

Tatiana Pantina, Tamara Volkova

**WP1.1: STUDY ON COMMERCIAL VISIBILITY AND FUTURE  
CARGO FLOWS ON THE ROUTE  
SAIMAA LAKES – VOLGO BALT**

Project «Future potential of inland waterways» («INFUTURE»)

Financed by EU, Russian Federation and Republic of Finland



CBC 2014-2020  
SOUTH-EAST FINLAND - RUSSIA



**Admiral Makarov SUMIS  
St.-Petersburg 2019**

## INDEX

INDEX	2
INTRODUCTION	3
1. GENERAL CHARACTERISTICS OF INLAND WATERWAY TRANSPORT OF RUSSIAN FEDERATION	4
2. STRATEGIC DIRECTIONS OF THE DEVELOPMENT OF INLAND WATERWAY TRANSPORT IN RUSSIAN FEDERATION	7
3. ANALYSIS OF CARGO VOLUMES AND ITS STRUCTURE TRANSPORTED BY INLAND WATERWAYS FROM RUSSIAN FEDERATION TO FINLAND	16
4. DYNAMICS OF CARGO TRANSPORTATION IN WHITE SEA – ONEGA AND VOLGO-BALT BASINS	18
5. BRIEF CHARACTERISTICS OF INLAND PORTS OF REPUBLIC KARELIA AND LENINGRAD REGION	20
5.1. BRIEF CHARACTERISTICS OF INLAND WATERWAYS OF LENINGRAD REGION	25
APPENDIXES	26
LIST OF REFERENSES	28

## INTRODUCTION

In situation of limited capacity of roads and railways, the fullest use of the potential of inland waterways of Saimaa canal, Volgo-Balt and others of Unified Deepwater System (UDWS) of Russia, which are and potential integral parts of the North-South international transport corridor, can be a significant factor in reducing logistics infrastructure costs as component in the price of goods, reducing the negative impact of transport on the environment.

Further UDWS development for its integration into the international transport corridors will contribute to the growth of the transport of foreign goods by inland waterway transport, help to increase the competitiveness of transport and business companies throughout Saimaa and Volgo-Balt waterways and promote of international cooperation between Finland and Russia in the field of transport services.

At the meeting of the Presidium of the State Council of the Russian Federation on August 2016 on the issue «On the development of the inland waterways of the Russian Federation», among the main tasks it was noted that it is necessary to shift part of the transportation of construction, oil, grain cargo, ferrous metals and others, based on economic feasibility from land-based modes of transport to inland waterway transport, with the removal of infrastructure restrictions and a fair competitive tariff policy. At the same time, it is advisable to make greater use of the capabilities of the regions to promote inland waterway transport among consignors.

This study was carried out within the framework of the section WP1.1: Study on Commercial Inland Waterways Potential (INFUTURE) project Saimaa Lakes – Volgo-Balt. The study is starting in the first working package of the specified project.

# **1. GENERAL CHARACTERISTICS OF INLAND WATERWAY TRANSPORT OF RUSSIAN FEDERATION**

Inland waterways (IWWs) of Russia and associated shipping fairways and hydrotechnical sites are state owned and used for shipping purposes by any legal entities and persons [1].

IWWs has complex usage to meet the needs of individuals and legal entities, industries, regions, in addition providing society with drinking and industrial water supply, irrigation, sanitary flooding of rivers.

At the present, the total length of the inland waterways of the Russian Federation is 101,7 thousand kilometers, they goes on the territory of 60 administering entities of the Russian Federation, and in order to ensure the IWWs maintenance are divided into 15 Basins. Each basin has common navigable waterways, climate, navigational and hydrographic settings for the vessels sailing and hydrometeorological conditions.

The main inland waterways are White Sea-Onega, Volga-Balt, the Volga, the Moscow, the Kama, the Volga-Don and the Azov-Don basins, which form the United deep-water system of inland waterways of the European part of Russia (hereinafter – UDWS) connecting the Baltic, White, Caspian, Azov and Black Seas. The total length of the UDWS is about 6500 km.

Deep waterways have large throughout capacity, they can be compared with multi-track railways (or motorways), and they are well-adapted to mass transportation of goods and passengers. It worth to be reminded that branches of UDWS with a total length of 5357,6 km of inland waterways are included in the list of inland waterways of international importance [2].

Vessels flying the flag of the foreign countries allowed sailing by inland waterways [3] of Russia totaling 20630 km.

In order to ensure the navigable conditions of inland waterways there 741 navigable hydro-technical sites are operated providing integrated solutions in: navigation, water supply (including drinking water), sanitary flooding of rivers,

irrigation and reclamation engineering protection of territories and populations from man-made disasters and natural floods.

On the territory of the European part of Russia are the largest artificial hydrotechnical constructions (sites) – the inland shipping canals: the Volga-Balt Canal, the Moscow Canal, the Volga-Don Canal, the White Sea-Onega Canal.

State regulation in the field of inland waterways and shipping hydrotechnical sites located on them is carried out by the Ministry of Transport of the Russian Federation [1].

Organization of works on navigation and hydrographic conditions providing for the vessels sail by inland waterways, as well as carrying out maintenance of inland waterways and navigable hydraulic engineering constructions situated on them rests with the Federal Agency of Sea and River Transport.

Direct keeping and maintenance of inland waterways and located on them navigable hydraulic engineering structures, functions of port State control and other functions in the inland waterway basins shall implement the Administrations of Basins Waterways [1].

There are 134 river ports operated on the territory of the Russian Federation. The business entities of inland waterway transport carrying out cargo works in there exceed the number of 200 companies. River ports are the main link in interaction with railway and road transport, among them 58 river ports are rail accessed.

As it can be noticed on Fig.1 in 2008 was reached the maximum amount of goods transported by inland waterways since the beginning of the century – 151.0 million tons (fig. 1). However, under the influence of the global financial crisis and subsequent economic recession, the volume of inland waterway transport falls in 2009 on 36% to 97 million tons. From the 2010 volumes of transported cargoes were increasing again, making it in 2012 about 142.4 million tons. Since then, however there has been slow but steady trend of cargoes declining till 2018, when transportation by inland waterways consisted of 116,2 million tons (115,1 million tons by other sources).

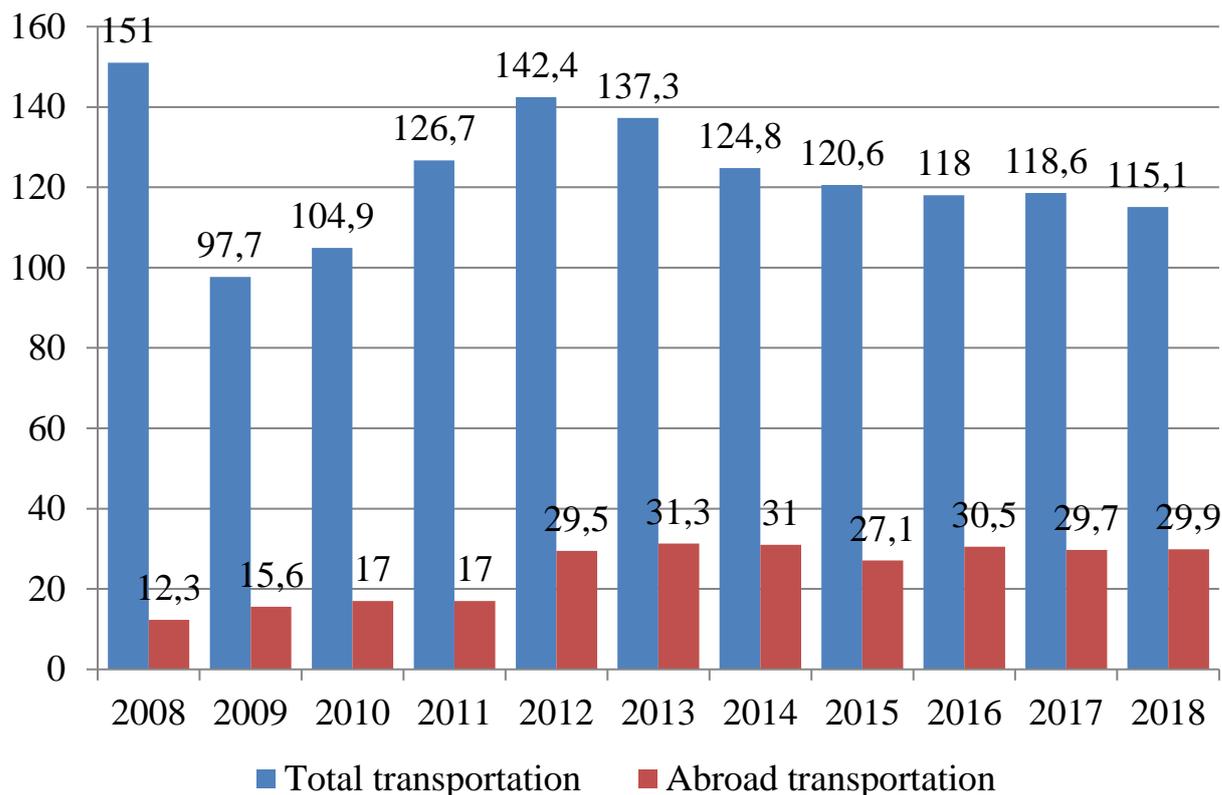


Figure 1. Development of volumes of goods transportations by inland waterway transport of Russia in the years 2008-2016, million tons

At the same time, the amount of foreign (abroad) transportation by inland waterway transport in 2016 amounted up to 30,5 million tons, which is nearly 2,5 times higher compared to the same indicator of year 2008, when growth in the years 2008-2012 and stabilization in a subsequent period were reached (fig. 1).

The share of the goods transported by inland waterways of the UDWS is about 75% of the total traffic volume, whereas the volume of export-import cargoes (petroleum products, wood, metal, fertilizers, etc.) amounts about 25% of the total traffic.

River ports are mainly focused on handling of bulk cargoes, their share is about 93-95%, remaining 5-7% falls on oil and petroleum products, processed at specialized berths. In recent years out of the total volume of cargo handling works, the share of export-import cargoes is about 6-8%.

There are 13022 cargo and passenger vessels registered in the Russian River Register, and 641 vessels of combined “river-sea” going class (of classes II-SP and

III-SP) are registered in Russian Maritime Register of Shipping, which are operated under the national flag [5].

## **2. STRATEGIC DIRECTIONS OF THE DEVELOPMENT OF INLAND WATERWAY TRANSPORT IN RUSSIAN FEDERATION**

The basic strategy document defining priorities, goals, objectives and indicators for the development of the transport industry is the Transport Strategy of the Russian Federation for the period until 2030 [4], where the imbalance in the development of the unified transport system of Russia is identified as one of the most significant problems and the scale of development of different types of transport, including a significant lag in the development of inland waterway transport.

The Strategy for the Development of Inland Waterway Transport of the Russian Federation for the period until 2030 [5], based on the strategic priorities and objectives of the Transport Strategy and based on the analysis and synthesis of the current state, problems and opportunities for the development of inland waterway transport, defines the goals for the development of inland waterway transport until 2030 of the year. In order to achieve each of the goals set, tasks were set and measures were justified to ensure their systematic solution.

*Objectives and indicators of the development of inland waterway transport of the Russian Federation:*

*1. Creation of conditions for the shifting of cargo flows from land transport to inland waterway transport to ensure a balanced development of the transport system.*

Achieving this objective (goal) will help improve the balance of the country's transport system, and

-reduce specific transport costs in the price of final products by optimizing transport and technological schemes for cargo delivery, taking into account the

shift (redistribution) of part of cargo flows from land-based transport to inland waterway transport;

- reduce the overall environmental burden of the transport industry;

- develop and strengthening of ties between regions by eliminating territorial and structural imbalances in transportation;

- accelerate of the socio-economic development of the regions, especially of the Far North, Siberia and the Far East, where inland waterway transport is without alternative and life-supporting;

- increase in employment.

The fullest use of the potential possibilities of inland waterways will reduce the traffic density of roads and railways in parallel directions for the delivery of bulk cargoes, ensure the development of port facilities and the construction of logistics terminals, and create an information environment for multimodal technological interaction between participants in the transport process.

Indicators for this objective are:

- the length of inland waterways with guaranteed dimensions of ship fairways;

- the length of inland waterways with illuminated and reflective conditions;

- proportion of the length of inland waterways with limited capacity on the UDWS;

- cargo handling by river ports of Russia;

- the share of container traffic in the total inland waterway transport;

- the share of highly profitable cargoes in the structure of the inland waterway cargo base;

- labor productivity in inland waterway transport.

*2. Ensuring the growth of competitiveness of inland waterway transport in relation to other types of transport.*

Achieving this goal will allow creating a modern transport fleet that corresponds to the structure of transported goods and parameters of inland waterways, international and Russian standards for shipping safety, energy

efficiency and environmental friendliness, provide a powerful impetus for the development of domestic shipbuilding, and create conditions for the development of passenger traffic on tourist routes.

Indicators for this objective are:

- average age of the cargo fleet;
- average age of the fleet used on tourist routes;
- total fleet capacity;
- average specific fuel (electricity) consumption per one ton-km.

### *3. Improving the availability and quality of inland water transport services for shippers.*

Achieving this goal will allow to fully meet the needs of the country's economy in the services of inland waterway transport, including providing socially significant cargo transportation in the Far North regions and equated localities, Siberia, the Far East and remote regions of Russia. Government support for container transport by inland waterway transport will reduce the traffic density of highways and reduce the negative environmental impact from the operation of heavy vehicles. The removal of infrastructural restrictions on the inland waterways of the UDWS will ensure the growth of traffic, speeding up time and reducing the cost of shipping goods.

Indicators for this objective are:

- number of container lines;
- number of multimodal terminals;
- volume of cargo transportation to the Far North regions and similar areas;
- volume of traffic of foreign trade cargoes on inland waterways.

### *4. Ensuring the social function of inland waterway transport for passengers.*

Achieving this objective means fully meeting the growing needs of the population in inland waterway transport, ensuring the affordability of inland waterway transport services of social importance, as well as the availability of services for citizens with disabilities.

Within the framework of this objective, it is intended primarily to ensure the transportation of passengers on socially significant routes, including ensuring their affordability, the development of urban and suburban passenger water transport systems in large cities with inland waterways.

Indicators for this objective are:

- average age of the passenger fleet;
- volume of passenger traffic on socially significant routes;
- number of newly built or reconstructed berths and other infrastructure facilities for passenger transport.

*5. Improving the level of safety and environmental friendliness of inland waterway transport.*

Realization of this objective will allow to ensure the level of safety and information support of shipping that meets international and national requirements, the security of operation of inland waterway infrastructure facilities, a higher level of safety of cargo transportation that require special conditions.

Indicators for this objective are:

- share of navigable hydro technical structures that are subject to security declaration, having an unsatisfactory level of safety, in the total number of navigational hydro technical sites;
- amount of emissions of air pollutants per one ton-km;
- share of inland waterway transport organizations that has implemented environmental management systems for environmental quality management in their total number of organizations.

The dynamics of the main indicators are shown in Figure 2.

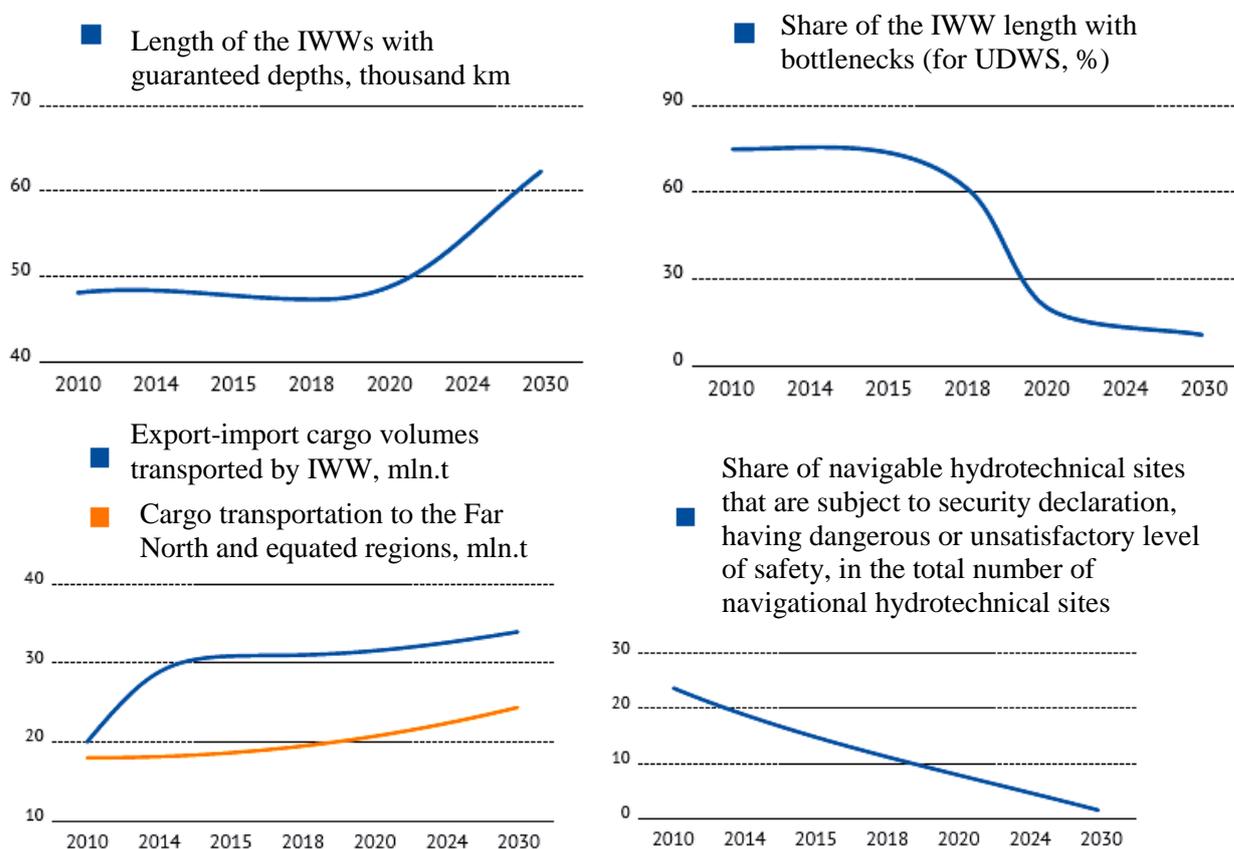


Figure 2. Dynamics of the main indicators of the Strategy of the IWW transport development of Russia

For the implementation the Strategy provides a set of measures ensuring the achievement of long-term goals and the solution of the tasks:

- Increased throughput of inland waterways:
  - by improving the quality parameters of inland waterways;
  - by implementation of projects for the construction of new hydro technical structures to eliminate «bottlenecks» on the inland waterways of the UDWS;
  - by renovation of technical (serving) fleet vessels.
- Development of port infrastructure:
  - by improvement of the property management mechanisms in river ports;
  - by updating of cargo handling equipment in river ports;
  - by improvement of credit and customs policy when purchasing cargo handling equipment for river ports.

- Working out and implementation of state support measures for the development of inland waterway transport:

- by development of regulatory and financial measures aimed at restricting the transportation of non-metallic building materials by road;

- by legislative restriction at the level of the constituent entities of the Russian Federation of the use of heavy vehicles in cities where there are inland waterways;

- by development and implementation of measures to attract cargo flows that potentially can be carried by inland waterways;

- by development and implementation of a system of measures to promote transportation with the participation of inland waterway transport among professionals of the transport and logistics services market and shippers.

- Ensuring competitive prices (rates) for the carriage of goods by inland waterway transport:

- by improvement of the tariff policy providing for a combination of free pricing mechanisms with control functions in the interests of protecting consumers from unreasonable discriminatory tariffs, and market participants from dumping tariffs.

- Creation of an additional cargo base on inland waterways:

- by development of industrial clusters, focused on the transportation of manufactured products and raw materials by river transport.

- Improvement of the document management system, creation of the information environment for multimodal technological interaction of participants in the transport process:

- by introduction of a system of unified electronic transport documents, development and implementation of an integrated electronic system for the design and maintenance of sea and river freight and passenger traffic.

- Ensuring renewal and growth of fleet tonnage:

- by development and implementation of state support measures for fleet renewal (interest rate compensation for borrowing and construction of ships at

Russian shipyards, using the leasing mechanism to upgrade the river fleet and vessels of river-sea navigation, including the fleet of shipowners delivering cargo to the Far North and equated areas);

- by renewal of the fleet of shipowners delivering goods to the Far North and equated areas, based on the implementation of the mechanism of operational leasing of ships;

- by development of a program for upgrading ships of the river fleet and river-sea navigation based on the introduction of a payment mechanism to Russian organizations for the purchase the cargo ships in exchange for vessels delivered for scrapping.

- Improving the safety, environmental and energy efficiency of inland waterway transport:

- by equipping ships of inland and river – sea going class with satellite navigation equipment of GLONASS or GLONASS / GPS, electronic mapping systems, government finance support for equipping transport ships with navigation systems;

- by reconstruction of navigation laboratories for creating and updating electronic navigational charts in the basins of inland waterways, creating electronic navigational charts on side and smaller rivers;

- by development of a program for the modernization of vessels and infrastructure of inland waterway transport to reduce their negative environmental impact;

- by development of measures to stimulate the modernization of vessels with the installation of modern engines and fuel consumption control systems;

- by improving the integrated services of inland water transport vessels, including the reception and treatment of sewage and oily wastewater, and other wastes;

- by development and implementation of a program for the construction of technologically advanced ships (bilge water collectors, integrated ship cleaning stations and oil and sewage collectors) to replace the existing environmental fleet;

- equipping ports with means to protect the environment.
- Development of passenger traffic on tourist routes:
  - by development of measures of state support for the renewal of the tourist fleet;
  - by construction of modern vessels for use on tourist routes.
- Ensuring the availability of transport services for the carriage of goods in the Far North, Siberia and the Far East:
  - by creation of a mechanism to support the initiatives of regional executive authorities of the constituent entities of the Russian Federation on the development of navigation on side and smaller rivers in the eastern regions;
  - by development of standard designs of vessels for the eastern basins, including the shallow draft fleet, based on the proposed grid, taking into account the requirements of cargo owners and shipowners;
  - by development of a set of measures aimed at the systemic use of the transport potential of the Northern Sea Route and inland waterways of Siberia to ensure the growth of traffic volumes;
  - by improvement of the tariff policy in the framework of the delivery of goods to the regions of the Far North and equivalent areas.
- Creating conditions for switching container flow from congested road sections to inland waterway transport:
  - by development of a mechanism for state support of projects for the creation and development of trimodal terminals using the mechanism of public-private partnership.
- Development of measures for the effective use of the potential of the UDWS as the most important waterway of international importance:
  - by justification of a set of measures aimed at the implementation of the transit potential of the UDWS;
  - by modernization of the system of international agreements on navigation on inland waterways, primarily in the context of the opening of certain sections of

the inland waterways of the Russian Federation for the access of vessels flying a foreign flag;

- by development of container and contrailer (piggyback) transportation of container-like cargoes along the North-South international corridor by inland waterway transport.

- Ensuring the social function of inland waterway transport of passengers:

- by development of passenger traffic on socially significant routes, including speed lines;

- by development of intracity and suburban passenger transportation by inland waterway transport in large cities with waterways:

- by development and implementation of purposed programs for the development of urban and suburban passenger transport by inland waterway transport in large cities with waterways.

- Improving the level of safety and environmental friendliness of inland waterway transport:

- by development and implementation of integrated projects for the reconstruction of hydro-technical sites, other infrastructures and inland waterways of the UDWS basins, Siberia and the Far East;

- by modernization and equipment of the navigational aids of inland waterways with geographic information systems for monitoring positioning and technical condition;

- by reconstruction and development in basins of the departmental technological communication networks on inland waterways based on international standards of river information services;

- by increase the level of safety of transportation of goods required special conditions;

- by meeting the need for specialists with qualifications that meet the requirements of safety and sustainability of the transport system, including international ones.

Large investment and infrastructure projects implemented under the Strategy: the construction of the Bagayevsky hydrotechnical site on the Don River and the construction of the Nizhny Novgorod hydrotechnical site on the Volga River.

The implementation of the projects will provide a unified guaranteed depth of 4 meters on the main inland waterways of the UDWS, increase their throughput up by 56 million tons, and create incentives for updating cargo and passenger fleet.

### **3. ANALYSIS OF CARGO VOLUMES AND ITS STRUCTURE TRANSPORTED BY INLAND WATERWAYS FROM RUSSIAN FEDERATION TO FINLAND**

Analysis shows that the entire cargo volume transported from Russia to Finland is represented by wood cargo. For example, in 2016 around 307 thousand tons of cargo has been delivered by inland waterway transport to the ports of Finland (fig. 3).

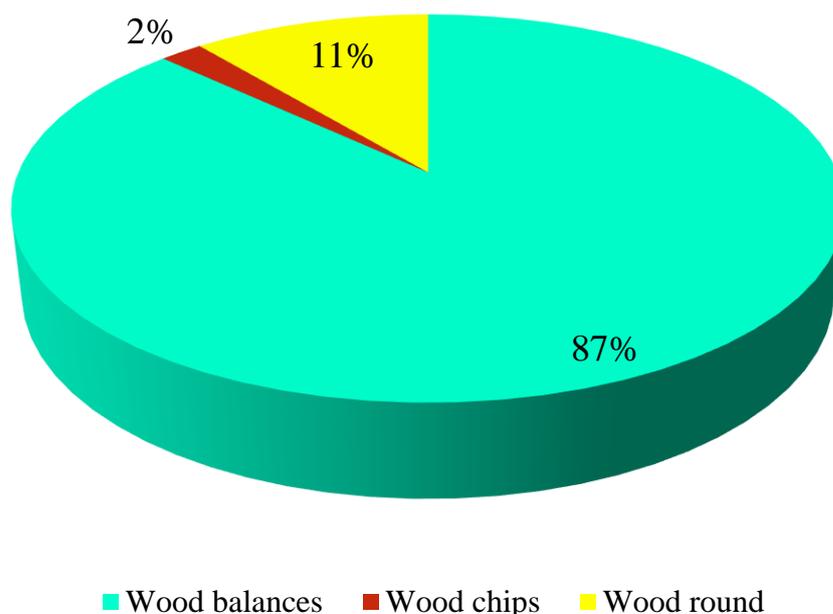


Figure 3. Structure of cargo transportation to Finland in 2016, %

The main destination ports on the territory of Finland in 2016 were the following ports: Imatra, 107 thousand tons of cargo were delivered there, which accounted for 35% of the total cargo volume, Lappeenranta – 60 thousand tons of cargo, which accounted for 20% of the total cargo volume, Kaukas – 36 thousand tons of cargo, which accounted for 12% of the total cargo volume. A detailed structure showing all the destination ports is shown in the diagram below (fig. 4).

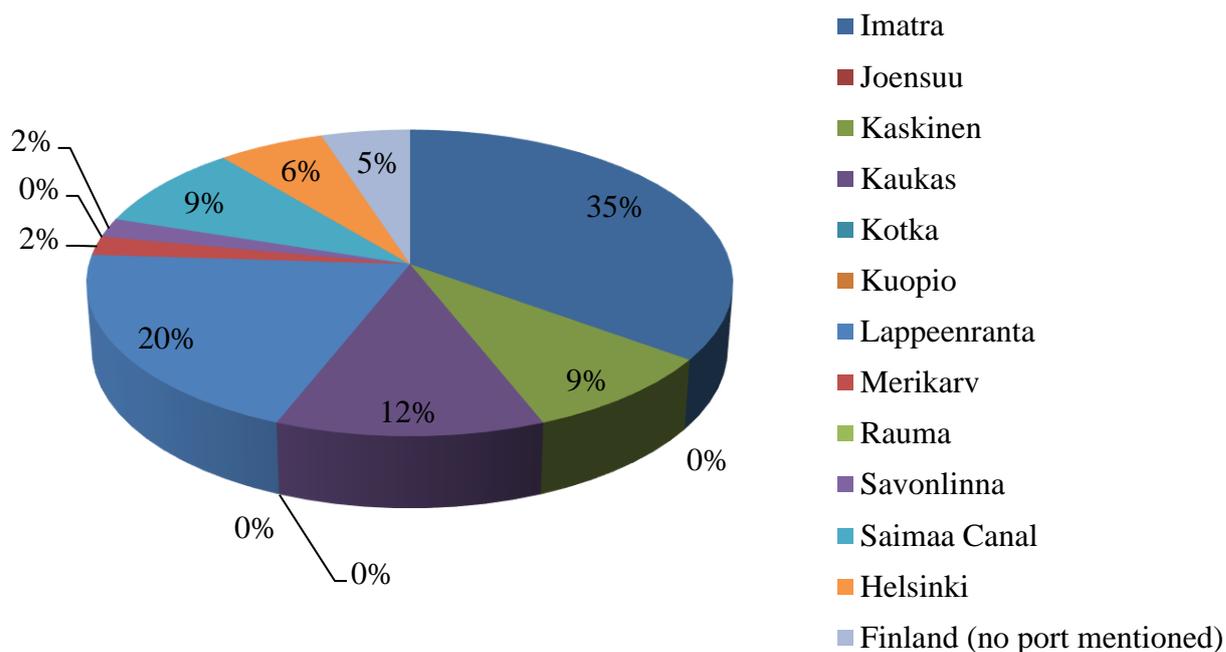


Figure 4. Structure of cargo volume by destination ports of Finland, %

The main departure ports on the territory of the Russian Federation in 2016 were the following ports: Bely Ruchey, 68 thousand tons of cargo was shipped from there, which accounted for 22% of the total volume. Belousovo and Shala, 44 thousand tons of cargo, which accounted for 14% of the total volume, Mondoma – 37 thousand tons, Vytegra – 31 thousand tons, which accounted for 12% and 10% of the total volume, respectively. A detailed structure showing all the departure ports is shown in the diagram below (fig. 5).

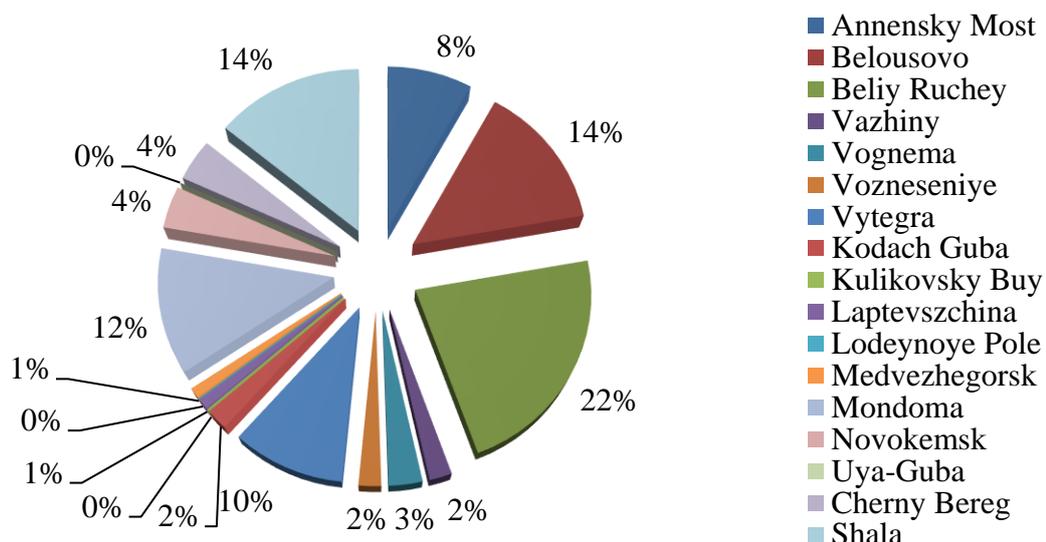


Figure 5. Structure of cargo volume by departure ports of the Russian Federation, %

The main carriers for export-import cargoes in 2016 were Neva-Group — 135 voyages, Hangut Marine Agency — 39 voyages and Astra Shipping Agency — 37 voyages. In total there were made 235 export-import voyages (see Appendixes).

It should be noted that the main cargo-generating points of the North-West region are the inland ports of the White Sea – Baltic Sea Canal, Volga-Baltic Waterway, Onega Lake. Inland ports are located in the White Sea-Onega and Volga-Baltic basins.

#### 4. DYNAMICS OF CARGO TRANSPORTATION IN WHITE SEA – ONEGA AND VOLGO-BALT BASINS

The diagram below shows the cargo volume dynamics in these basins for the period of 2008–2017 (fig.6). It can be seen that the cargo volume in the Volga-Baltic basin in 2016 and 2017 has reduced in comparison with 2008, but still from 2015 tendency upright is positive.

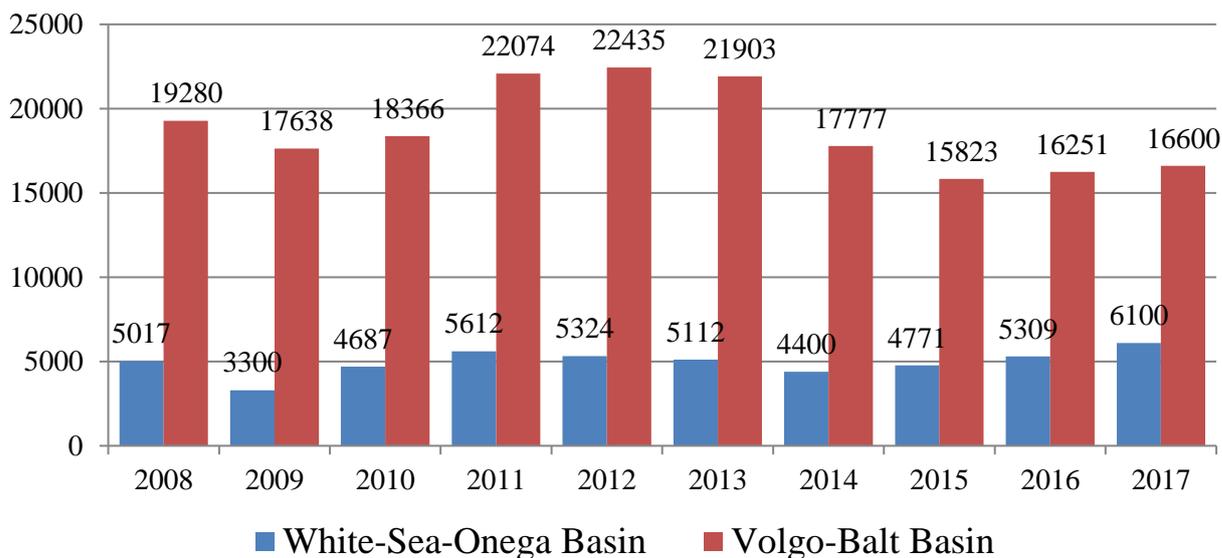


Figure 6. Dynamics of cargo flow in the White Sea-Onega and Volgo-Balt basins from 2008 to 2017, thousand tons

The wood products harvested in the White Sea-Onega and Volgo-Baltic basins are transported either within the basin to the woodworking or pulp and paper mill (PPM), or for export to Sweden, Finland, England, Germany, and the Netherlands. Export shipments of wooden cargo by river-sea going vessels in 2016 amounted to 539 thousand tons.

In 2016 the total volume of cargo transported in the White Sea-Onega basin was about 5300 thousand tons. The main cargo was building or construction cargoes accounted for 88% of the total cargo volume. The detailed transport structure is shown in the diagram below (fig. 7).

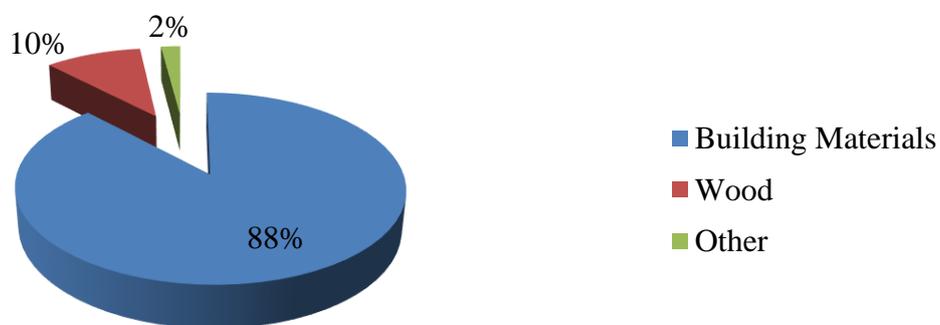


Figure 7. Structure of cargo transportation in the White Sea-Onega basin in 2016,

%

In 2016 about 16200 tons of cargo has been transported in the Volga-Balt basin. The main cargo was construction cargo accounted for 54 % of the total cargo volume. The detailed transport structure is shown in the diagram below (fig.8).

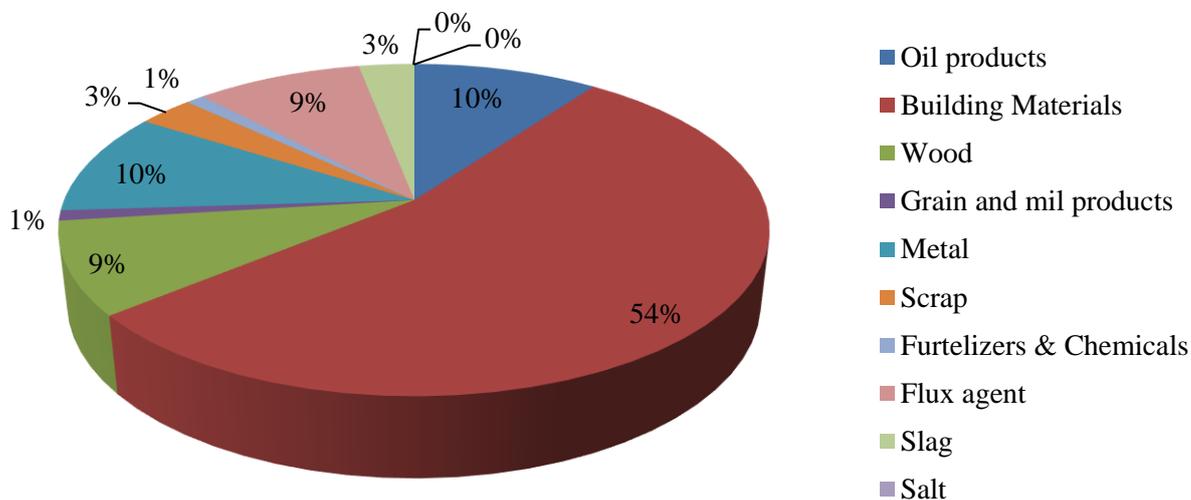


Figure 8. Structure of cargo transportation in the Volga-Balt basin in 2016, %

The regions of the Russian Federation bordering the territory of Finland are the Murmansk region, the Republic of Karelia and the Leningrad region. The main inland shipping passes through the territories of the Republic of Karelia and the Leningrad region.

## **5. BRIEF CHARACTERISTICS OF INLAND PORTS OF REPUBLIC KARELIA AND LENINGRAD REGION**

The ports of Petrozavodsk, Kondopoga, Medvezhyegorsk, Nadvoitsy, Segezha and the Shoksha berth, which are ports of common use, are located on the territory of the Republic of Karelia. Railway approaches have ports Medvezhyegorsk and Segezha, making them three-modal inland ports.

The cargo handling capacity of the ports for navigation period is evaluated by experts as follows:

Petrozavodsk – 500 thousand tons;  
Medvezhyegorsk – 200 thousand tons;  
Kondopoga – 150 thousand tons;  
Nadvoitsy – 100 thousand tons;  
Segezha – 50-100 thousand tons;  
Shoksha berth – 700 thousand tons.

The Port of Petrozavodsk (its Northern Cargo Port) is the largest cargo handling complex in the region and is located directly in the city of Petrozavodsk on the shore of the Petrozavodsk Bay of Onega Lake. Since 2006 Petrozavodsk Shipping Company LLC – the successor of the White Sea-Onega Shipping Company – has been doing business in the port.

By the order No. 734-p of the Government of the Russian Federation dated 05/05/2012, the port of Petrozavodsk was included in the List of ports opened for entering of vessels under the flags of foreign states.

The port provides handling of sand and crushed stone (gravel) of various fractions, timber cargo, packaged cargo, universal containers, Karelian granite and building stone (including boulder), as well as grain cargo arriving from the southern regions. Large-sized assemblies for the construction of berths and other facilities on the islands of Ladoga and Onega lakes are being assembled in the port. In addition, the products of Karelian producers (wood pellets) are being loaded for transportation to Denmark and Sweden.

The length of berths is 118 meters, the total area of open storage areas is 281,368 m<sup>2</sup> (2008).

Compared with its potential capacity stated above, the volume of cargo handling at the port of Petrozavodsk, in 2016 has been as low as 39,1 thousand tons. In 2017 the volume of cargo handling dropped sharply and amounted only about 18,5 thousand tons, in 2018 – 19,6 thousand tons.

The port of Kondopoga is located on the coast of Onega Lake in the Matguba Bay. The quay length (three berths) is 152,3 meters. The port carries out operations of handling bulk cargoes, mainly gravel (crashed stones).

The port of Nadvoitsy is located on the route of the White Sea – Baltic Sea Canal (1244 km of the navigable channel). The port carries out operations with packaged and bulk cargoes. The quay length is 183 meters (of which a wood berth is 77 meters, barge converted to the berth is 60 meters, bunker berth is 25 meters, and refueling berth is 21 meter). There is a covered warehouse (0.6 thousand m<sup>2</sup>) and two open areas (with a total area of 12 thousand m<sup>2</sup>).

In 2012 about 31,4 thousand tons of cargo were handled by Port of Nadvoitsy LLC. Data for the period of 2013-2018 is need to be checked out.

The port of Medvezhyegorsk is located in the Big Gulf of the Povenets Bay of Lake Onega. The port performs operations with packaged and bulk cargoes, as well as with universal containers. The total quay length is 300 meters (two berths); the open storage area is 14,5 thousand m<sup>2</sup>. The advantage of this port is the availability and access to railway track (line of 960 meters) from the station Medvezhya Gora of the Oktyabrskaya Railway.

The port of Segezha is located in the northwestern part of the Vygozersko-Onda reservoir (lake). There are two business entities – JSC Segezha Sawmills (loading packaged timber cargo) and JSC Segezha PPM (transshipment of wood chips, pulpwood and round wood). Each enterprise has its own separate quay – the quay of the JSC Segezha Sawmills has a length of 100 meters, and the quay of the JSC Segezha PPM is 436,5 meters. Access to railway tracks of the Segezha Station of the Oktyabrskaya Railway adjoins the quay of the JSC Segezha Sawmills. The quay of the Segezhsky Pulp and Paper Mill does not have access to the railway. JSC Segezha Sawmills has an open storage area (3100 m<sup>2</sup>).

Shoksha berth is located on the shores of Onega Lake in the Prionezhsky region of the Republic of Karelia (1,2 km north of Quartzitny town) and specializes in loading fractional stones on vessels. The quay length is 146,5 meters. Since 2007 when there were handled 688,8 thousand tons of cargo the latest available data is to be further checked out.

The challenge for the future studies to check out tendencies in cargo handling in the inland ports of Kondopoga, Medvezhyegorsk, Segezha and the

Shoksha berth, since its owners do not provide information in the prescribed manner.

On the territory of the Leningrad Region there are four sea trading ports located in Ust-Luga, Primorsk, Vysotsk, and Vyborg.

Sea port of Primorsk is the largest specialized port for the export of oil and its products in the North-West region of Russia. The port is the final link of the Baltic pipeline system providing oil transportation from the Timan-Pechora field, from Western Siberia and the Ural-Volga region and the Sever (North) oil pipeline (Kstovo-Yaroslavl-Kirishi-Primorsk pipeline).

At the sea trade port of Vysotsk the main volume of cargo turnover is provided by the oil terminal of the RTC Vysotsk LUKOIL-II. The terminal is a complex for transshipment of petroleum products and has its own industrial railway station. The prospect of an increase in the terminal cargo turnover is connected with the laying of an oil product pipeline from the port of Primorsk to the transshipment complex for the delivery of petroleum products via the North main oil pipeline.

The coal terminal (Port Vysotsky LLC) performs coal transshipment for export. In 2011 the terminal completed work of cargo transshipment technology modernization. The access canal and the terminal water area depth is 12 meters; today, the port is open for vessels up to the Panamax size.

Recently the studies and design works were being carried out in the port about construction of a marine terminal for the production and shipment of liquefied natural gas to European countries in the amount of 600 thousand m<sup>3</sup> per year.

Sea trade port Vyborg – is the oldest port of Russia (as early as in 1527 Vyborg was officially recognized as a «slipway city» with the right to service foreign ships). The port is universal and processes a large range of general, bulk cargoes (mineral fertilizers, metal, ore, cast iron, scrap metal), food and chemical bulk cargoes. During the summer navigation, the port hosts passenger ships and

small crafts mainly with Russian and Finnish tourists. The port is capable of handling up to 2 mln.t of various cargoes.

Newly built Ust-Luga sea trade port develops rapidly. The port construction is implemented on the basis of public-private partnership. The main partners in the project implementation are FSUE Rosmorport, JSC Russian Railways, OJSC AK Transneft, OJSC SIBUR Holding, Gunvor Group Company, OJSC NOVATEK, OJSC Kuzbassrazrezugol, Global Ports Group (NKK), United Metallurgical Company CJSC, Russian Transport Lines OJSC.

The large depths by the quays and in the operational areas (up to 17,5 meters) in combination with two short approach canals, as well as a short ice navigation period, provide the port with significant competitive advantages. Currently the port is capable to handle any large-capacity tankers (with deadweight up to 160 thousand tons), ones which being draft loaded are capable to cross the Danish straits when entering the Baltic Sea, as well as service ocean-going Ro-Ro vessels of any type.

In the future the handling capacities will be enhanced due metal products and mineral fertilizers transshipment, the terminals for these cargoes are under construction. Work is also underway on auxiliary fleet base construction.

The external railway approaches are constructing and the Ust-Luga railway connection is being constructed joining five port approaching stations and the information management logistics center of the Luzhskaya railway station complex. In years ahead, the railway connection will be the largest and most modern in Europe; its handling capacity is planned of up to 120 mln.t of cargo per year.

The seaport of Ust-Luga, being an intermodal transport hub, is considered as the basis for the integrated development of the adjacent territory. Therefore, further development of the port is planned to be carried out within the framework of the Project «Integrated Development of the Sea Trade Port of Ust-Luga and the Adjacent Territory» included in the list of priority investment projects of the

North-Western Federal District, approved by the Government of the Russian Federation.

### **5.1. BRIEF CHARACTERISTICS OF INLAND WATERWAYS OF LENINGRAD REGION**

The length of the operated inland waterways in the Leningrad Region is 1843,5 km. The main route is the waterway from St.-Petersburg to Cherepovets, with a length of 856 km, of which 438 km goes on the territory of the Leningrad Region (St. Petersburg–Voznesenie).

The inland waterways navigable area includes following: 2 river ports – Podporozhsky port, «Fleet Repair and Maintenance Workshop JSC LSR Base» (Otradnoe town), 3 navigable locks – Volkhovsky, Nizhnesvirsky and Upper Svirskiy.

An integrated project for the reconstruction of the Volga-Balt Waterway is under development. There are included seven of the nine stages of reconstruction related to transport infrastructure facilities located on the territory of the Leningrad Region. This question is the subject of further studies.

**APPENDIXES:**

## 1. Traffic analysis from Russian IWW to Finland by cargo type for 2016

Cargo type	Number of routes	Cargo volume, tons
Pulpwood	202	269081
Wood chips	9	4397
Roundwood	24	34514
Total	235	307992

## 2. Traffic analysis by port of destination from Russian IWW for 2016

Pulpwood		
Destination port	Number of routes	Cargo volume, tons
Imatra	69	94219
Joensuu	1	1338
Kaskinen	21	29454
Kaukas	23	31728
Kotka	1	1311
Kuopio	1	1125
Lappeenranta	45	54061
Merikarv	1	2680
Rauma	1	1159
Savonlin	3	4139
Saimaa channel	16	19868
Helsinki	13	16776
Finland (w/o port designation)	7	11223

Wood chips		
Destination port	Number of routes	Cargo volume, tons
Lappeenranta	9	4397

Roundwood		
Destination port	Number of routes	Cargo volume, tons
Imatra	9	12661
Kaukas	3	4273
Lappeenranta	1	1419
Merikarv	1	2450
Savonlin	1	1413
Saimaa channel	6	8088
Helsinki	1	1452
Finland (w/o port designation)	2	2758

## 3. Traffic analysis by vessel type from Russian IWW to Finland for 2016

Vessel project	Cargo type	Number of routes	Cargo volume, tons
10523	Pulpwood	12	15762
	Roundwood	1	1372
	Total	13	17134
1743.1	Roundwood	1	2450

2-95A	Pulpwood	5	7517
2-95A/P1	Pulpwood	6	12398
326.1	Pulpwood	42	51228
	Wood chips	2	979
	Roundwood	4	5228
	Total	48	57435
326.1/00	Pulpwood	27	33857
	Wood chips	4	1951
	Roundwood	1	1432
	Total	32	37240
326.1/M-	Pulpwood	5	3969
	Wood chips	3	1467
	Total	8	5436
P168	Pulpwood	90	124491
	Roundwood	15	21273
	Total	105	145764
P-168M-π	Pulpwood	15	19859
	Roundwood	2	2759
	Total	17	22618

#### 4. Traffic analysis by ship owners and agents from Russian IWW to Finland for 2016

Ship owner	Agent	Vessel project	Number of routes
VTS Shipping	Atlantis Shipping Agency	326.1	1
		326.1/00	20
		Total	21
	VTS Shipping	326.1	2
	Gangut Marine Agency	326.1	8
		326.1/00	12
		326.1/M-	8
		Total	28
Total			51
Neva-Balt	Astra Shipping Agency	2-95A	5
		2-95A/P1	6
		Total	11
Neva-Hagen	Neva-Group	10523	13
		P168	87
		P-168M-π	17
		Total	117
Saimensky Passat	Astra Shipping Agency	326.1	26
Northern River Shipping Lines	Gangut Marine Agency	326.1	11
North-Western Shipping Company	Universal Expeditor	1743.1	1
Freight company	Neva-Group	P168	18

## LIST OF REFERENCES

1. Code for inland navigation of Russian Federation (Federal Law of 07.03.2001 № 24-FZ (revised 29.12.2017).
2. Resolution of The Government of Russian Federation from 24 September 1997 № 1211 «On signing by Russian Federation the European Agreement about main inland waterways of international importance».
3. Resolution of The Government of Russian Federation from 05.05.2012 № 734-r (revised 30.06.2015) «On approving of the list of ports, opened for the entrance of the foreign flag vessels and list of the inland waterways of Russian Federation by which is allowed to sail of the foreign flag vessels».
4. Transport Strategy of the Russian Federation till the period up to 2030 (approved by the Resolution of the Government of Russian Federation from 22.11.2008 № 1734-r (revised 2.05.2018).
5. Strategy of the development of inland waterway transport till the period up to 2030 (approved by the Resolution of the Government of Russian Federation from 29.02. 2016 № 327-r): <https://www.mintrans.ru/documents?q=стратегия+развития+&date=&n=&type=0>
6. River cargo ports: <http://www.vrp.ru/services/cargo-handling/>  
[https://spravka-saratov.ru/catalog/enterprises/trucking/port\\_saratov\\_oao\\_saratovskoe/](https://spravka-saratov.ru/catalog/enterprises/trucking/port_saratov_oao_saratovskoe/)  
<http://www.gudok.ru/newspaper/?ID=1181196>  
<https://www.kommersant.ru/doc/3020088> и др.
7. <http://cniimf.ru/press-tsentr/publikatsii/626/> .
8. Russian statistic annual 2017: [http://www.gks.ru/free\\_doc/doc\\_2017/year/year17.pdf](http://www.gks.ru/free_doc/doc_2017/year/year17.pdf) .
9. Zaytsev A.A. Transport infrastructure for multimodal transportation in North-West Federal Region // Proceedings of Admiral Makarov SUMIS, 2012: <https://cyberleninka.ru/article/n/transportnaya-infrastruktura-dlya-multimodalnyh-perevozok-v-severo-zapadnom-federalnom-okruge> .
10. Market of cargo transportation by inland waterway transport. Current situation and forecast: <https://marketing.rbc.ru/research/35362/>
11. Final report on results of the activities of Ministry of Russian Federation in 2017, objectives and goals for 2018 and planning period up to 2020 - 01.mintrans.ru>file/413275.
12. Informative and statistical booklet «Transport of Russia» by Ministry of Transport of Russian Federation, January-December 2017: <https://www.mintrans.ru/documents/0/9103> .
13. Public declaration of key objectives and priority goals of the Ministry of Transport of Russian Federation for 2018: <https://www.mintrans.ru/ministry/targets/121> .