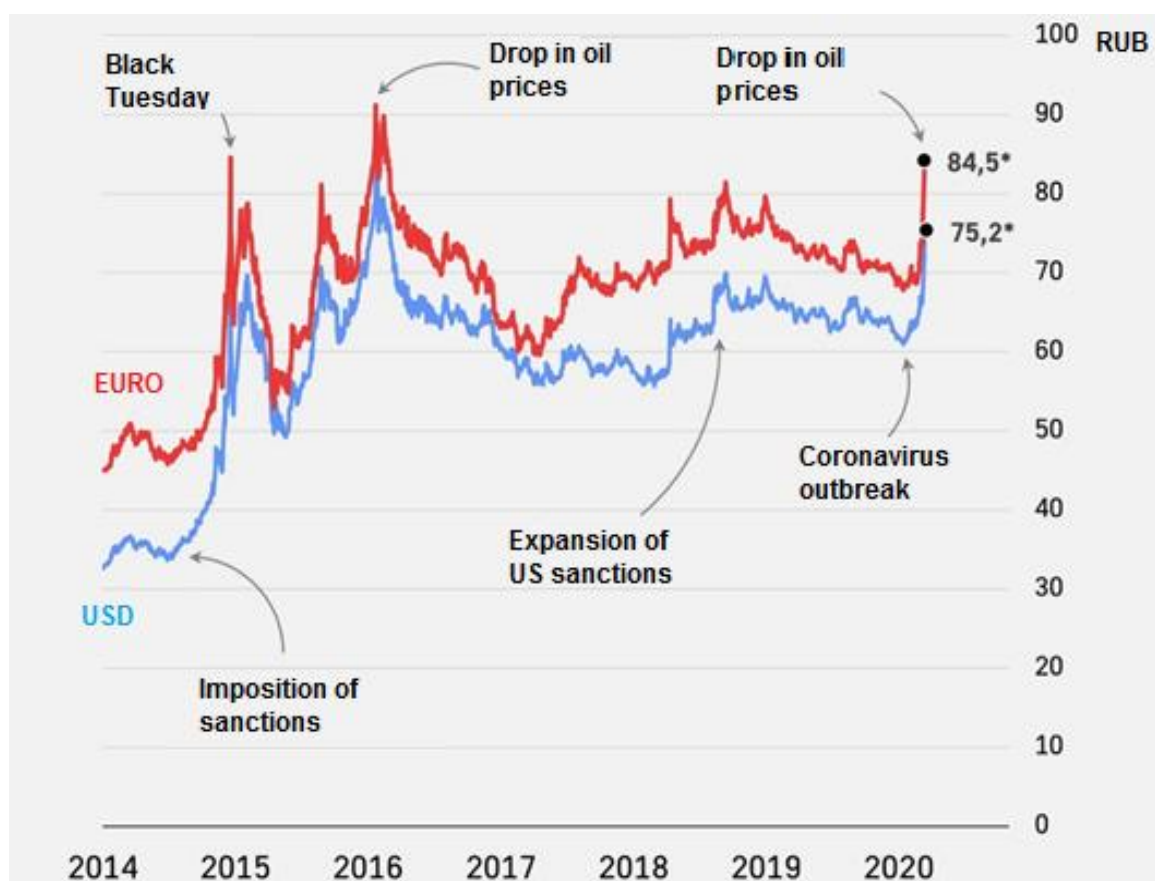


Figure 3. - Change in exchange rates from 2014 to 2019⁴

⁴ Analysis of foreign trade. Archives of statistical data. Source <http://cargostat.ru/>

Obviously, given the relative stability of the price of exported goods in EUR, the cost of these goods for Russian enterprises increased significantly (15-20%), which made the list of goods less attractive.

2. Changes in the structure of demand

Among other things, the above factor was the reason for the change in the structure of demand over the past five years. Thus, if the structure of exports of goods remained approximately the same as before the crisis of the end of 2014 - it is dominated by raw materials, then the share of metals and metal products in the structure of imports increased against the background of a decrease in the share of food products and raw materials.

3. Sanction restrictions

The sanctions that were applied to Russia, as well as retaliatory sanctions from Russia, limited the list of goods that were previously involved in exports and imports. This, among other things, was a factor in the sharp decline in cargo turnover in 2015. Gradually, consumers and suppliers found alternative substitutes for these goods, which gradually began to restore the volume of cargo turnover.

Within the framework of this study, among the specified modes of transport, only three of the modes are important:

- road transport;
- railway transport;
- internal water transport.

These three modes of transport account for about 75% of all transport traffic between Russia and Finland (Fig. 4).

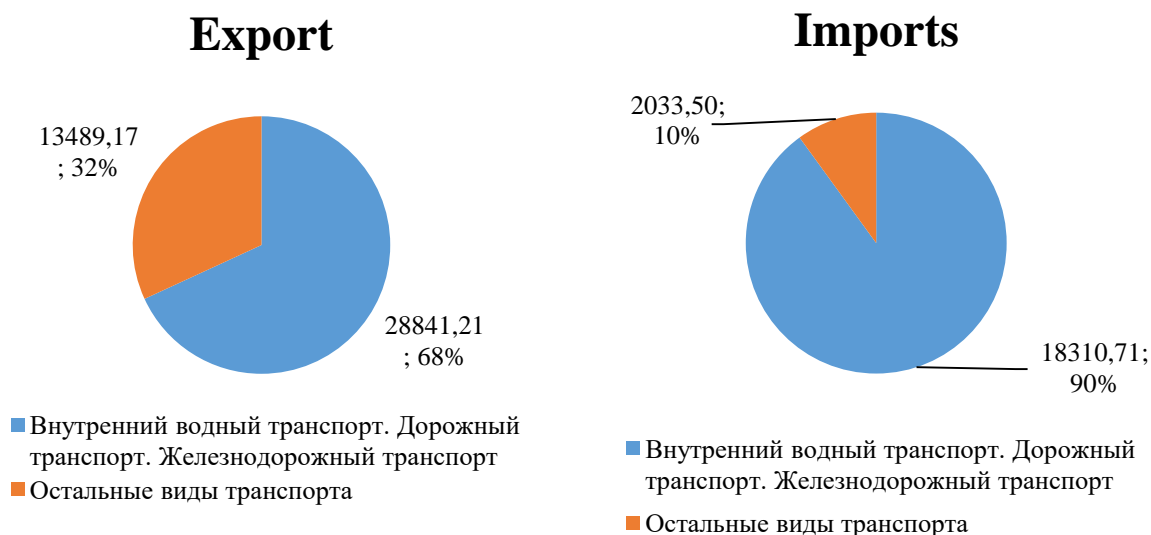


Figure 4. - Share of inland waterway, road and railway transport (in blue) and other transport modes (in orange-brown) in the total volume of export and import cargo transportation, thousand EUR, %

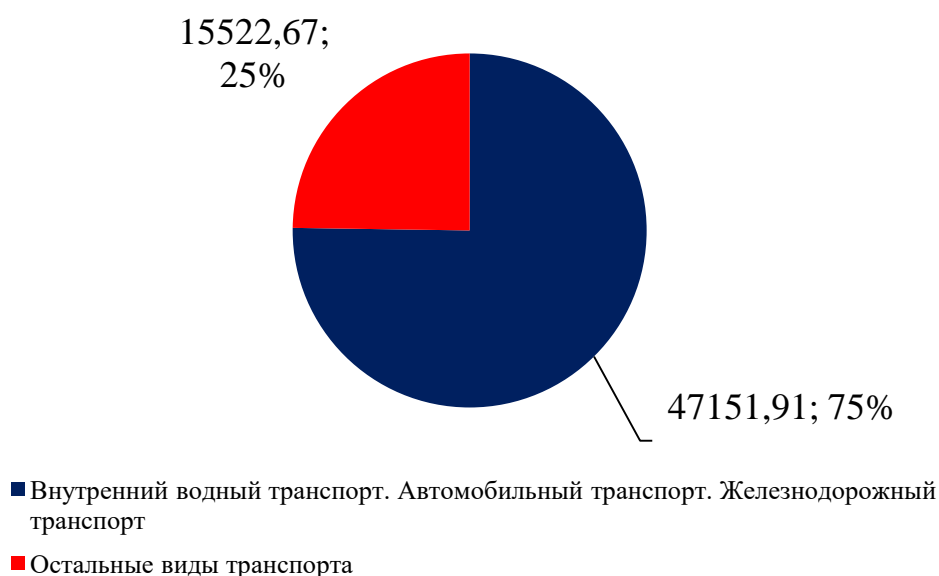


Figure 5. - The share of inland waterway, road and railway transport (in blue) and other transport modes (in red) for 2014-2019 in the total volume of cargo traffic between Russia and Finland, thousand EUR, %

The diagrams show that the other transport modes include sea, pipeline transport and transportation by individuals for their own needs.

Analysis of the information presented above shows that the three transport modes identified have a significant share in the total volume of traffic.

Thus, it can be argued that further optimization of the traffic data structure by transport mode has a synergistic effect and can have a significant impact on the organization and economy of cargo traffic between Finland and Russia in the near future.

At the same time, it is important to analyze statistical data on the structure of transportation by these transport modes, which is presented in Table 3.⁵

Table 3. - Volumes of exports and imports between Finland and Russia for 2014-2019 by internal river, road and railway transport, mln. EUR

| Year | Export / Import | Inland waterway transport | Road transport | Railway transport |
|------|-----------------|---------------------------|----------------|-------------------|
| 2014 | export | 27.66 | 525.32 | 1268.53 |
| | import | 1.24 | 3845.82 | 261.07 |
| 2015 | export | 19.19 | 536.72 | 950.83 |
| | import | 0.48 | 2656.69 | 149.59 |
| 2016 | export | 15.12 | 604.80 | 1110.13 |
| | import | 0.19 | 2510.72 | 144.04 |
| 2017 | export | 16.76 | 645.35 | 2405.86 |
| | import | 0.00 | 2846.18 | 99.98 |
| 2018 | export | 26.83 | 790.87 | 2032.26 |
| | import | 0.12 | 2768.04 | 117.36 |
| 2019 | export | 18.40 | 757.21 | 1737.35 |
| | import | 0.19 | 2797.19 | 111.80 |

⁵ Data of customs statistics of foreign trade, FCS of Russia. Sources: <http://stat.customs.ru/> (for the period: 01.01.2014 - 31.12.2019)

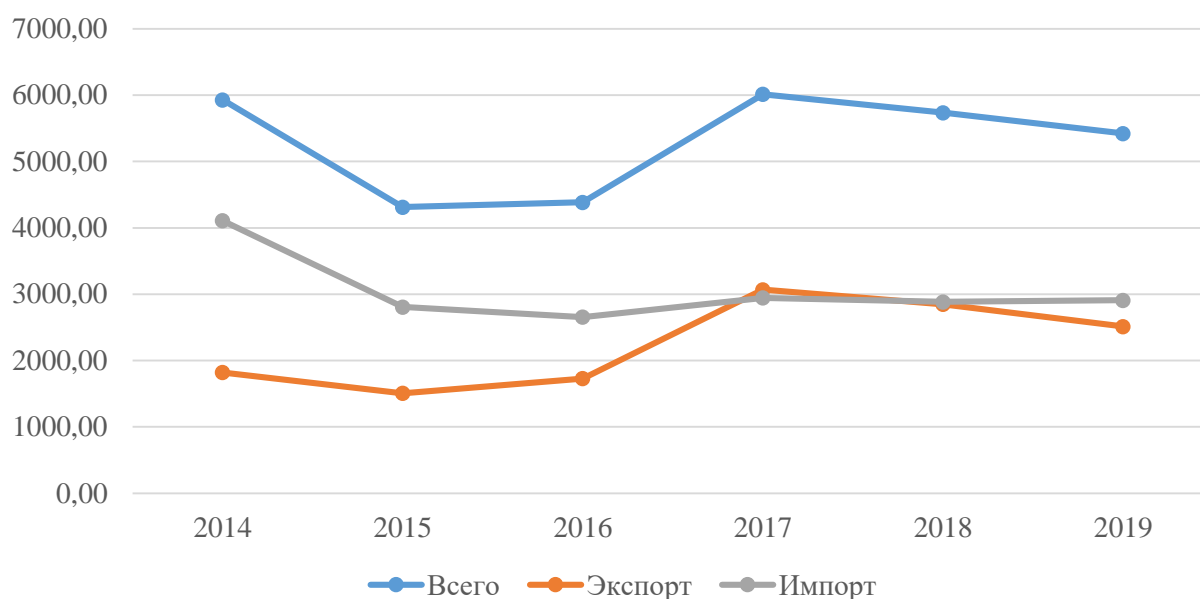


Figure 6. - Dynamics of export and import volumes between Finland and Russia in 2014-2019, exports – in orange, imports – in grey, total – in blue, mln.euro

At the same time, the structure of traffic volumes by these transport modes is as follows (Fig. 7).

As can be seen from the presented diagrams, the main share in transportation is taken by road transport.

1.2. Inland waterway transport

The share of inland waterway transport is very low – less than 1%. At the same time, the potential for transportation by this type of transport is quite high. For example, being the main inland waterway, the Saimaa Canal between Russia and Finland has sufficient potential to increase cargo traffic more than 2 times.

This is confirmed by the following factors.

First, the statistics of export and import of goods between Russia and Finland, given in Tables 4 and 5, indicate that the level of the current congestion of the Saimaa Canal does not even reach the level of 2014. For imports, the difference reaches 6.5 times in the cost of transported goods, for exports – 1.5 times. This is despite the fact that the average annual euro exchange rate in 2014 was 51 rubles, and in 2019 – 72 rubles.

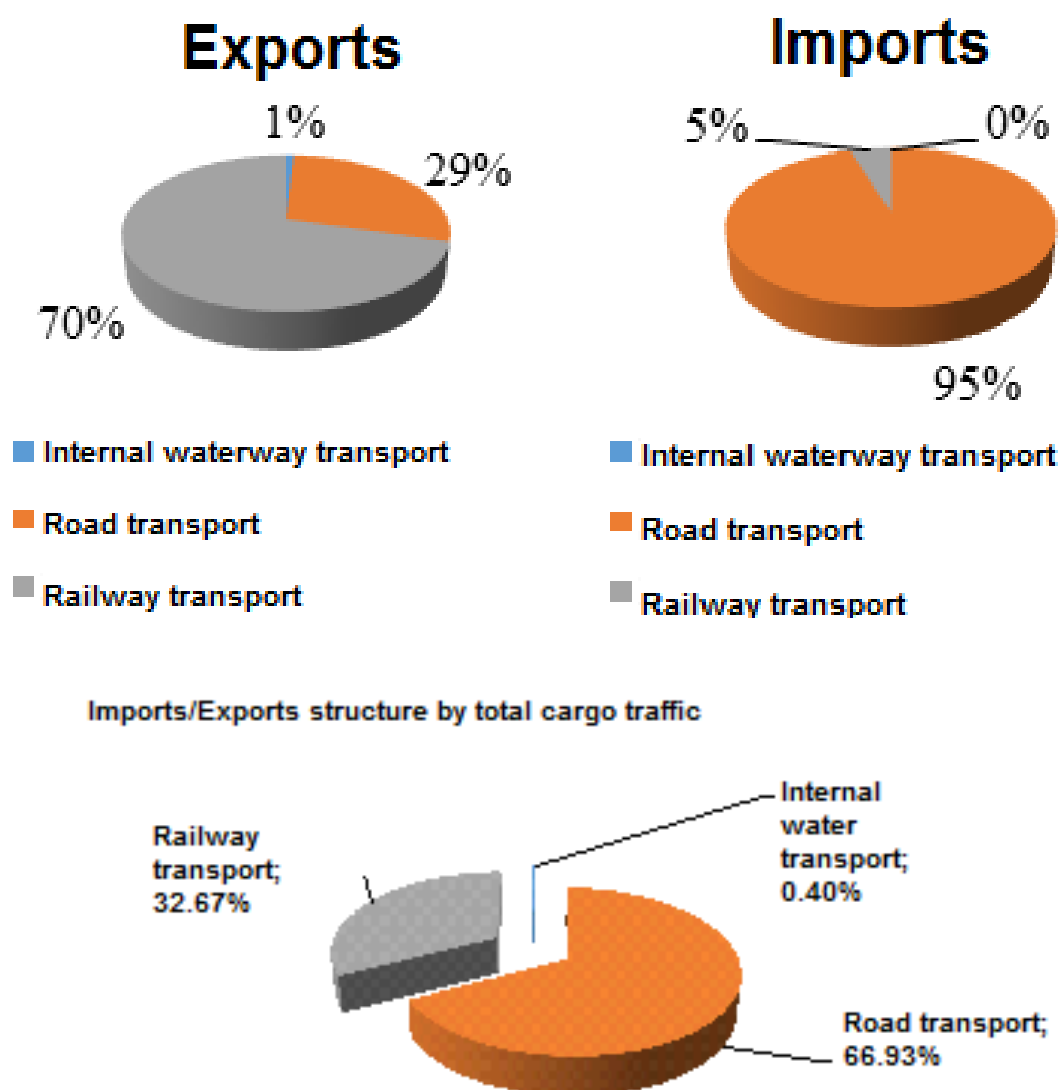


Figure 7. - Structure of export and import cargo flows between Russia and Finland for 2014-2019⁶

Thus, the potential throughput of the Saimaa Canal could triple, reaching the level of 2014.

Secondly, the potential of the Saimaa Canal is determined by the seasonality of navigation (navigation period), which is currently limited to the time from March

⁶ Eurostat EXTRA EU trade since 2000 by transport mode (HS6) (DS-043328) (international trade statistics with a breakdown by transport mode and headings at the 6-digit level of the Harmonized System)

to December. Within the project from the Finnish part, there is a creation of a self-propelled ice-breaking bow, which, in conjunction with other technical and organizational measures, can extend the navigation period for the winter months and make it year-round.⁷

Thirdly, it is planned to increase the length of the lock chambers (by almost 12 meters) and increase the water level in the canal by 0.1 m, which will allow larger vessels to be navigated through the canal.

According to expert estimates, these factors in general make it possible to increase the maximum channel capacity by more than 2 times.

The Saimaa Canal makes it possible to navigate ships from the ports of inland waters of Eastern and South-Eastern Finland to the countries of Central and Eastern Europe and Russia. Within Russian territory, the Saimaa Canal provides direct access to the port complexes of Vyborg and Vysotsk. At the same time, for many cargo owners, it is a logical addition to the Volga-Baltic waterway.

Within the Saimaa Lakes system, there are large Finnish timber and machine-building enterprises. Water transport is the most economical for the transportation of foreign trade cargo, in addition, the Saimaa Canal allows the above-mentioned Finnish enterprises to import raw materials on the shortest path (including from Russia), export their products to the ports of the Gulf of Finland and further by sea to Central Europe or Russia. This determines the high intensity of navigation along the canal during the navigation period. On the 43-kilometer long waterway up to 30 vessels are constantly operating only within the Russian direction. Of the domestic shipping companies, the most active are North-Western Shipping Company and Neva-Hagen, occasionally ships of the White Sea-Onega Shipping Company and Orimi Ship appeared.⁸

The Russian companies provide transportation of mainly domestic goods,

⁷ Zhukov S. Self-propelled icebreaker nose will allow the Finns to expand the potential of the Saimaa Canal of the Russian Federation. // Information portal "New Inform". [Electronic resource]. - 06.03.2019. - Source: https://newinform.com/164384-samokhodnyi-ledokolnyi-nos-pozvolit-finnam-rasshirit-potencial-saimenskogo-kanala-rf?utm_source=yxnews&utm_medium=desktop&utm_referrer=https%3A%2F%2Fyandex.ru%2Fnews

⁸ Zucker V., Esipovich F. A canal in a thousand lakes // Expert North-West, no. 32 (285). – 2016

since foreign-flag ships cannot operate within the Volgo-Balt basin. According to experts, Russian companies are almost completely forced out of cargo traffic by large German and Dutch carriers following the Saimaa Canal from Finland to Germany, England, France and vice versa. Thus, in the coming years, Russian shipowners will lose the advantage that the closed inland waterways provided them and they will have to compete with foreigners even for internal cargo flows.

Therefore, the analysis of cargo flows and the development of recommendations for the further development and more intensive use of inland waterways is an urgent topic not only in the North-West region, but also in international trade and political relations between Finland and Russia in general.

Nevertheless, it is initially necessary to analyze the structure of goods transported by inland water transport on the one hand, and by road and rail, on the other hand, in order to assess the possibility of redirecting cargo flows from land-based types of cargo.

As for the structure of exports and imports when using inland waterway transport by types of transported goods, then it is presented in the following form.⁹

Table 4. - Composition and structure of exports and imports between Russia and Finland, transported by inland waterway transport for 2014-2019

| Import / Export | Classification rating | Share of cargo in the total cost | Cost of transported goods, EUR | Volume of transported cargo, t |
|-------------------------------|--|----------------------------------|--------------------------------|--------------------------------|
| Export from Russia to Finland | Rough wood, with bark or sapwood removed or not removed, or roughly edged or unedged | 90.63% | 114 342 500 | 1 880 149 |
| | Fuel wood in the form of logs, cordwoods, branches, bundles of brushwood or similar forms; wood in the form of chips or shavings; sawdust and wood waste and scrap, not agglomerated or agglomerated in the form of logs, briquettes, pellets or similar | 5.35% | 6 744 593 | 95 870 |
| | Residues from starch production and similar residues, beet pulp, bagasse, or sugar-cane pulp, and other wastes from the production of sugar, stillage and other wastes | 1.66% | 2 096 366 | 12 390 |

⁹ Eurostat EXTRA EU trade since 2000 by mode of transport (HS6) (DS-043328) (international trade statistics with a breakdown by transport mode and heading at the 6-digit level of the Harmonized System).

| Import / Export | Classification rating | Share of cargo in the total cost | Cost of transported goods, EUR | Volume of transported cargo, t |
|-------------------------------------|--|----------------------------------|--------------------------------|--------------------------------|
| | from brewing or distilling, not granular or granular | | | |
| | Hard coal; briquettes, pellets and similar solid fuels obtained from coal | 0.61% | 774 707 | 12 723 |
| Export from Russia to Finland TOTAL | | 98.25% | 123 958 166 | 2 001 132 |
| Import from Finland to Russia | Pebbles, gravel, rock stone or crushed stone, commonly used as aggregates for concrete, road or railroad ballast or other ballast, pebbles, and boulders and flint gravel, heat treated or untreated | 1.75% | 2 211 380 | 62 096 |
| | Liquid pumps with or without flow meters; liquid lifters | 0.00% | 250 | 0,005 |
| Import from Finland to Russia TOTAL | | 1.75% | 2 211 630 | 62 096 |
| Grand total | | 100.00% | 126 169 796 | 2 063 228 626 |

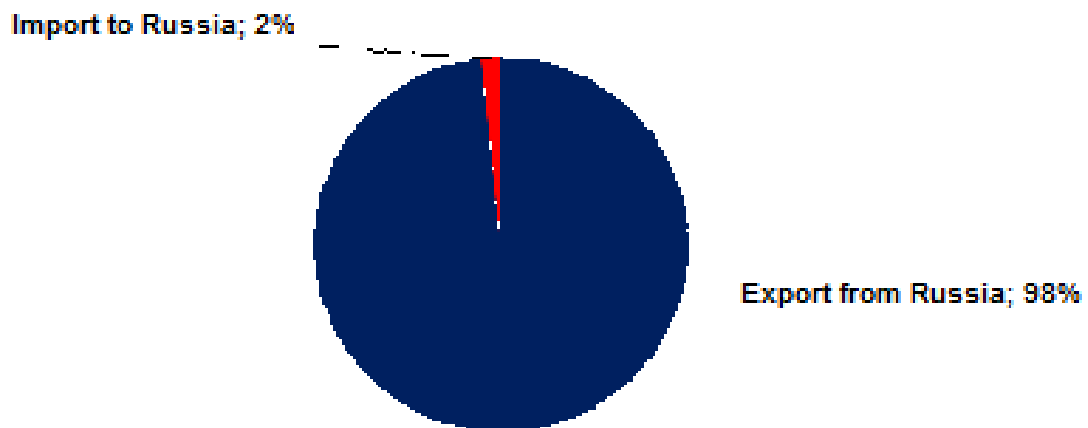


Figure 8. - Structure of import and export of goods transported in 2014-2019 by inland water transport between Russia and Finland

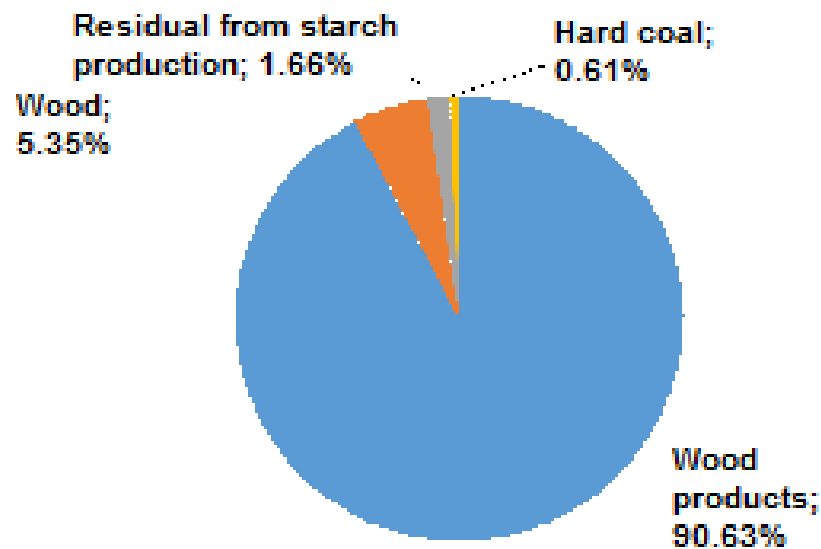


Figure 9. - The structure of the export of goods transported in 2014-2019 by inland water transport between Russia and Finland

Based on the results of the analysis of the above data, the following conclusions can be drawn:

- 1) in the structure of cargo transportation by inland water transport between Russia and Finland, exports are of overwhelming importance, the share of which reaches 98%;
- 2) the main type of goods exported from Russia to Finland are raw materials - timber and wood, while timber is the prevailing cargo in transportation, the share of which reaches more than 90%;
- 3) All of this fully characterizes the narrow focus of the use of inland waterway transport, focused only on the export of raw materials from Russia to Finland - the rest of the cargo takes up an insignificant part of the transportation.

At the same time, the main artery of inland water transportation between Russia and Finland is the Saimaa Canal, which has a significant, but even 50% unused potential at the current time. Only a balanced approach of Russia and Finland to the question of the future of the Saimaa Canal will make it possible to effectively use its potential.

Currently, there are various, both domestic and EU programs for the development of cross-border areas, including in the Baltic Sea region and between Finland and Russia.

One of the tasks of such programs is to switch part of the cargo traffic from railway and road transport to inland waterways, which forms the basis of the topic of this study.

At the same time, it is important to get started with understanding the composition and structure of goods, as well as their volumes, which are transported by railway and road transport, some of which, after a preliminary assessment and with certain organizational, legal, technical and economic changes, could be recommended for transportation by inland waterway transport.

At the same time, the data of the Federal Customs Service do not allow to form fully information on the structure of cargo traffic depending on the modes of transport, and therefore hereinafter in this respect the study will be guided by the data of the statistical service of the European Union.

1.3. Railway transport.

The composition and structure of the export of goods transported by rail from Russia to Finland is presented in Table 5.

Table 5. - Composition and structure of export of goods for 2014-2019 from Russia to Finland, transported by railway transport (ranked by the volume of transported goods in tons)¹⁰

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|--|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| 1 | Rough wood, with bark or sapwood removed or not removed, or roughly edged or unedged | 801.25 | 8.4% | 17204.92 | 43.6% |
| 2 | Iron ores and concentrates, including roasted pyrite | 477.12 | 5.0% | 6571.52 | 16.7% |
| 3 | Fuel wood in the form of logs, cordwoods, branches, bundles of brushwood or similar | 169.53 | 1.8% | 2820.72 | 7.2% |

¹⁰ Eurostat EXTRA EU trade since 2000 by mode of transport (HS6) (DS-043328) (international trade statistics with a breakdown by transport mode and heading at the 6-digit level of the Harmonized System).

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|--|---------------------------|--------|-----------------------------|--------|
| | | mln. EUR | share | tn | share |
| | forms; wood in the form of chips or shavings; sawdust and wood waste and scrap, not agglomerated or agglomerated in the form of logs, briquettes, pellets or similar | | | | |
| 4 | Acyclic hydrocarbons | 1008.24 | 10.6% | 2631.27 | 6.7% |
| 5 | Oil and oil products obtained from bituminous rocks, except for crude; products, not elsewhere specified or included, containing 70% or more by weight of petroleum or petroleum products obtained from bituminous minerals | 1031.07 | 10.8% | 2267.72 | 5.7% |
| 6 | Acyclic alcohols and their halogenated, sulfonated, nitrated or nitrosated derivatives | 494.43 | 5.2% | 2186.19 | 5.5% |
| 7 | Other pipes and tubes (for example, welded, riveted or similarly connected), with a circular cross-section, the outer diameter of which is more than 406.4 mm, of ferrous metals | 1175.03 | 12.4% | 1114.98 | 2.8% |
| 8 | Crude petroleum and crude petroleum products obtained from bituminous minerals | 366.31 | 3.9% | 1034.73 | 2.6% |
| 9 | Petroleum gases and other gaseous hydrocarbons | 315.63 | 3.3% | 838.40 | 2.1% |
| 10 | Cyclic hydrocarbons | 602.25 | 6.3% | 581.30 | 1.5% |
| 11 | Mineral or chemical fertilizers, nitrogen | 90.50 | 1.0% | 441.31 | 1.1% |
| 12 | Nickel matte, nickel oxide agglomerates and other intermediate products of nickel metallurgy | 2307.02 | 24.3% | 381.49 | 1.0% |
| 13 | Mineral or chemical fertilizers containing two or three nutrients nitrogen, phosphorus and potassium; other fertilizers; goods of this group in tablets or similar forms or in packages, the gross weight of which does not exceed 10 kg | 92.17 | 1.0% | 345.83 | 0.9% |
| 14 | Remaining 101 positions (in total) | 574.41 | 6.0% | 1028.30 | 2.6% |
| TOTAL: | | 9504.95 | 100.0% | 39448.68 | 100.0% |

The data from Table 5 allow us to draw several significant conclusions about the transportation of goods by rail:

- up to 80% of transported goods are raw materials or primary processing products exported from the territory of the Russian Federation;
- there is a disproportion in the structure of transportation of goods in physical terms and their value.

At the same time, there are four groups of goods that, from the point of view of export, occupy a large share in the transportation structure both in terms of volume and in terms of transportation cost:

- rough wood, with bark or sapwood removed or not removed, or roughly edged or not edged;
- iron ores and concentrates, including roasted pyrite;
- acyclic hydrocarbons;
- oil and oil products obtained from bituminous rocks, except for crude; products, not elsewhere specified or included, containing 70 mass fraction or more of petroleum or petroleum products obtained from bituminous minerals.

Also, the following groups can be quite closely related to them:

- nickel matte, nickel oxide agglomerates and other intermediate products of nickel metallurgy;
- other pipes and tubes (for example, welded, riveted or connected in a similar way), with a circular cross-section, the outer diameter of which is more than 406.4 mm, of ferrous metals.

Although these groups are small compared to the first four in terms of physical volume of transport, they have a high cost, which makes them attractive for considering the possibility of redirecting to inland waterway transport.

The same kind of analysis can be performed for the import of goods from Finland to the territory of Russia.

The results of this analysis are presented in Table 6.

Table 6. - Composition and structure of import of goods for 2014-2019 from Finland to Russia, transported by railway transport (ranked by the volume of transported goods in tons)¹¹

¹¹ Eurostat EXTRA EU trade since 2000 by transport mode (HS6) (DS-043328) (statistics of international trade with detailing by transport mode and commodity items at the level of 6 characters of the Harmonized System).

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|------------|--|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| 1 | Paper and paperboard coated on one or both sides with kaolin (china clay) or other inorganic substances, with or without a binder, and without any other coating, whether or not colored | 186.63 | 21.1% | 236645 | 25.8% |
| 2 | Natural magnesium carbonate (magnesite); fused magnesia; magnesia calcined before sintering (agglomerated), whether or not containing small amounts of other oxides added before sintering; other magnesium oxides | 2.02 | 0.2% | 231404 | 25.2% |
| 3 | Malt, roasted or unroasted | 30.58 | 3.5% | 67533 | 7.4% |
| 4 | Uncoated paper and paperboard, of a kind used for writing, printing or other graphic purposes, and non-perforated cards and non-perforated paper tapes, in rolls or rectangular (including square) sheets of any size, other than paper of the heading | 40.33 | 4.6% | 59585 | 6.5% |
| 5 | Oil and oil products obtained from bituminous rocks, except for crude; products, not elsewhere specified or included, containing 70% or more by weight of petroleum or petroleum products obtained from bituminous minerals | 68.99 | 7.8% | 54963 | 6.0% |
| 6 | Copper matte; carburizing copper (precipitated copper) | 131.08 | 14.8% | 31751 | 3.5% |
| 7 | Phenols; phenolic alcohols | 22.39 | 2.5% | 23632 | 2.6% |
| 8 | Wood pulp, soda or sulphate, other than instant grades | 9.99 | 1.1% | 23233 | 2.5% |
| 9 | Other alloy steel rods; corners, shaped and special profiles, of other alloy steels; hollow rods for drilling from alloyed or unalloyed steel | 22.42 | 2.5% | 22808 | 2.5% |
| 10 | Uncoated kraft paper and paperboard, in rolls or sheets, other than those of commodity items 4802 or 4803 | 11.49 | 1.3% | 20486 | 2.2% |
| 11 | Products used for animal feeding | 27.24 | 3.1% | 20052 | 2.2% |
| 12 | Paper, paperboard, cellulose wadding and webs of cellulose fibers, coated, impregnated, laminated, surface-dyed or decorated or printed, in rolls or rectangular (including square) sheets of any size | 18.33 | 2.1% | 18213 | 2.0% |
| 13 | Polymers of ethylene in primary forms | 24.15 | 2.7% | 16065 | 1.8% |
| 14 | Railway or tramway, unpowered freight cars | 16.82 | 1.9% | 11750 | 1.3% |
| 15 | Glass and garden putties, resin cements, compounds for sealing and other mastics; putties for painting work; non-refractory compounds for the preparation of surfaces of facades, interior walls of buildings, floors, ceilings or similar | 3.10 | 0.4% | 11181 | 1.2% |

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|--|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| 16 | Barley | 2.13 | 0.2% | 10245 | 1.1% |
| 17 | Other uncoated paper and paperboard, in rolls or sheets, not further processed or processed as specified in note 3 to this group | 3.70 | 0.4% | 9320 | 1.0% |
| 18 | Remaining 292 positions (in total) | 262.47 | 29.7% | 48802.98 | 5.3% |
| TOTAL: | | 883.85 | 100% | 917669 | 100% |

From the above Table 6, in addition to the first three groups of goods leading in terms of the volume of transportation, three more can be distinguished, which, in terms of import intensity, occupy a large share in the structure of cargo traffic in terms of transportation cost:

- paper and cardboard coated on one or both sides with kaolin (china clay) or other inorganic substances, with or without a binder;
- oil and oil products obtained from bituminous rocks, except for crude; products not elsewhere specified or included, containing 70 wt. % or more of petroleum or oil products obtained from bituminous minerals;
- copper matte; carburizing copper (precipitated copper).

Also, the following groups can be quite closely related to them:

- equipment for the production of pulp from fibrous cellulosic materials or for the manufacture or finishing of paper or paperboard;
- malt, roasted or unroasted;
- other uncoated paper and paperboard, in rolls or sheets, without further processing or processed;
- phenols, phenolic alcohols;
- rods of other alloyed steels; corners, shaped and special profiles, of other alloy steels;
- natural magnesium carbonate (magnesite); fused magnesia; calcined magnesia (agglomerated).

Since the analysis of cargo flows is important not only in terms of the tonnage

of transportation, but also the cost, which determines the commercial interest of enterprises in Finland and Russia, these commodity groups are the subject of consideration from the point of view of switching flows to inland waterways, but in the future, a thorough study of the potential is required, opportunities and economic feasibility of such a transition.

From the point of view of the research direction, it is interesting to have a comprehensive assessment of import-export flows for these commodity groups. The results of combining these data are presented in Table 7.

Table 7. - Commodity groups by importance in the structure of imports and exports when transported by rail

| Export from Russia | Import to Russia |
|--|--|
| <i>High importance in terms of share in the cost and volume of transportation</i> | |
| - | Coated paper and board |
| <i>Significant importance in terms of share in the cost and volume of transportation</i> | |
| Timber, Ores Acyclic hydrocarbons Oil and petroleum products | Oil and petroleum products, from bituminous rocks Copper matte |
| <i>Average significance in terms of share in cost and volume of transportation</i> | |
| Pipes Nickel matte | Natural magnesium carbonate Malt Uncoated paper and cardboard Phenols; phenolic alcohols Other alloy steel rods Equipment for the production of pulp from fibrous cellulosic materials |
| <i>Low significance in terms of share in the cost and volume of transportation</i> | |
| Wood Alcohols Cyclic hydrocarbons | Wood pulp Parts intended exclusively or primarily for machines Products used for animal feeding Polymers of ethylene in primary forms Carriages Internal combustion engines Machines, industrial equipment |
| <i>Low significance in terms of share in cost and volume of transportation</i> | |
| Other groups | Other positions |

High, medium, minor and low significance determine the influence of a particular group of goods on the volume of cargo turnover between Russia and Finland. Relatively speaking, this is the value of the share in the cargo turnover.

Thus, the information from this table makes it possible to determine the main cargo flows using railway transport between Russia and Finland for 2014-2019.

1.4. Road transport

The concept of road transport denotes several modes of transport that have a different technical base, but are united by the operation on the public road network. The types of road transport include:

- automobile transport;
- urban electric street transport (tram, trolleybus);
- non-mechanical transport - uses the muscular strength of a person (bicycle, rickshaw) or animals (horse-drawn, pack).

Obviously, from the point of view of the study, road transport in import-export transport means only automobile/cargo trucks transport.

In terms of the frequency of use, road transport on the route of cargo transportation takes a significant share between Finland and Russia.

Loading from the port area, border area or inland territory of Finland is carried out from the warehouses of service operators or shippers.

A large share of transportation by road is associated with some peculiarities:

- development and geographical proximity of logistics transit points of Finland to the state border with the Russian Federation;
- availability of services and opportunities for safe storage of goods and materials in Finland with subsequent import;
- delivery of containers, standard (general cargo) to the internal customs post at the client request;
- reduction of delivery times (in comparison with similar points in Poland and the Baltic countries);
- certain savings on transport services (for multimodal transportation).

Therefore, within the framework of the analysis of statistics, the concept of road transport will be understood as road transport and transportation with its use.

The composition and structure of the export of goods transported by road from

Russia to Finland is presented in Table 8.

Table 8. - Composition and structure of export of goods for 2014-2019 from Russia to Finland, transported by road transport (ranked by the volume of transported goods in tons)¹²

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|--|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| 1 | Fuel wood in the form of logs, cordwoods, branches, bundles of brushwood or similar forms; wood in the form of chips or shavings; sawdust and wood waste and scrap | 376.7 | 9.8% | 7995877 | 45.4% |
| 2 | Rough wood, with bark or sapwood removed or not removed, or roughly edged or unedged | 317.2 | 8.2% | 5458182 | 31.0% |
| 3 | Timber, obtained by sawing or splitting along, planing or peeling, whether or not planed, sanded or not, with or without end connections, with a thickness of more than 6 mm | 425.6 | 11.0% | 1527202 | 8.7% |
| 4 | Thermally polished glass and glass with a ground or polished surface, in sheets, whether or not having an absorbent, reflective or non-reflective layer, but not otherwise treated | 67.6 | 1.8% | 247173 | 1.4% |
| 5 | Plywood, veneered panels and similar laminated wood materials | 152.9 | 4.0% | 240096 | 1.4% |
| 6 | Peat (including peat chips), whether or not agglomerated | 3.7 | 0.1% | 150088 | 0.9% |
| 7 | Tires and covers, pneumatic rubber new | 560.2 | 14.5% | 149650 | 0.8% |
| 8 | Recycled paper or cardboard (waste paper and waste) | 19.7 | 0.5% | 128189 | 0.7% |
| 9 | Newsprint paper in rolls or sheets | 48.7 | 1.3% | 115353 | 0.7% |
| 10 | Pipes, tubes and other hollow sections (for example, with an open seam or welded, riveted or connected in a similar way), of ferrous metals | 62.2 | 1.6% | 109828 | 0.6% |
| 11 | Slag wool, mineral silicate wool and similar mineral wool; exfoliated vermiculite, expanded clays, foamed slag and similar expanded mineral products | 37.9 | 1.0% | 87061 | 0.5% |
| 12 | Aluminum plates, sheets, strips or ribbons with a thickness of more than 0.2 mm | 185.7 | 4.8% | 79706 | 0.5% |
| 13 | Products of asphalt or similar materials (for example, petroleum bitumen or coal tar pitch) | 29.9 | 0.8% | 62445 | 0.4% |
| 14 | Bars of iron or non-alloy steel, not further | 30.6 | 0.8% | 59145 | 0.3% |

¹² Eurostat EXTRA EU trade since 2000 by transport mode (HS6) (DS-043328) (statistics of international trade with detailing by transport mode and commodity items at the level of 6 characters of the Harmonized System).

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|---|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| | processed, other than forging, hot rolling, hot drawing or hot extrusion, including rods twisted after rolling, other | | | | |
| 15 | Articles of cement, concrete or artificial stone, whether or not reinforced | 24.3 | 0.6% | 57033 | 0.3% |
| 16 | Prepared explosives, except for gunpowder | 23.6 | 0.6% | 55150 | 0.3% |
| 17 | Flat-rolled products of iron or unalloyed steel, 600 mm wide or more, hot-rolled, unclad, without electroplating or other coating | 24.5 | 0.6% | 52060 | 0.3% |
| 18 | Tall oil, refined or unrefined | 14.9 | 0.4% | 45479 | 0.3% |
| 19 | Carbon (soots and other forms of carbon, not elsewhere specified or included) | 34.8 | 0.9% | 42545 | 0.2% |
| 20 | Lumber (including planks and frieze for parquet flooring, not assembled) in the form of profiled molding | 11.2 | 0.3% | 39921 | 0.2% |
| 21 | Flat-rolled products of iron or non-alloy steel, width 600 mm or more, clad, galvanized or otherwise coated | 22.3 | 0.6% | 33073 | 0.2% |
| 22 | Particleboards, oriented strand boards (OSB) and similar boards (e.g. wafer boards) of wood or other lignified materials, whether or not impregnated with resins or other organic binders | 11.7 | 0.3% | 32593 | 0.2% |
| 23 | Hot rolled rods in loose coils of iron or unalloyed steel | 15.0 | 0.4% | 30137 | 0.2% |
| 24 | Aluminum wire | 55.2 | 1.4% | 30014 | 0.2% |
| 25 | Ferrous metal structures (other than prefabricated building structures of commodity item 9406) and parts thereof (for example, bridges and their sections, gateways, towers, lattice masts, roof ceilings, building trusses, doors and windows and their frames, thresholds for | 37.4 | 1.0% | 28852 | 0.2% |
| 26 | Sheets for cladding (including those obtained by splitting laminated wood), for plywood or similar laminated wood and other wood products obtained by sawing or splitting | 13.6 | 0.4% | 27689 | 0.2% |
| 27 | Other positions (share of 0.1% or less, in total) | 1253 | 32,5% | 723109 | 4,1% |
| TOTAL: | | 3860 | 100% | 17607650 | 100% |

The data of the table allow us to draw the following conclusion on the transportation of goods by road:

- 85% of goods transported by road are wood and timber products, which account for only one third of the cost of transportation.

As can be seen from the above table, the following three groups are the most significant from the point of view of cargo transportation:

- fuel wood in the form of logs, cordwoods, branches, bundles of brush-wood or similar forms; wood in the form of chips or shavings; sawdust and wood waste and scrap;
- unworked timber, with bark or sapwood removed or not removed, or roughly edged or not edged;
- timber obtained by sawing or splitting along, planing or peeling, processed or not processed by planing, grinding, with or without end connections, with a thickness of more than 6 mm.

The same approach applies to data on cargo imports from Finland to Russia. The results of this analysis are presented in Table 9.¹³

Table 9. - Composition and structure of imports of goods for 2014-2019 from Finland to Russia, transported by road (ranked by the volume of transported goods in tons)

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|---|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| 1 | Paper and paperboard coated on one or both sides with kaolin (china clay) or other inorganic substances, with or without a binder, and without any other coating | 1296.7 | 7.4% | 1667078 | 24.7% |
| 2 | Polymers of ethylene in primary forms | 650.4 | 3.7% | 453626 | 6.7% |
| 3 | Oil and oil products obtained from bituminous rocks, except for crude; products, not elsewhere specified or included, containing 70% or more by weight of petroleum or petroleum products obtained from bituminous minerals | 994.3 | 5.7% | 395372 | 5.9% |
| 4 | Paper, paperboard, cellulose wadding and webs of cellulose fibers, coated, impregnated, laminated, surface-dyed or decorated or printed, in rolls or rectangular (including square) sheets of any size | 466.0 | 2.7% | 384624 | 5.7% |
| 5 | Quicklime, slaked lime and hydraulic lime, other than calcium oxide and hydroxide of | 39.1 | 0.2% | 293538 | 4.3% |

¹³ Data of customs statistics of foreign trade, FCS of Russia. Sources: <http://stat.customs.ru/> (for the period: 1/1/2017 - 12/31/2019)

| It. No. | Type of cargo transported | Cost of transported goods | | Volume of transported goods | |
|---------|--|---------------------------|-------|-----------------------------|-------|
| | | mln. EUR | share | tn | share |
| | commodity item 2825 | | | | |
| 6 | Uncoated paper and paperboard, of a kind used for writing, printing or other graphic purposes, and non-perforated cards and non-perforated paper tapes, in rolls or rectangular (including square) sheets of any size | 174.7 | 1.0% | 255697 | 3.8% |
| 7 | Wood pulp, soda or sulphate, other than instant grades | 100.1 | 0.6% | 176964 | 2.6% |
| 8 | Products of asphalt or similar materials (for example, petroleum bitumen or coal tar pitch) | 64.3 | 0.4% | 167074 | 2.5% |
| 9 | Finishing agents, agents for accelerating dyeing or fixing dyes and other products and finished preparations (for example, processing agents and mordants) used in the textile, paper, leather industry or similar industries | 59.0 | 0.3% | 102622 | 1.5% |
| 10 | Glass and garden putties, resin cements, compounds for sealing and other mastics; putties for painting work; non-refractory compounds for the preparation of surfaces of facades, interior walls of buildings, floors, ceilings or similar | 30.0 | 0.2% | 94169 | 1.4% |
| 11 | Products used for animal feeding | 94.1 | 0.5% | 88949 | 1.3% |
| 12 | Carbonates; peroxocarbonates (percarbonates); commercial ammonium carbonate containing ammonium carbamate | 10.4 | 0.1% | 87888 | 1.3% |
| 13 | Polymers of propylene or other olefins in primary forms | 114.5 | 0.7% | 82007 | 1.2% |
| 14 | Flat-rolled products of other alloy steels, 600 mm wide or more | 73.0 | 0.4% | 69577 | 1.0% |
| 15 | Kaolin and other kaolinic clays, whether or not calcined | 15.9 | 0.1% | 69222 | 1.0% |
| 16 | Uncoated kraft paper and paperboard, in rolls or sheets, other than those of commodity items 4802 or 4803 | 53.5 | 0.3% | 64635 | 1.0% |
| 17 | The remaining 1,082 positions (share less than 1%, in total) | 13188.4 | 75.7% | 2303181 | 34.1% |
| TOTAL: | | 17424.6 | 100% | 6756221 | 100% |

Differences in road transportation between Russia and Finland are that the distribution of commodity groups is more even than for railway transport, there are no significantly distinguishing commodity groups.

All this indicates a certain uniformity of transportation of commodity groups by road transport.

This data can be applied to a similar approach that we used for rail transport.

The results of combining these data are presented in Table 10.

Table 10. - Commodity groups according to their importance in the structure of imports and exports when transporting by road

| Export from Russia | Import to Russia |
|--|--|
| <i>High importance in terms of share in the cost and volume of transportation</i> | |
| Fuel wood | Polymers of ethylene in primary forms Oil and oil products obtained from bituminous rocks Paper, cardboard Kaolin coated paper and cardboard |
| <i>Significant importance in terms of share in the cost and volume of transportation</i> | |
| Raw timber Sawed timber | Machines and devices for lifting, moving Uncoated paper and cardboard Lubricating materials Paints and varnishes Passenger cars and other motor vehicles |
| <i>Average significance in terms of share in cost and volume of transportation</i> | |
| Tires and tires Insulated wires | 29 commodity groups |
| <i>Low significance in terms of share in the cost and volume of transportation</i> | |
| 19 commodity groups | 36 commodity groups |
| <i>Low significance in terms of share in cost and volume of transportation</i> | |
| Other groups | Other groups |

As you can see, the structure of exports is more concentrated on road transport of several commodity groups, while these groups are mainly raw materials and associated with wood and wood derivatives.

Imports are more diversified and there is a stratification of cargo flows between a dozen commodity groups.

The analyzed data on cargo transportation by various modes of transport between Russia and Finland for 2014-2019 allows us to say that their structure is diverse and changes over time.

However, it is possible to single out the main trends in the analyzed cargo flows, which boil down to the fact that the export structure of raw materials from Russia prevails, mainly wood and timber, while the import of goods to Russia is characterized by several rather diverse commodity groups.

At the same time, transportation by inland waterway transport is currently quite limited, both in volume and in the composition and structure of transported

goods.

In order to develop further recommendations for switching part of the cargo flows between Russia and Finland to inland water transport, you can use the results of processing statistical data.

First, to assess the potential for each commodity group on the possibilities for its transportation by inland waterway transport.

Secondly, to assess the potential demand and location of entities involved in the process of goods transportation within these cargo flows, to assess the interest of economic entities and their ability to attract inland waterway transport for the transportation of goods with which they work.

Thirdly, in the future, it is necessary to carry out an economic and regulatory assessment of switching part of the cargo traffic to inland waterway transport.

1.5. Analysis of statistical data on cargo traffic by region

To solve some of the issues indicated at the end of the previous paragraph, it is interesting and necessary to analyze statistical data related to the movement of cargo flows between Russia and Finland by regions and constituent entities of the Russian Federation.

Initially, we can evaluate these statistics for federal districts, which is presented in Table 11 and Fig. 10.¹⁴

Table 11. - Data on the traffic of exported and imported goods between Russia and Finland by federal districts of the Russian Federation

| Federal district name | Cargo traffic volumes, USD | | |
|-------------------------------|----------------------------|------------|------------|
| | Import | Export | General |
| Central Federal District | 8 123 737 | 26 828 716 | 34 952 453 |
| Northwestern Federal District | 9 331 244 | 13 234 490 | 22 565 734 |
| Privolzhsky Federal District | 914 744 | 8 083 967 | 8 998 711 |
| Ural Federal District | 609 846 | 5 126 523 | 5 736 369 |
| Siberian Federal District | 850 649 | 1 352 673 | 2 203 322 |
| Southern Federal District | 262 583 | 411 382 | 673 965 |

¹⁴ Data of customs statistics of foreign trade, FCS of Russia. Источники: <http://stat.customs.ru/> (за период: 01.01.2017 - 31.12.2019)

| | | | |
|----------------------------------|------------|------------|------------|
| Far Eastern Federal District | 243 952 | 52 862 | 296 814 |
| North Caucasian Federal District | 37 375 | 36 194 | 73 570 |
| Sevastopol and Crimea | 1 027 | 0 | 1 027 |
| Grand total | 20 375 158 | 55 126 808 | 75 501 965 |

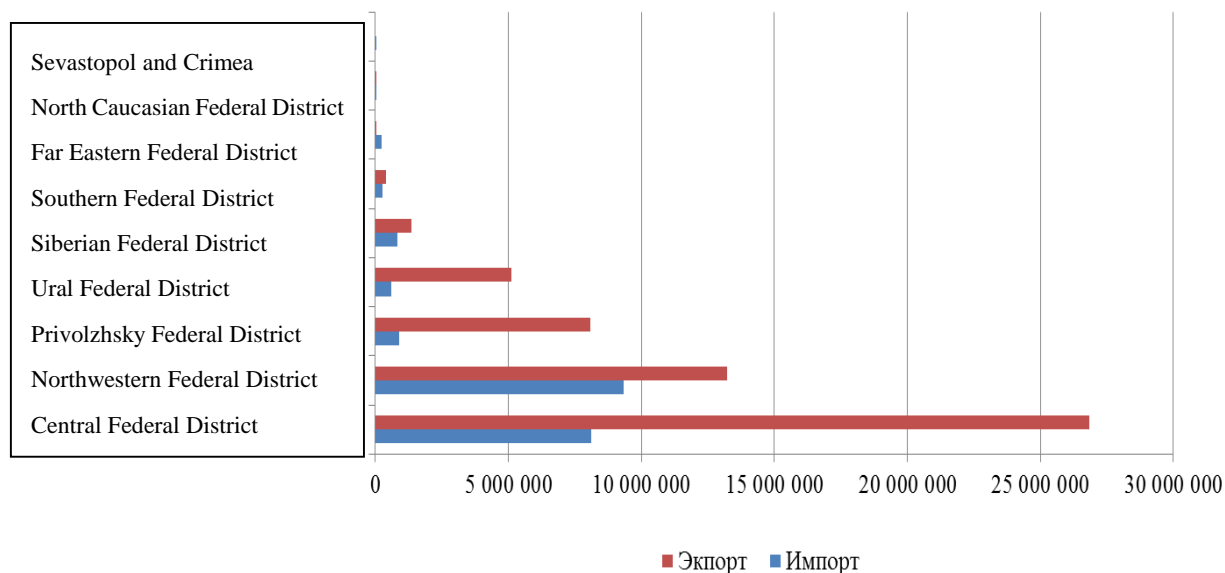


Figure 10. - The ratio of the volume of exports (brown-red) and imports (blue) of cargo traffic between Russia and Finland by federal districts of the Russian Federation

Thus, it can be seen that the main federal districts in terms of the intensity of cargo traffic between them and Finland are the Northwestern and Central Federal Districts.

At the same time, the Ural and Volga Federal Districts also organize cargo transportation, however, the main emphasis in them is on export.

2. ANALYSIS OF COMMERCIAL VALUES FOR SWITCHING CROSS-BORDER TRAFFIC BETWEEN RUSSIA AND FINLAND TO WATER TRANSPORT AND PROMISING MARKET NICHEs

2.1. Preconditions for the formation and development of commercial prospects for switching cross-border transport to inland waterway transport

Earlier, a study was carried out, which consisted in the analysis of statistical data on cargo turnover between Russia and Finland for 2014-2019. This analysis made it possible to draw a number of conclusions that predetermined the further direction of work on the possible development of transportation using inland waterway transport.

First, the main growth in cargo turnover between the countries under consideration was attributable to the export of goods from Russia to Finland, while the export of cargo turnover was noticeably lagging behind in terms of growth rates. At the end of 2019, the volume of cargo traffic did not even reach the values of 2014.

Thus, over the past three years, there has been a significant excess of export volumes over the volume of imports of goods between Russia and Finland, in 2018 this value reached 61.7%, which is one and a half times higher than the pre-crisis difference.

Secondly, given the relative stability of the price of exported goods in EUR, the cost of these goods for Russian enterprises increased significantly (15-20%), which made the list of goods less attractive.

Thirdly, the bulk of cargo turnover is carried out by sea transport. At the same time, the amount of goods exported to Finland significantly exceeds the level of goods imported from Finland.

The same applies to railway transport, the exports of which also significantly exceed the volume of imports.

For these types of transport, this is due to the fact that the main type of goods that are transported by sea and rail are natural resources, which are actively consumed by Finnish enterprises.

At the same time, on the part of Russia, interests primarily relate to food products, equipment, as well as other consumer goods that are easier and more convenient to transport by road. This is reflected in the comparison of the volume of cargo turnover for this type of transport.

The *main conclusion* concerned the place and role of inland waterway transport in the cargo transport system between Russia and Finland.

The share of inland waterway transport is very low - less than 1%. At the same time, the potential for transportation by this type of transport is quite high. For example, being the main inland waterway, the Saimaa Canal between Russia and Finland has sufficient potential to increase cargo traffic more than 2 times.

This is confirmed by the following factors.

1. The statistics of export and import of goods between Russia and Finland indicate that the level of the current congestion of the Saimaa Canal does not even reach the level of 2014. For imports, the difference reaches 6.5 times in the cost of transported goods, for exports – 1.5 times. This is despite the fact that the average annual euro exchange rate in 2014 was 51 rubles, and in 2019 – 72 rubles. Thus, the potential throughput of the Saimaa Canal could triple, reaching the level of 2014.

2. The potential of the Saimaa Canal is determined by the seasonality of shipping, which is currently limited to the time from March to December. Within the project from the Finnish part, there is a creation of a self-propelled ice bow, which can extend the navigation period for the winter months.¹⁵

3. It is planned to change the length of the lock chambers and increase the water level in the canal by 0.1 m, which will allow larger vessels to be navigated through the canal.

¹⁵ Decision of the Supreme Eurasian Economic Council dated December 26, 2016 No. 19 "On the main directions and stages of implementation of the coordinated (agreed) transport policy of the member states of the Eurasian Economic Union" (in the current version)

According to expert estimates, these factors in general make it possible to increase the maximum channel capacity by more than 2 times.

Statistics show that the nature of the goods transported from Russia to Finland is low-profit and these are goods of a raw material nature, timber, mineral construction materials and coal.¹⁶

The main types of cargo transported from Finland to Russia are machinery and equipment, chemical products, mineral products, food products and agricultural raw materials. Until the period of 2018, imports from Finland to Russia in value terms increased every year. The growth of trade turnover between Russia and Finland creates grounds for the demand for logistics services.

The largest cargo turnover falls on the Northwestern Federal District (22,565,734 thousand dollars), in second place is the Central Federal District. At the same time, the potential of waterways for transporting goods is used, as noted, on average by only 50%, and the design capacity of the Saimaa Canal is used by a quarter.

In this regard, it seems appropriate to consider the commercial prospects for increasing the traffic volume both already transported along the Saimaa Canal, and other goods traditionally transported by rail and road.

The subsequent results of the study made it possible to outline the main directions for the development of cargo transportation along the Saimaa Canal¹⁷.

Groups of commodities were identified that are potentially interesting for switching cargo flows from road and railway transport to inland water transport, and enterprises from both the Russian and Finnish parties were identified, which may be interested in using inland waterways to transport their goods to counterparties (consumers) on the other side of the border.

However, these results, although they reflect the potential efficiency of the use of inland waterway transport for cargo traffic between Russia and Finland, but

¹⁶ The official website of the SeaNews Information and Analytical Agency: <https://seanews.ru>

¹⁷ R&D "Development of proposals for the development of transportation along the Saimaa Canal and the possible switch of cross-border cargo turnover from road and rail transport to water transport" (stage 1 and stage 2)

also indicate a number of problems that accompany the use of this type of transport in logistics and hinder its further development.

These problems include the following.

Consumer demand problem.

From the point of view of commercial activities and business relations between the seller/buyer of one state and the buyer/seller of another state, an important element of the use of a particular business tool is its effectiveness in achieving its main goal - to extract and maximize profits.

From this point of view, the use of inland waterways is somewhat limited by the presence of unequal bilateral demand between Russia and Finland, or rather by the uneven composition, structure and, most importantly, the volume of aggregate demand within the territory of each of the countries.

The results of the first part of the study showed that the volumes of exports (transportation from Russia) exceed the volumes of imports (imports to Russia), which is caused by the structure of interests of Finnish companies and companies from countries that use Finland as a country for the transit of their goods.

At the same time, the structure of transportation by inland waterway transport is also quite unambiguous - mainly goods-resources are exported from Russia, equipment and processed lumber are imported, while their list is rather limited. It should be noted that the same goods are transported by other modes of transport - road and rail.

Therefore, one of the problems lies in the fact that on the territory of each of the countries it is necessary to create a certain demand for other types of goods, to develop and stimulate the development of those enterprises whose products, in terms of their potential, can be interesting and, most importantly, are close to implementation within the territory of the partner state.

At the same time, it is necessary to increase not only the volumes, but also the variety of these products, especially those enterprises that are logistically close to inland waterways, to adopt a policy to promote inland waterway transport in both

countries, incl. in cross-border cooperation, and measures to support enterprises using it. In this case, in order to transport a larger volume and variety of products, entrepreneurs/commercial organizations can choose inland waterway transport as the main logistics tool for delivering goods to consumers.

The problem of logistics constraints.

This is a more complex problem from the point of view of its solution and implementation within the framework of the existing project for the development of the Saimaa Canal.

Its essence lies in the fact that the inland waterway from Russia to Finland via the Saimaa Canal has difficulties in further logistics of goods to the territory of not only Finland, but also other neighboring states.

In this regard, the complexity and economics of logistics through this channel is characterized by the fact that suppliers, consumers, shipping companies and other interested parties need to very clearly plan not only the supply of goods in one direction (Russia - Finland or Finland - Russia), but also plan transportation cargo in the opposite direction, since having crossed the canal to Finland, river vessels have only one direction of logistic movement - back to Russia along the same route.

This creates problems, since the composition and group of goods transported between countries do not coincide, including in terms of volumes, making transportation, for example, by Russian ships, in most cases, one-way in terms of loading. All this affects the rise in the cost of transportation (or even refusals in some cases from the transportation of goods) for both parties (buyer - seller) and in some cases does not allow to build efficient logistics for the delivery of goods by inland waterway transport.

This is also the reason why most enterprises prefer road and railway transport.

Large costs for the technical improvement of the Saimaa Canal to increase cargo traffic.

For Finland, this is quite costly. For example, in May 2019, the renovation of the Finnish part of the canal infrastructure was completed. The reconstruction lasted 3 years and cost the Finnish budget 10 million euros. The Soskua lock was included

in the list of overhaul works.

From Russia: From 2013 to 2017 Federal State Institution Saimaa Canal received 83.9 million rubles from the federal budget for the repair of 22 navigation signs.

Everything rests on economic feasibility. Both countries are interested in expansion. Finland will be able to start large ships or take more cargo, thereby winning back on the cargo rate and the volume of transportation. The Russian party can revise the channel lease rate. But in any case, the reconstruction of the canal is very costly. One of the possible compromises is that Finland carries out all the work on account of the rent.

These are the biggest problems in the development of cargo traffic along the Saimaa Canal.

Nevertheless, these problems can be solved and the governments of the two states (including through their representatives in various institutions and structures) are gradually finding common ground and directions of interaction, since an increase in the flow of goods through the Saimaa Canal brings obvious economic benefits for both countries.

2.2. Analysis of exports from Russia to Finland

In accordance with the analysis of the statistics of cargo flows between Russia and Finland, carried out in the first part of the study, identify those groups of goods that, to one degree or another, can actually be switched to transportation by inland water transport.

Table 12 shows the main groups of goods according to the classifier of the Customs Nomenclature of Foreign Economic Activity, which satisfy the principle of switching.

Table 12 - Average annual volumes of cargo transportation from Russia to Finland by various modes of transport, t/year

| Code TN VED | Commodity group | Average annual cargo traffic over the past 5 years, tons | | |
|----------------|--|---|-----------|---------|
| | | railway | auto | river |
| 4401 | Fuel wood in the form of logs, cordwoods, branches, bundles of brushwood or similar forms; wood in the form of chips or shavings; sawdust and wood waste and scrap | 564 143 | 1 599 175 | 19 174 |
| 4403 | Untreated timber, with bark removed or not removed | 3 580 983 | 1 091 636 | 376 029 |
| 4407 | Timber obtained by sawing or splitting along, planing or peeling, with or without end connections, with a thickness of more than 6 mm | 26 | 305 440 | - |
| 7005 | Thermally polished glass and glass with a ground or polished surface, in sheets | 144 | 49 434 | - |
| 2601 | Iron ores and concentrates, including roasted pyrite | 1 314 304 | 167 | - |
| 2901 | Acyclic hydrocarbons | 526 103 | - | - |
| 2710 | Oil and oil products obtained from bituminous rocks, except for crude; products not elsewhere specified or included, containing 70% or more by weight of petroleum | 453 402 | 493 | - |
| 2905 | Acyclic alcohols and their halogenated, sulfonated, nitrated or nitrosated derivatives | 437 254 | 19 | - |

For clarity, the main commodity groups are displayed on the map, indicating the main flows (Fig. 11) and the places of their origin and consumption.

The red box in Table 12 marks those commodity groups, which can be switched from Russia to Finland to inland waterway transport with relatively little effort.

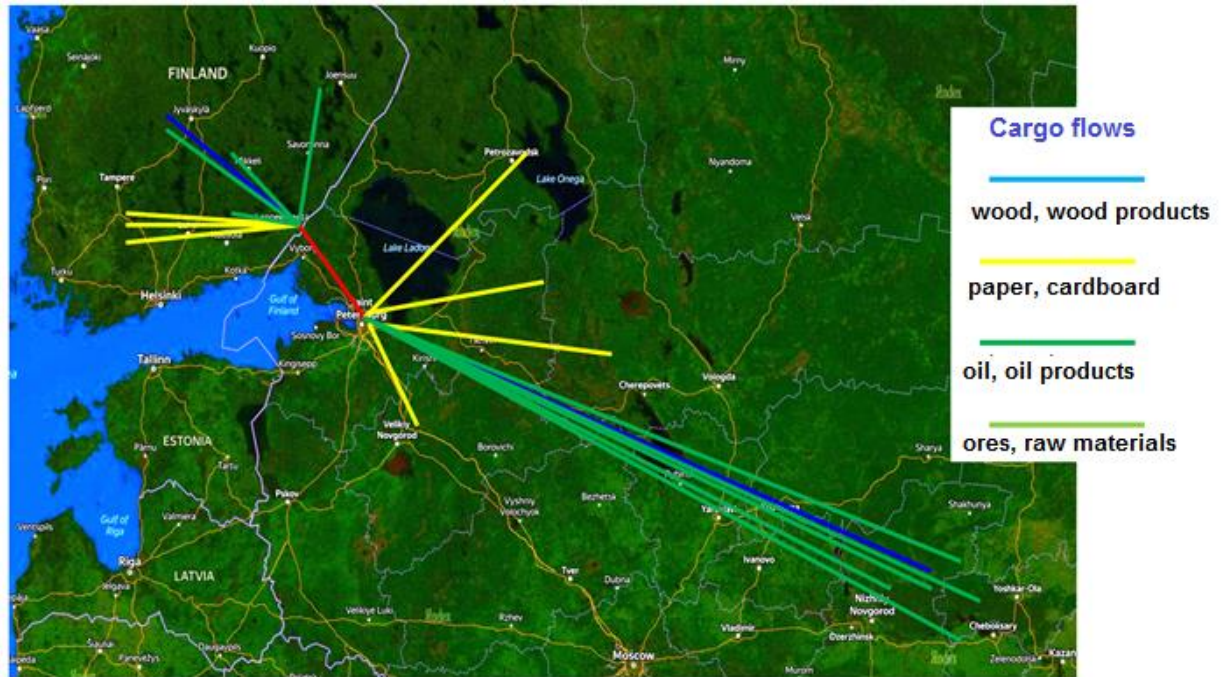


Figure 11 - The main flows of commodity groups that are possible to switch to transport by inland waterway transport

The switching of cargo flows to water can be favored by the following factors:

- the volume of transportation of these groups of goods in physical terms is large, which will ensure the full loading of ships passing through the Saimaa Canal;
- due to the large turnover, part of it can be sent for transportation by inland waterway without much damage to other modes of transport;
- the main subjects of the logistic flow of these groups of goods are located near the waterways that determine the transportation along the Saimaa Canal;
- switching to inland waterway transport does not require a large-scale and top-priority renovation and/or formation of a logistics infrastructure, this can be done in parallel.

For commodity groups highlighted in green, switching is complicated by the

presence of established rail links. Therefore, there can be interest on the part of commercial parties only if the savings on transportation by inland waterway are significant, even despite the increase in the delivery time of the goods, which in this case are not so fundamental from the point of view of the safety and urgency of delivery of goods.

Yellow color in Table 12 highlights those groups of goods that may be interesting for transportation by inland waterway and have specific turnovers for this, but at the current time, due to environmental restrictions, they cannot be transported through the Saimaa Canal. These groups can be considered only after assessing the possibility of changing environmental requirements for transportation or assessing the equipment of ships with the necessary safety systems.

The rest of the commodity groups at this point in time, due to the relatively small volume of traffic or inconvenience, are not relevant for switching to water.

At the same time, in order to switch the flows of goods to transportation by inland water transport, it is important to determine the end sides of the supply chain, i.e. suppliers and consignees of products, respectively, in Russia and in Finland in the form of specific organizations that could, if certain conditions exist, consider the option of organizing the transportation of goods by inland waterway transport.

Table 13 shows the organizations that could act as such entities.

Table 13. - Main entities that can use inland waterway transport to transport their goods

| It. No. | Type of cargo transported | Russian party | Finnish party |
|---------|---------------------------|--|----------------------------|
| 1 | Petroleum products | LUKOIL-NIZHEGORODNEFTE-ORGSINTEZ | Oy Teboil Ab |
| 2 | Fertilizers | JSC "Appatit" (PhosAgro's own warehouses, but in the port) | SGN Group OY (port) |
| 3 | Paper, raw materials | LLC "Karelia Pulp" | Voith, Walki, Valmet |
| 4 | Paper, cardboard | JSC "Segezha PPM" | - |

| | | | |
|---|----------------------------|---|--|
| 5 | Wood, wood products | Agroservice, LLC Bogorodsky forestry, GPNO Buturlinsky forestry enterprise, GPNO Voskresenskoe Agroenterprise, LLC Kedr, LLC Pervomayskie Timber Industrialists, FanCor LLC | Ekovilla, Metsäliitto Group, Stora Enso Timber, UPM |
| 6 | Iron ores and concentrates | JSC "Karelsky Okatysh" | Fundia |

It is possible to work with these enterprises to stimulate the use of inland waterway transport.

2.3. Analysis of imports from Finland to Russia

As for the import direction (Finland-Russia), the leading position is taken by road transport, which accounts for more than 79%.

An increase in trade through the Saimaa Canal will mainly allow increasing cargo traffic to the border ports of the Northwestern region and transshipment of cargo to road or railway transport. At the same time, a high share of export shipments by sea transport makes it possible to reorient cargo flows, following with reloading in seaports to road or railroad transport, for transportation by vessels of mixed river-sea navigation, lighter carriers or smaller vessels, in comparison with sea and ocean, displacement along the Saimaa Canal and exclude the cost of delivery to the consignee by road.

As in the case of exports, we have identified key commodity groups that may be most interesting for switching to inland waterway transport (Table 14).

Table 14 - Average annual volumes of cargo transportation from Finland to Russia by various modes of transport, t/year

| Code TN VED | Commodity group | Average annual cargo traffic over the past 5 years, tons | | |
|----------------|---|---|----------------|--------------------|
| | | railway transport | road transport | river transport |
| 4401 | Paper and paperboard coated on one or both sides with kaolin (china clay) or other inorganic substances, with or without a binder, and without any other coating | 47 329 | 333 419 | |
| 4403 | Polymers of ethylene in primary forms | 3 213 | 90 725 | |
| 4407 | Oil and oil products obtained from bituminous rocks, except for crude; products, not elsewhere specified or included, containing 70% or more by weight of petroleum or petroleum products obtained from bituminous minerals | 10 992 | 79 074 | - |
| 7005 | Natural magnesium carbonate (magnesite); fused magnesia; magnesia calcined before sintering (agglomerated), whether or not containing small amounts of other oxides added before sintering; other magnesium oxides | 46 281 | 28 | - |

In the same way as for export, in Table 14, those groups of goods are highlighted in yellow that may be interesting for transportation by inland water transport and have specific turnovers for this, but at the current time, due to environmental restrictions, they cannot be transported along the Saimaa Canal. These groups can be considered only after assessing the possibility of changing the environmental requirements for transportation or assessing the equipment of ships with the necessary safety systems.

For the organization of exports using inland waterway transport, it is also important to determine the end sides of the supply chain, suppliers and consignees of products now, respectively, in Finland and in Russia in the form of specific organizations that could, under certain conditions, consider the option of organizing the transport of goods by inland waterway transport. Table 15 shows the organizations that could act as such entities.

Table 15. - Main entities that can use inland waterway transport to transport their goods

| It. No. | Type of cargo transported | Finnish party | Russian party |
|---------|--|---|--|
| 1 | Cars and equipment | Ponsse Raute Oyj Wartsila Kone Andritz | Mondi Syktyvkar LPK Segezha-Group Holding, Playterra CJSC, Yugorsk Timber Holding Transmashenergo Naberezhnye Chelny Cardboard and Paper Mill named after S.P. Titov |
| 2 | Paper and cardboard | UPM Specialty Papers Metsa Group Stora enso DM Tiimi Fedrigoni Walki Wisa Group OY C. Schauman AB OY Lorentzen & Wettre AB | LLC ASD Package LLC Paper mill Bereg CJSC MPK KRZ Komus Retail chains |
| 3 | Woodworking products (lumber, wood products) | Metsa Group | JSC "Solombalsky LDK" GK "Sveza" CJSC "Investlesprom" |
| 4 | Telecommunication equipment | Nokia | Retail chains |

It is possible to work with these enterprises to stimulate the use of inland waterway transport.

You can provide an approximate calculation of the costs associated with the transportation of a specific type of product from a supplier in Kuovola (Finland) to Tatarstan (Russia). These calculations are presented in Table 16.

Table 16. - Example of calculations for the delivery of cargo "Paper and cardboard coated on one or both sides with kaolin (Chinese clay) or other inorganic substances" in the direction of import from UPM (Kuovola) to the Republic of Tatarstan, taking into account the use of the Saimaa Canal and the Volga-Baltic route

| Option number | Route description | Cost, rub. (per vehicle unit) | The cost of transportation per 1 ton of cargo |
|---------------|--|-------------------------------|---|
| 1 | Road transport (20 tons) (distance 1800 km) | 269 000 | 13 450 |

| | | | |
|---|---|-----------|--------------------------|
| 2 | River transport (1000 tons): - Kouvola - St. Petersburg via the Saimaa Canal - St. Petersburg - Cherepovets (via the Volga-Baltic canal) - Cherepovets - Rybinsk - Kazan | 2 765 000 | from 4 900 to 6 700 * |
| 3 | Rail transport (65 tons): - Kouvola - Buslovskaya (rail road crossing point) - Buslovskaya (rail road crossing point) - Kazan | 529 300 | 8 143 |

** cost depends on many factors (type of cargo, seasonality, intensity of navigation, requirements of contractors)*

Thus, these calculations show that, in principle, the cost of transporting one ton of cargo by inland waterway transport can be lower than the use of road and railway transport.

3. DEVELOPMENT OF SCIENTIFICALLY GROUNDED PROPOSALS FOR THE FORMATION OF A REGULATORY FRAMEWORK AND PRIORITY MEASURES FOR SWITCHING TRANSBOUNDARY CARGO TURNOVER FROM ROAD AND RAILWAY TRANSPORT TO WATER TRANSPORT

In the Strategy for the Development of Export of Services until 2025¹⁸, it is stated that the export of transport and transit services is associated with the efficiency of logistics, namely, due to the “digitalization of transport corridors and junctions, simplification of administrative procedures in the implementation of export, import and transit, including "one contact" principle, harmonization of transport legislation, as well as the formation and implementation of long-term plans for the development of transport infrastructure, the formation of special legislation in the field of public-private partnerships and special financial instruments to attract private investors to the implementation of large investment projects".

At the same time, for water transport in the specified regulatory legal acts, specific measures are given that allow to determine in more detail the directions for further research to achieve this goal.

Transportation of goods along the river is a rather profitable enterprise if the task is to save money, since it has the lowest cost of all existing transportation methods. The transfer of building materials and other goods is 2-3 times cheaper than on the railway of a similar route.

The analysis of tariff setting (Table 16) on the Finland - Russia route by various transport modes has proved the competitive advantage of river transport.

Taking into account the emergence of bottlenecks in transport links in the North-West, a promising direction is the inclusion of the underutilized capacity of inland waterways in the transportation process.

The implementation of the logistics and transport capabilities of inland water-

¹⁸ Order of the Government of the Russian Federation No. 1797-p "On approval of the Strategy for the development of export of services until 2025" as of August 14, 2019 (together with the "Action Plan for the implementation of the Strategy for the development of export of services until 2025") (as amended)

ways is associated with the need for a significant modernization of the port infrastructure and water transport. The characteristics of the state of the infrastructure of inland waterways and water transport, given in official sources, including in the Strategy for the Development of Inland Waterway Transport until 2030, makes it possible to draw an unambiguous conclusion about the need to apply a number of economic measures aimed at supporting the development of inland waterway transport and port infrastructure. Legal entities carrying out commercial activities aimed at ensuring the functioning of inland waterways, including attracting additional cargo flows, including highly profitable cargo for this type of transport and direct investment, also require state support.

To realize the potential of inland waterways, it is necessary to create conditions that allow expanding the sources of financing for facilities from extra-budgetary sources and conditions that ensure the profitability of the work of both transport companies and commercial structures that ensure the operation of river ports and trading organizations, which was justified in the first paragraph of this part of the research.

However, the development of logistics through state support using inland waterway transport on the Saimaa Canal requires the application of a number of significant measures on the part of the state authorities of both states. Thus, in the case if the actions of the Finnish party are difficult to formulate recommendations, then a number of directions can be proposed for concrete actions on the part of Russian government structures.

In this regard, it seems that in order to attract investments and optimize cargo flows within the territory adjacent to inland waterways on the section of the International North-South Transport Corridor in the Saimaa Canal zone, it is advisable to consider options for using economic instruments that involve a wider range of territories and organizations.

These include:

- formation of recommendations for improving the regulatory frame-

work, directly or indirectly related to transportation by inland waterways in general and the Saimaa Canal, in particular;

- creation of special economic zones or free trade zones, "free" ports, which will stimulate the use of inland water transport by organizations;
- the application of the customs procedure of the free customs zone, including the port customs zones and the improvement of customs operations.

At the same time, it should be noted that the legislation regulating the activities and the procedure for investment in the territory of the port special economic zone is mainly focused on the activities of the port administrations and the authorities of the constituent entities of the Russian Federation. The possibility of attracting investment is mainly associated with budgetary sources of financing. Commercial organizations can invest in a port special economic zone only when it comes to the construction or reconstruction of port infrastructure facilities, while the statutory payback period for the port zone is 15 years. Of course, port infrastructure facilities require more than significant investments, and the payback periods have been set accordingly. If for budgetary funds significant payback periods are possible and allow reducing the cost of services provided by port administrations, then for commercial organizations long payback periods do not allow starting a business in the port special economic zone. Thus, it is obvious that the investment conditions are mainly focused on the investment of budgetary funds. This situation significantly limits the possibility of attracting investment and the attractiveness of projects related to the port special economic zone for investors. In addition, budgetary funds that can be used to develop expensive infrastructure for both federal and regional budgets are rather limited.

It is possible to propose a set of priority measures and appropriate recommendations for changing the regulatory documents, which could increase the incentives for commercial structures and other economic entities to use the Saimaa Canal.

1. Recommendations for improving the lease agreement and regulatory relations caused by its implementation.

The relations between the countries on the use of the Saimaa Canal are governed by the Agreement between the Russian Federation and the Republic of Finland on the lease by the Republic of Finland of the Russian part of the Saimaa Canal and the adjacent territory and on the implementation of navigation through the Saimaa Canal (as amended on April 20, 2016) (ratified by the Federal Law No. 315-FZ as of November 16, 2011).

According to Finnish businessmen, the development of waterways is in line with the plans of the White Paper of the European Union (EU) in terms of environmental safety and energy savings.

In view of these circumstances, the Finnish party is ready to invest in the development and modernization of the canal, but would like to receive guarantees from Russia that it will remain in its management after 2013 for the period that will allow the investment to be recouped (at least 30-50 years). Every year the Finnish government spends about 10 million euros on the maintenance of the Saimaa Canal.

In 2013, an agreement was renegotiated, according to which the rental price for the Finnish party increased from 300 thousand EUR to 1.22 million EUR plus a variable rate for each ton of cargo transported through the canal.

This is a positive moment for Russia, but the problem is the fact that despite the increase in rental income by 4.5 times, the use of these funds by the Russian party has not become more efficient.

On the one hand, an increase in rent is a positive moment, since it increases revenues to the Russian budget, on the other hand, dues (port, pilotage, canal) paid by shipping companies have increased. Shipping companies pay two times for the passage of ships from Russia to Saimaa: The Maritime Administration of the ports of Vyborg and Vysotsk for the transit passage of Vyborg (canal and pilotage dues) and the Finnish party, which receives all other dues. Additional costs have always been perceived negatively by the business. More painfully, the rise in prices hit passenger traffic.

At the same time, there is an imperfection of the organizational and economic mechanism for ensuring stable transportation along the canal due to the departmental

disunity of organizations responsible for the implementation of certain functions related to the fulfillment of obligations under the lease agreement. This leads to the fact that the amount of rent paid by the Republic of Finland under the current agreement is not targeted, is not related to the volume of functions performed by various organizations, and only partially covers their actual costs.

This leads to the need to form a set of regulatory legal acts (or changes in existing ones) directly related to the lease agreement, which would regulate the distribution or targeted use of rent for the development of the Saimaa Canal.

2. Stimulating the development of a system of public-private partnership projects

Public-private partnership (PPP) is a qualitatively special system of cooperation between public authorities and the private sector with the forms and mechanisms of specific organizational-economic and property-economic relations corresponding to this system, carried out in the public interest on conditions that are economically and socially beneficial for all participants such a relationship.¹⁹

The use of PPP mechanisms is now becoming more widespread in the Russian Federation. It is obvious that the PPP market in Russia has enormous potential. Due to the current macroeconomic conditions, one cannot speak of a breakthrough in the development of Russian infrastructure, but, nevertheless, one can state the progressive development of the PPP sphere. As of the beginning of 2019, according to the Ministry of Economic Development of the Russian Federation, in total in Russia it was decided to implement (an agreement was concluded) more than 1,300 PPP projects, of which the vast majority - more than 1,100 contracts - are municipal-level projects (mostly non-capital-intensive municipal concessions), 191 projects at the regional level and 15 at the federal level. 68 constituent entities of the Russian Fed-

¹⁹ Toshchenko, V. Public-private partnership: role, forms and areas of use / V. Toshchenko // Bulletin of the Institute of Economics of the Russian Academy of Sciences - 2010. -№ 1. P.77-88

eration already have experience in working with PPP projects, however, in 17 constituent entities, PPP projects are still not considered even at the initiation stage.

Analyzing the market of domestic PPP projects in the sectoral context, it should be noted that out of 873 projects that passed the stage of commercial closure until 2018, the bulk (626 projects) were municipal infrastructure projects. Social infrastructure accounted for 20% of the total number of projects. Transport infrastructure projects took the 3rd place - 47 projects (Fig. 12.).

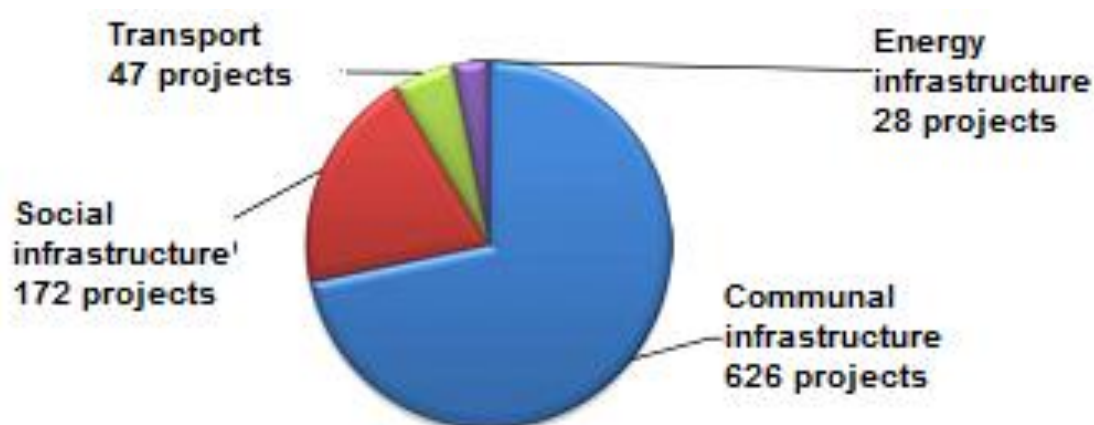


Figure 12 - PPP structure by field of activity

With regard to water transport, it is worth noting that PPP is used extremely widely in the world port industry. Since the mid-1990s, most major ports in the world have been actively involved in attracting private capital, including through the use of PPP mechanisms. The form of participation of private partners varies depending on the specific conditions of each project, but the most widely used are the classical concession and the so-called greenfield contracts. In Russia, however, only a small number of pilot projects are being carried out, mainly aimed at modernizing the infrastructure of seaports. The PPP mechanism in the inland waterway transport industry has not yet received proper development in our country. There is an urgent need to change this situation, since the state, as the owner of the water transport infrastructure, does not in all cases succeed in fulfilling its obligations to maintain

inland waterways to such an extent that shipping companies can carry out their activities without hindrance, and the industry itself is in dire need of investment.²⁰

At the same time, there are positive aspects for the use of PPP tools for the development of cargo turnover and passenger flow along the Saimaa Canal.

For example, the concept for the development of inland waterways of the Russian Federation for the period up to 2024 provides for the use of a PPP system for the development of navigation on inland waterways.

Some of the projects have already been implemented. For example, on the development of cruise shipping: investor (LLC KONT) in 2017-2018 built 11 passenger berths in the Northwestern and Central regions, to ensure the approach of ships, Rosmorrechflot performed dredging at the expense of the federal budget (50 million rubles), the result - in 2018, 37 voyages were performed and 6,975 tourists were transported; On the initiative of the Republic of Tatarstan, Rosmorrechflot carried out dredging, and guaranteed the dimensions of waterways on terms of co-financing from the regional budget (up to 50%), the result - in 2018, 240 passenger ships, mainly cruise ships, were called in Sviyazhsk and Bolgary, the program is designed for a long period; construction of two tourist vessels of the RU300 project, unique for Russia, meeting modern international standards of comfort, energy efficiency, environmental friendliness at the Krasnoye Sormovo and Lotos factories, investors - Moscow River Shipping Company and Vodokhod LLC.

Another project is a project to switch cargo flows to the river: by agreement with the administration of the Altai Territory and interested enterprises in 2015-2018. Rosmorrechflot improved the parameters of the navigational course, with funding from the federal, regional budgets and extra-budgetary sources, which made it possible to additionally transport more than 3 million tons of cargo by switching from road transport. Why the Administration of the Territory on the federal highway Biysk - Barnaul equipped a weight control point. Additionally, the transshipment of

²⁰ Plotnikova E.S. The use of alternative sources of financing in the development of the water transport infrastructure of Russia / E.S. Plotnikova // Proceedings of the XXXVII scientific-practical conference of the teaching staff, research workers and graduate students. Section "Economics of Water Transport". M.:Altair-MGAVT. 2015. – P. 41-44.

goods from inland waterway transport in Ust-Pristanskiy, Kalmanskiy, Shelabolikhinskiy districts was restored, which made it possible to reduce the load on the network of federal and regional roads with a length of about 775 km and to reduce the cost of the subject for road repair (estimated at 4.5 billion rubles)

This suggests that PPP projects in the development of inland waterway transport can be effective and applicable. For the development of transportation on the tourist routes of the Saimaa Canal, the Concept also provides for an event, development and launch of a new network of tourist water routes, the length of which is from Lake Saima to Lake Ladoga and Onega lakes, Lake Ilmen, with the possibility of access to the Central and Southern regions of Russia. Project participants: investors: OOO Kont, OOO SK Infoflot; Rosmorrechflot - improvement of IWW parameters creation of river passenger transport infrastructure in the area of the Forest Park zone of the city of Ryazan and the Borki transport and logistics center (investors: LLC Oksko-Moscow Shipping Company, JSC Port Kolomna, with the assistance of the Ryazan Region Administration, Rosmorechflot: improvement of IWW parameters); creation of new tourist routes in a mixed river-sea communication in the Azov-Black Sea, Caspian and Baltic basins (investors: LLC Moscow River Shipping Company, LLC Vodokhod, with the assistance of interested regions, Rosmorrechflot: improvement of IWW parameters).

However, the full implementation of PPP in the development of the Saimaa Canal is hampered by legislative restrictions. If these restrictions are not so visible in the development of inland waterway transport within Russia, then for the implementation of a project related to international cooperation, they are more significant.

A factor that narrows the possible scope of PPP projects (224FZ) is the limitation of the range of possible partners, in particular the impossibility of participating in the project as a partner of state-owned companies with a state share of more than 50%. The disadvantage of Federal Law No. 115-FZ is the fact that this law applies only to concessions, while 224-FZ on PPP involves the implementation of projects of various forms. Nevertheless, there are certain restrictions in the PPP law, which does not prescribe specific forms of project implementation (paragraph 5 of Table

2.5), however, assuming the presence of 4 required elements and 4 optional.

The restriction on the participation of large state participants creates problems for the development of PPP on the Saimaa Canal, since, on the one hand, significant investments are required to modernize the canal, on the other hand, state control is required, which is simply not effective due to state regulation.

All this requires possible changes in the PPP legislation.

3. Fee for the passage of foreign ships on inland waterways

This fee is governed by the following regulatory document: Order of the Federal Tariff Service of Russia No. 184-t/5 "On Approval of the Rules for the Application of Dues (Fees) from Vessels for the Services of Natural Monopolies in River Ports and for the Use of the Infrastructure of Inland Waterways" as of 08.10.2013 (Registered in the Ministry of Justice of Russia on November 25, 2013 No. 30446).

The fee is levied on the conditional volume of the vessel for the actual distance of the IWW sections passed by the foreign vessel (Table 17).

Table 17. - Fee for the passage of foreign ships on inland waterways²¹

| Country | Charge method | Charge rate | Point of fees collection |
|---------|-------------------------|-------------|---|
| Russia | 1000 m ³ /km | RUB 43.5 | Volga basin: section Kolkhoznik-Red Barricades, Volga-Baltic basin: Torovo - St. Petersburg, Volga-Don basin: Gateway No. 15 - Krasnoarmeysk, Azov-Don basin: Rostov-on-Don Gateway No. 15 |

This type of fees is not charged in the Danube countries and is a distinctive feature of Russian practice. The allocation of a separate fee, applicable only to foreign ships, is found only in Yugoslavia. This is a charge for embarkation and disembarkation of crew members of foreign shipping companies.

Obviously, this fee increases the cost of the transported cargo and forms a negative attitude towards the country on the part of carriers and suppliers. Therefore,

²¹ Appendix to Order No. 26 dated March 14, 2019 Rates of charges from vessels for services in the use of inland waterway infrastructure provided by the Volga Basin Administration

if at the state level there is an interest in the development of inland waterways, including the development of the Saimaa Canal, and this is confirmed by a number of decisions at the federal level, then this order should to one degree or another be revised towards a reduction in the fee collection or a fundamental refusal of it for a certain time.

4. Tax law

As a direction for improvement, we can recommend that regional legislative bodies consider the possibility of reducing the level of the property tax rate for shipping companies in the respective territories, regions, republics in order to facilitate the active construction of a new fleet to ensure the vital activity of the region.

5. Customs regulation

To develop activities on the Saimaa Canal, it is necessary to analyze possible directions for supporting foreign economic activity by improving customs administration in the implementation of customs operations and customs control in relation to goods transported by inland water transport.

Due to the specifics of water transport, the improvement of customs administration at a sea (river) checkpoint should be considered within the framework of two main directions:

- shortening the time for completing customs formalities;
- reduction in the number of documents for performing customs operations and procedures.

These areas are inextricably linked and can be implemented through the use of the capabilities of modern information technology and advanced technical means of control. To implement these areas, the following can be singled out as priority tasks for improving customs administration at river checkpoints:

- acceleration of control of goods and vehicles at sea (river) checkpoints due to the full-scale implementation of mandatory preliminary notification;
- an increase in the share of sea (river) vessels, the customs control of which is carried out without sending officials on board the vessel (hereinafter - documentary control);

- increasing the efficiency of customs control of goods and vehicles at sea (river) checkpoints through the use of modern technical means of customs control (TSTK).

At the same time, at present, there are no customs exemptions, no reductions in customs duties for the transportation of goods from Finland to Russia and back along the inland waterways of the Saimaa Canal compared to road and railway transport.

Thus, the amount of collected customs payments for all transport modes will be the same. You can give the calculation of the costs of customs clearance and customs payments on the example of the transportation of round unprocessed timber from Russia to Finland. The distance and location of the supplier and the consumer is not important in this case, since it does not affect the value of customs payments. The calculation of the remaining transportation costs was given in the second part of this study.

So, as a commodity, the most voluminous commodity in terms of transportation was taken - untreated timber with unremoved pine bark (pine logs), TN VED code - 4403 21 110 0.

The calculation was made for a conditional lot transported on a ship with a capacity of 2000 tons (3600 m³ of timber) from Russia to Finland. The main characteristics of the calculations are shown in Table 18.

Table 18. - Expenses for customs processing (clearance) of timber

| Customs clearance costs | Payment amount | In the currency of customs payments |
|---|---------------------------|-------------------------------------|
| Customs value of goods | - | RUB 14000000.00 |
| Customs duty | 8% | RUB 1120000.00 |
| Excise tax | Is not a subject to a tax | RUB 0.00 |
| VAT | 20% | RUB 3024000.00 |
| Customs duty | RUB 30000 | RUB 30000.00 |
| Total - customs clearance costs | - | RUB 4174000.00 |
| Total - costs of customs clearance together with the value of the goods | - | RUB 18174000.00 |

The calculation was made at the rate of 1 RUB = 1 rub. on the date 01/12/2020

| Rate USD = RUB 76.1999 for 1 dollar | EURO rate = 91.2037 rub. for 1 EUR.

As can be seen from the calculations, only customs procedures increase the cost of transported goods by 29.8% (18.174 million rubles compared to the cost of goods of 14 million rubles). And this is not counting the additional costs of transportation and other fees.

Moreover, for this product, it is necessary to additionally undergo a number of procedures defined in Table 19.

Table 19. - Additional procedures for passing customs procedures for goods with the TN VED code 4403 21 110 0.

| Type of additional procedures | Regulatory document |
|--|---|
| License | Resolution 1520 of 12.12.2017 of the Government of the Russian Federation |
| Quota | Resolution 1520 of 12.12.2017 of the Government of the Russian Federation |
| Phytosanitary control | Customs clearance of goods can be completed only after phyto-control. Decision 157 of 30.11.2016 of the EEC Council |
| Phytosanitary control | Customs clearance of goods can be completed only after phyto-control. Decision 318 of 06/18/2010 KTS |
| Placement in a customs warehouse is prohibited | It is forbidden to place goods in a customs warehouse Decision 375 of 09/20/2010 KTS |
| Goods for the purposes of Article 226.1 of the Criminal Code of the Russian Federation | Resolution 923 of 13.09.2012 of the Government of the Russian Federation |
| Gr.31 - documents and information | The list of information confirming the classification code of the goods according to the Foreign Economic Activity Commodity Nomenclature of the Customs Union (TN VED CU), and documents containing this information. Letter 06-42 / 59089 dated 02.12.2011 FCS of Russia |
| Additional information for group 31 according to Appendix 3 | Decision 133 of 08/19/2014 of the EEC Board |
| Additional information for group 31 according to Appendix 3 | Decision 257 of 05/20/2010 KTS |
| License | Decision 30 of 21.04.15 of the EEC Board |
| San / epid control | The goods are subject to sanitary and epidemiological supervision (control) Decision 299 of May 28, 2010 KTS |
| Declaration of Conformity | Declaration of Conformity required |

Accordingly, for the development of commodity turnover on the Saimaa Canal, changes are required in customs legislation, including the above-mentioned regulatory legal acts.

6. Free economic zones and the organization of a free port within the territory of the waterway along the Saimaa Canal

A special economic zone or a free economic zone (abbreviated as SEZ or FEZ) is a territory with a special legal status, in which there are favorable economic conditions for carrying out activities for Russian or foreign entrepreneurs.

Port SEZs are formed in order to create a platform for organizing shipbuilding and ship repair activities, providing logistics services, as well as a base for new routes, located in the immediate vicinity of the main transport routes. Their creation is possible in areas of the territory, the total area of which is no more than fifty square kilometers.

For the Saimaa Canal, the creation of such a port zone can serve as a factor in attracting investments and economic entities in the field of cargo transport to this logistics route.

Items 5 and 6 will be discussed in more hereinafter, in subsequent parts of this study.

7. Bringing Russian legislation in the field of regulation of inland waterway transport to the norms of international law

Another important point to pay attention to is significant legislative gaps. In this case, we are talking about the fact that Russian legislation in the field of river and sea transport still does not comply with the norms of international legislation, despite the already quite long time that has passed since Russia's accession to the WTO, and the fact that Russia is a member European Agreement concerning the International Transportation of Dangerous Goods by Inland Waterways. The Minister of Transport of the Russian Federation argued for the need for unified legislation

to the deputies of the State Duma of the Russian Federation back in 2011²², but so far this problem has not been solved. In particular, the national legislation in the field of inland waterway transport does not take into account the norms of the EU Regulation on the European Community policy in the field of fleet capacity, Directive of the European Parliament and of the Council 2006/87/EC²³, the Rhine Navigation Convention.²⁴ The totality of the listed normative legal acts establishes technical requirements for inland waterway transport vessels, provides for obtaining a special certificate for navigation on IWW, establishes a special regime for the transport of EU inland waterway transport and requirements for ships. In addition, one cannot fail to point out the abolition of many of the most important internal regulatory legal acts regulating various organizational, substantive and technical aspects of the operation of inland waterway transport, which have not been replaced by new, updated and improved regulatory documents²⁵.

²² Speech by the Minister of Transport of the Russian Federation 09/20/2011 to the deputies of the State Duma [Electronic resource]: http://www.mintrans.ru/news/interviews/detail.php?ELEMENT_ID=16893

²³ Directive 2006/87 / EC of the European Parliament and of the Council of 12.12.2006 // ATP "ConsultantPlus". PROF version

²⁴ Thematic report on river-sea transport: Submitted by the Central Commission for the Navigation of the Rhine. Item 8 of the provisional agenda. Working group for the unification of technical regulations and safety rules on inland waterways: 56th Session, Geneva, 12-14 February 2020 - Informal document SC.3 / WP.3 No. 2, 2020 [Electronic resource]: https://www.unece.org/fileadmin/DAM/trans/doc/2020/sc3wp3/ECE-TRANS-SC3-WP3-2020-inf_02r.pdf (date accessed 01.06.2020)

²⁵ Opportunities for improving state supervision in the field of sea and river transport // International Journal of Humanities and Natural Sciences, vol. 6-3 (45), 2020

CONCLUSION

In conclusion, it has to be said that within the framework of this part of the research work, the goal was achieved, which was to determine the commercial prospects for switching cargo flows from road and railway transport to water transport using the Saimaa Canal.

In the Strategy for the Development of Export of Services until 2025, it is determined that the export of transport and transit services is associated with the efficiency of logistics, namely, due to the “digitalization of transport corridors and junctions, simplification of administrative procedures in the implementation of export, import and transit, including in the format of "one contact" principle, harmonization of transport legislation, as well as the formation and implementation of long-term plans for the development of transport infrastructure, the formation of special legislation in the field of public-private partnerships and special financial instruments to attract private investors to the implementation of large investment projects.”

At the same time, for water transport in the specified regulatory legal acts, specific measures are given that allow to determine in more detail the directions for further research to achieve this goal.

Transportation of goods along the river is a rather profitable enterprise if the task is to save money, since it has the lowest cost of all existing transportation methods. The transfer of building materials and other objects is 2-3 times cheaper than on the railway tracks of a similar route.

The analysis of rate setting on the Finland - Russia route by various modes of transport has proved the competitive advantage of river transport.

Taking into account the emergence of bottlenecks in transport links in the North-West, a promising direction is the inclusion of the underutilized capacity of inland waterways in the transportation process.

The implementation of the logistics and transport capabilities of inland waterways is associated with the need for a significant modernization of the port infrastructure and water transport. The characteristics of the state of the infrastructure of

inland waterways and water transport, given in official sources, including in the Strategy for the Development of Inland Waterway Transport until 2030, allows to draw an unambiguous conclusion about the need to apply a number of economic measures aimed at supporting the development of inland waterway transport and port infrastructure. Legal entities carrying out commercial activities aimed at ensuring the functioning of inland waterways, including attracting additional cargo flows, including highly profitable cargo for this type of transport and direct investment, also require state support.

To realize the potential of inland waterways, it is necessary to create conditions that will expand the sources of funding for facilities from extra-budgetary sources and conditions that ensure the profitability of the work of both transport companies and commercial structures that ensure the operation of river ports and trading organizations.

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