INTEGRATION OF REGIONAL TRANSPORT COMMUNICATIONS

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ABSTRACT

A variant of the integration of international transport and transport-technological system of Southern Federal District is proposed with account of development strategy of inland water transport of Russia until 2030. Alternative directions of traffic and transshipment of containers are shown using the example of containers of «river-sea» type and economic effect of their use subject to ports and enterprises of Southern Federal District is calculated. The article highlights perspective of transport and logistics service of transit, outbound and inbound freight flows in the presence of state-controlled single control center that has regional branches.

ENGLISH SUMMARY

Background. *In recent decades, under the influence of rapid technological progress transport and communications system has significantly strengthened its place in society. Not only does it accelerate the dynamics of socio-economic reforms, but also gives rise to a qualitatively new relationship, brings together different types of transport, communication services and industries [1].*

Qualitative transformation of international trade and increased proportion of manufactured products require rationalization of transportation with the use of multiple fleet of containers and container carriers. It promotes more rapid, inexpensive and safe carriage of goods, and makes it possible to come over to large-scale multimodal transport involving water and land transport modes.

Within the transport system of Russia segment of container and piggyback transportation is recognized as one of the most promising to improve the efficiency of processes based on logistics technologies in multi-modal communications [2].

In this context, environmental requirements for all types of transport and the desire to maintain an acceptable share of transport costs in the price of the final product under strict standards on environment and safety increase.

Government's approval in 2013 of development strategy of inland water transport in Russia until 2030 and allocation of certain funds to support river navigation may be the start of innovative development of a cascade system of transport and logistics service of cargo flows (transit, outbound, inbound) and of establishment of an integrated transport and logistics system (ITLS) with equity participation of private capital, but under the auspices of state in the presence of a single control center that has regional branches [3]. It will enable to redistribute traffic flows, considerable part of which goes to the half-forgotten river (water) mode of transport with transport routes of more than 1000 km, releasing rail transport rolling stock to service distances up to 1000 km in regions and between them where there are no waterways or they are insufficient.

In this context, transport routes in ITLS should be formed with account for minimizing logistics costs throughout the supply chain and making full use of the existing transport and communication infrastructure in each region and the potential of interregional relations [4].

Objective. *The objective of the authors is to investigate perspective of transport and logistics service of transit, outbound and inbound freight flows in the presence of state-controlled single control center that has regional branches.*

Methods. *The authors use methods of analysis and comparison.*

Results. *All kinds of transport are present in Southern Federal District (SFD), they are mostly integrated in the operations of marine terminals located in Sochi, Tuapse, Novorossiysk, Yeisk, Azov, Taganrog and other port cities.*

Each of these terminals is characterized by a certain traffic capacity concerning marine vessels of various types and characteristics. The main features of them are navigable depth and length of mooring berth with handling equipment.

Currently there is a disproportion in the use of facilities for the handling of containers in maritime terminals of SFD. Some of them are used in over intense mode (seaport of Novorossiysk), while others, having not the worst possibilities are underloaded.

It is found that following routes of sea container shipping with intermodal operators pass through the port of Novorossiysk:

1. Destination Felixstowe (UK) – Bremerhaven (Germany) – Antwerp (Belgium) – Ambarl (Turkey) – Novorossiysk – Sochi.

2. Destination Barcelona (Spain) – Marseille (France) – Genoa (Italy) – Gebze (Turkey) – Novorossiysk – Sochi.

3. Destination New York – Norfolk – Savannah (United States) – Istanbul (Turkey) – Novorossiysk – Sochi.

4. Destination Novorossiysk – Sochi – Izmir – Ambarl – Gebze (Turkey) – Novorossiysk – Sochi.

Today it is possible to «unload» the port of Novorossiysk, directing part of its constituent container flows of imported goods to the port of Azov. It should be borne in mind that sea container carriers used by intermodal operators, according to their draft size cannot perform such transportation. Therefore it is better to consider an option in which containers will be delivered to the receiving port of Russia (Azov), bypassing Novorossiysk, by container carriers of «river-sea» type. And, if necessary, transportation will be continued with the maximum use of inland waterways – e. g., to Nizhny Novgorod, or the Caspian Sea ports. In this case, one of the ports of the Black Sea or Mediterranean basins lying on popular routes should become neighboring foreign port of the South of Russia.

This integration of transport and communication system based on logistics technology in mixed multi-mode traffic will improve transport efficiency

Table 1

Comparative characteristics of prime cost of transportation of one ISO-container in the water and water-rail communications

Route	Results of calculations with different combinations of transport used		
	Prime cost of transportation in water-rail communication (rub)	Prime cost of transportation in water communication (rub)	Economic benefit (rub)
Istanbul-Novorossiysk	–	18300	–
Istanbul-Azov	–	27657	–
Istanbul-Volgograd	38663	36194	2469
Istanbul-Nizhny Novgorod	51350	42067	9283

Table 2

Comparative characteristics of time required to transport one ISO-container in t water and water-rail communications

Route	Results of calculations with different combinations of transport used		
	Time required for transportation in water-rail communication (hours)	Time required for transportation in water communication (hours)	Difference in transportation time (hours)
Istanbul-Volgograd	88	103	15
Istanbul-Nizhny Novgorod	189	246	57

and transport infrastructure in all regions of the country.

Preliminary calculations show that the introduction of technology ISO-containers transportation with the adjacent Black Sea port to Istanbul, and then to Azov and into Russia using inland waterways will reduce transportation costs to a level that is shown in Table 1.

Distance from Istanbul to Volgograd in transportation through Novorossiysk in water-rail communication is 1646 km, through Azov in water communication – 1780 km. Route from Istanbul to Nizhny Novgorod in freight transportation through Novorossiysk in water-rail communication takes 2749 km, through Azov in water communication – 2780 km.

As the transportation distance increases, economic benefit of containers transportation grows in comparison with water-rail communication.

Calculation of time required to transport one ISO-container is given in Table 2.

As it can be seen from Table 2, with increasing transportation distance difference in time required for water transportation grows as compared to water-rail communication.

With account of existing traffic capacity of waterways of Russia and given the accessible routes container carriers of following «river-sea» type can be used: dry cargo ship of «Volga-Balt» type project 2–95A and dry cargo ship of «Ladoga» type project 285 (289).

Conclusions. *Thus, the development of transport of goods by inland waterways using dry cargo ship of mixed «river-sea» type opens following opportunities for businesses of the south of Russia:*

1. To have affordable tariffs for transportation, which save money and reduce prime cost of products.

2. To achieve high cargo safety.

3. To dispose intercontinental transportation of goods.

4. To transport a variety of goods.

5. To conduct relocation of released rail rolling stock to serve other routes where there are no water main lines.

Another point to add: solution of the problem of deepening inland ship lines would make it possible to use water transport with larger tonnage. Here, the reserve is obvious.

Keywords: water transport, multimodal transport, infrastructure, region, integration, transport system, terminal, container, bulk carrier.

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