

# FEATURES OF DEVELOPMENT OF NATIONAL SEAPORTS

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## ABSTRACT

The problems of the activities of national seaports and port logistics, issues of intermodality of transportation are considered. The discrepancy between the world practice of the regime and the procedures of operation of border checkpoints and customs, the absence of generally accepted tax and customs preferences abroad, including the creation of port special economic zones, continues to considerably influence transport and logistics business activities. It is shown that the basis for assessing the level of competitiveness in transport is the transition of the profitability point from the

processes of physical transportation or cargo turnover to the area of transport and logistics services. Accordingly, various systems of criteria for the «attractiveness» of the seaport are applied. An integral row of such indicators-criteria for various conditions, goals and participants in the transport process is proposed. Among the prospects for development of seaports in the European part of Russia, the authors emphasize the option of combining all four modes of transport in the agglomeration of one port, which can dramatically increase its demand as an inter-regional transport hub.

**Keywords:** economy, logistics, seaports, export, cargo transportation, intermodality, world market, competition, border checkpoints, customs.

**Background.** Port activity has always been a strategic aspect for the economy of any maritime state. Russian ports annually process between 60 % and 80 % of foreign trade cargoes, and this is one of the geopolitical factors that ensure the country's economic and foreign trade development [1]. As a result of 2016, cargo turnover of domestic seaports amounted to 721,9 million tons (Pic. 1) and by autumn of 2017 it will continue to grow, with the volume of dry cargo almost inferior to bulk cargo. In addition to export (79 %), this includes cabotage (10 %), transit (7 %) and import (4 %) transportation.

Today the seaport economy of Russia is more than 870 port complexes with the capacity of about 850 million tons, the length of berths is about 140 thousand running meters. The technical loading and unloading facilities, equipped with crane and other special equipment, allow to handle about 10000 cars per day, storage areas can provide for simultaneous storage of up to 15 million tons of cargo, in seaports there are over 260 stevedoring companies [2].

**Objective.** The objective of the authors is to consider features of development of Russian seaports.

**Methods.** The authors use general scientific methods, comparative analysis, graph construction, economic assessment.

## Results.

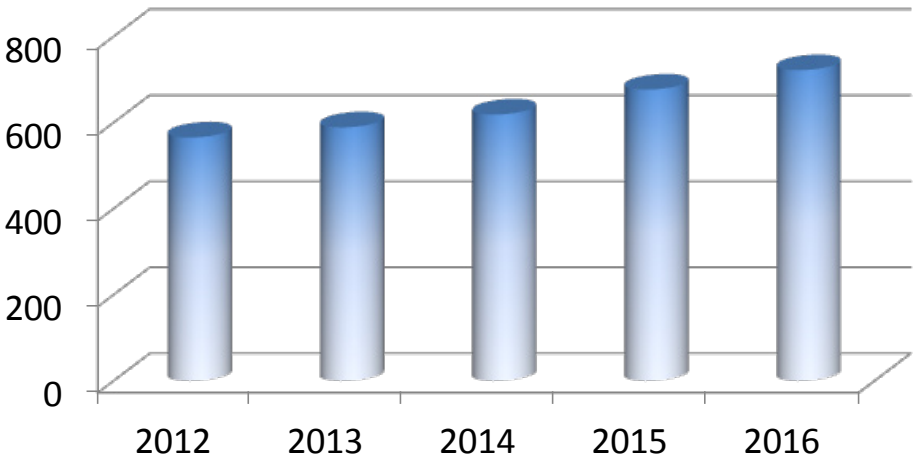
### Growth of export components

The difficult economic situation did not allow Russian ports to increase transshipment of cargoes in 2015. However, in 2016 the situation changed, cargo turnover increased by 6,7 %, and container turnover – by 1,4 %.

According to the Association of Sea Trade Ports at the beginning of autumn of 2017, cargo turnover of Russian harbors will exceed by 9 % the same period of last year (slightly more than 580 million tons). In particular, the volume of dry cargo transshipment shall reach 272 million tons (+9,3 %), liquid bulk – transshipment will exceed 308 million tons (+8,8 %).

Despite the increasing volume of transshipment of imported goods, exports continue to occupy the main share – about 77 % of the total freight traffic, which is even 1,5 times higher than the volume of transit through transit ports [9].

What are the components of growth? According to the results of 2016–2017 agricultural year, Russian



Pic. 1. Cargo turnover of Russian ports.



grain exports amounted to 35,5 million tons, while the head of the Ministry of Agriculture confirmed the forecast for exports in 2017–2018 agricultural year at 40 million tons, of which 30 million – wheat [11].

Russian ports in the Baltic Sea are increasing their cargo turnover by exporting coal and importing steel. Virtually all harbors increased cargo turnover for 5 months of 2017 by 7 %, to 27,8 million tons [10].

Of course, a positive moment is the growth of shipment of liquefied gas. The port of Ust-Luga in January–August 2017 increased the volume of transshipment of liquefied hydrocarbon gas (LHG) by 17 % compared with the same period in 2016, while the Black Sea port of Taman is the second Russian port through which the country exports LHG, – loses the freight flow. Russia is increasing exports of LHG to Europe, where the price of this type of fuel is growing, and reduces supplies to the Ukraine. And Ust-Luga is a more convenient platform for transshipment of gas in the European direction [10].

Speaker of the regional conference of the Valdai Club, held in Singapore in December 2016, Tomo Kikuti, Senior Researcher at the National University of Singapore, highlighted the huge volume of imports of liquid gas from Russia, which made it the fourth country in terms of imports to the Japanese economy [12].

#### **Factors of infrastructure development**

Of the many factors at different levels and scales, geopolitical, economic, natural and climatic and other, it seems appropriate to single out the role of new and increasingly weighty factors of financial, economic, regulatory, legislative and transport-logistic perspectives. Let's consider the impact of the most relevant of them on the developing port infrastructure of Russia.

The growing globalization of the economy, the forthcoming development of all types of marine activities, the growth in the volume of consumption of resources (hydrocarbons in the first place) lead to an increase in national and international demand for port capacities and coastal infrastructure in the interests of various departments and not only transport. According to the International Association of Ports and Harbors (IAPH), the crisis phenomena in the sphere of sea transportation are coming to an end and the trends of development of new cargo flows, increase of freight turnover of ports and their competitiveness come to the fore [4].

The next factor is a high level of loading of land transport communications, which already do not provide in some cases the required level of seaport capacity and the quality of complex logistics services. In the long term, this situation will be exacerbated by the shortage of infrastructure resources on the territories adjacent to the ports. In addition, this factor can play a particularly restraining role, taking into account the peculiarities of the geographical location of domestic ports in individual regions because of shallow depths, extended approach channels, ice conditions and remoteness from the main directions of world maritime transportation.

Equally important is the constant change in the dynamics and structure of freight flows associated with a number of economic factors, as well as with the expansion and complexity of the transport services market, which leads to the integration of all components of the transport process, and with it the development of transport (port infrastructure) of a new type – commodity-transport, commodity-warehouse, commodity distribution and other

complexes, which form certain transport-logistic elements and the transport and logistics system as a whole. For example, following the results of 2016 the cargo flow was distributed along the basins as follows: Azov-Black Sea – 244; Baltic – 236,6; The Far East – 185,5; Arctic – 49,7; Caspian – 6,1 mln tons [14].

The new transport and logistics paradigm, which considers a seaport not as a transport node, but as a center or a main element of the transport and logistics distribution system as a part of transport (transit, multimodal and other) corridors, leads to reconstruction of the port infrastructure and emergence of new concepts and objects: ports-hubs, port clusters, dry ports, ports of logistics centers. And an exit on this path can become a very significant advantage in the developing sphere of international transport and logistics relations.

#### **Not only logistics**

It is necessary to particularly name constraining factors of system character which interfere with development of port activity and reduce its competitive ability:

- lack of effective interaction of the state with private business in matters concerning port infrastructure. In particular, we should mention the circumstances that hamper its development, and first of all the inconsistency of the terms, volumes and directions of state investments within the subprograms «Maritime transport», «Road transport», «Railway transport», and the Federal target program «Development of transport system of Russia (2010–2021)»;

- lack of a single system of operator companies that coordinates the work of transport nodes, which significantly reduces the quality of seaport services. So, without operative access to the database of JSC Russian Railways, the ports are deprived of the opportunity to provide necessary information during negotiations with cargo and ship-owners, while losing business and partner attractiveness for clients;

- need to increase port capacity in proportional symmetry with the carrying capacity and throughput of road and rail approaches to ports. For example, after the fall of the 1990s, the cargo turnover from the Far Eastern ports increased many-fold, because this was ensured by a certain margin of the capacity of the railways. At the present stage, the growth prospects of cargo transshipment are directly dependent on the lagging behind in the implementation of reconstruction plans for their subcontractors;

- high loading of the most dynamically developing Far Eastern logistics route. The density of railway traffic in the meridional direction in the Far East is almost at the limit, which is confirmed by experts [11].

- discrepancy between the world practice of the regime and the procedures for operation of border checkpoints, customs, the lack of generally accepted tax and customs preferences abroad, including creation of port special economic zones.

The increase in cargo turnover of ports is hampered by other difficulties, for example, antimonopoly regulation of stevedoring activities and all the inconveniences associated with the fact that sea terminal operators are enlisted in the register of natural monopoly subjects.

And, finally, we should note such a serious factor of state influence on all aspects of the activities and development of port infrastructure, as a condition, the quantitative and qualitative composition of the domestic transport fleet. The directly proportional dependence of the fleet and ports, which cannot

Table 1

Criteria of attractiveness in the assessment of the seaport

The list of criteria	The importance of the criterion (in descending order)	The weight of the criterion in %
Cargo delivery end point	1	90
Efficiency of handling capacities	2	88
Possibility of saving on operating expenses	3	84
Frequency of work of vessels on lines	4	80
Efficiency of passage of formalities	5	76
Port location	6	74
Costs for port charges	7	70
Total number of berths and depth	8	66
Variety of services	9	60
Convenience of land transportation	10	58
Area of marshalling yards	11	54
Capital investments in terminals and special complexes	12	52
Quality of services	13	50
Possibility of coordinating the joint work of ships	14	48
Availability of departure port benefits	15	42

develop separately, makes us consider this factor in more detail.

**Competitiveness criteria**

The growth of globalization of the world economy and foreign trade relations of Russia leads to an increase in the number of participants in transport and logistics processes and, ultimately, to an increase in the role and importance of their competitiveness.

The competitive capacity in the context under consideration means, first of all, the increase of port capacities and cargo transshipment volumes, the improvement of the quality of rendered services, the reduction of the unit cost of transshipment of a ton of cargo and the cost of ship calls in domestic ports. It should also be noted that in the special studies, scientific sources and worldwide practice to date, there are no common principles, approaches and a universal methodology for assessing the competitiveness of seaports [6]. However, the basis of such an assessment in transport is the transition of the profitability point from the processes of physical transportation or cargo turnover to the area of transport and logistics services. For this purpose, various port «attractiveness» criteria systems are used, not single indicators of some production and labor efforts are used, but a «balanced» set of port performance indicators in various planes, allowing to control the factors influencing these indicators, and not just to track the results. And such an integral evaluation row calculated by scientific methods can turn out to be considerable (10–20 positions).

The system of indicators under consideration, meanwhile, is designed to alleviate the problem of «price-quality-time» that is difficult to be solved, since one, as a rule, is done to the detriment of another. With the optimal option, the seaport will be able to more flexibly take into account the interests of shippers, increase the proposed choice of solutions and better use their competitive advantages in accordance with the current realities in the market of transport and logistics services.

For seaports, depending on many external and internal factors, the list of competitiveness

indicators may vary. As a particular example [7], Table 1 provides a possible list of criteria for attractiveness, which, in our opinion, really affects the shipper when deciding on the choice of the port.

In the process of solving strategic problems the set parameters (criteria) of competitiveness are usually accepted. So, in the strategy of development of the sea port infrastructure of Russia (the main developer of «Rosmorport») the following basic indicators of the competitiveness of domestic ports are given for the perspective prospect up to 2030:

- ratio of budgetary and extra budgetary sources in investments in terminals and port infrastructure, rubles – 1:2,5;
- share of Russian foreign trade cargo handled at the ports of neighboring countries (the Ukraine, the Baltic countries), in the total volume of cargo handled at the ports of Russia and neighboring countries in the initial period – 5–10 %, in the final period – 4–5 %;
- increase in the use of various reloading complexes of seaports to a level of 75–80 %.

Sea domestic ports in all basins today are experiencing a powerful competitive pressure from the seaports of neighboring countries, especially those through which the transport intermodal corridors pass.

Russian ports were built mainly in the 60s of the last century and today many of them do not fully meet modern standards of guaranteed depths of approach channels, water areas, raids and berths. The problem of increasing competitiveness lies also in the strait zones of the Baltic and Black Seas, through which the most intensive cargo flows pass to the country's largest seaports, only the freezing northern ports (of which Murmansk port only is not a freezing one) and ports of the Far Eastern Basin have direct access to the ocean, in connection with which, diversification of routes is sometimes required.

To technical reasons of low competitiveness of domestic ports, one can safely attribute the obsolete transport equipment. For example, in port infrastructure there are 6–7 thousand gantry cranes, of which 90 % have exhausted their







resources, annually for replacement we purchase about 20 new cranes of imported production.

Domestic ports are also lagging behind in the development of container cargo flow – the most progressive form of world trade with a wide range of «goods». Experience shows that the enlargement of «cargo units» and the introduction of container, package, and ro-ro technology reduce transport costs to 47 %.

However, the most significant drawback of domestic ports is the weak logistics infrastructure of rail and road access to them, a lag in increasing the capacity of land transport communications from the capacity of ports.

The decrease in competitiveness is also due to gaps in the legislative framework for profile port activities, territorial and property relations. Most of the Russian ports are located in the city, and therefore are limited or deprived of the prospects for further development.

To this can be added the lack of a well-thought-out, scientifically grounded, tariff-oriented tariff policy that provides not high (and not competitive) fees, but a high collection of fees and charges for a wide range of services. The structure of port charges as an essential factor of financial competitiveness is intended to reflect the state of the market of port services, to be flexible in order to take into account local conditions. Shipping companies that pay port fees should have the opportunity to review illegal actions, which in the end allows you to switch cargo flows from neighboring ports, including neighboring countries, to domestic competitive ports.

#### **Port of the «third» generation**

An interesting solution may be a combination of all four modes of transport in the agglomeration of a single port to dramatically increase its demand as a transport node for many companies.

Mikhail Erofeev, the general director of the Ust-Luga multimodal complex, said relatively recently [13] that the country needs third-generation ports: «The idea is to create a full multimodal hub. What is «full»? There is a seaport, a railway and a railway junction are large, the federal highway has been put in, there is not enough air to bring together four types of transport in one place. This is a unique situation. Our airport will be the first specialized cargo airport in the country».

Last year, the general director said, 330 thousand tons of aviation cargo was destined for the North-West Federal District. Of these, only 30 000 pass through Pulkovo airport, and 300 000 go by through Helsinki, the Baltic states, even Frankfurt, Moscow. If we manage to re-orient air cargo in a direction that is advantageous for us, it will be a very big breakthrough. Then there will be all kinds of express mail, DHL, EMS, operators of Internet trading and so on – all of them are also interested in this site. And, of course, operators and logisticians who are able to use Ust-Luga's multimodal capabilities to optimize their business processes are extremely interested in cargo airport.

Such an attractive combination is not such a fantasy. It, it must be assumed, is a very real and close-in-time prospect. The main thing is that incentives work.

**Conclusion.** The development of the country's transport system, including its anchor points – seaports, will always be a prerequisite for the implementation of an innovative model of the Russian Federation's economic growth. Taking into account the complexity and scientific capacity of the modernization programs of the transport complex and the long-term goals of the sea transport strategy, the sector public administration provides for considerable support for sectoral

education and science. It requires the creation of a modern system of training personnel for the port industry, the establishment of partnership and contractual relations of ports with universities and colleges, and in line with this, and the tactics of step-by-step integration of sectoral market interests.

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