"Logistics of cargoes delivery in the BRICS countries using water transportation"

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Distinctive features of the BRICS countries are large water borders, presence of seaports, and significant dependence of these economies on goods transported by water.

The world's biggest seaports and port transport infrastructure located in China. Russia, being one of three leading exporters of oil, developed extensive oil transportation capacities. Brazil is the TOP-2 exporter of iron ore. India is in the process of construction of the seaport and supporting infrastructure on the way of the global transportation routes. South Africa has a good chance to take a place among the countries which actively using sea transportation in the economy.

For more than fifteen years transport corridor «North-South» links transportation systems of India and Russia through the Indian Ocean and Caspian Sea. Good perspectives have cooperation projects of Russia's Far Eastern ports with China ports in the Pacific Ocean. The world's largest ocean vessels are used in the transportation of iron ore from Brazil to China's metallurgical enterprises across Atlantic and Pacific Oceans.

Transportation by sea, which is used to deliver huge consignments, is not possible without the supportive transport infrastructure and rolling stock. Firstly, ground and inland water transportation infrastructure as well as required rolling stock (riverboats, railway locomotives and railcars, belt conveyors and handling equipment, pipeline and road transport) provides the accumulation of large ship consignments for further deliveries by vessels from seaports. The next step is to unload and process delivered cargoes at the destination points. Finally, these goods should be transported to the enterprises located in these countries. Thus, having the robust transportation infrastructure leads to overall positive effects in the economy.

Understanding this issue, China in a past few decades continuously improving its ports and supportive infrastructure with increasing pace. For a short time, they constructed and upgraded their inland water, rail, and road links connecting the major ocean ports with the internal parts of the country.

In Russia, there was a significant expansion of ground infrastructure capacities focused on oil cargo deliveries. In addition to the existing rail infrastructure, several pipelines were built to ensure the delivery of oil cargo in the Far East, Black Sea and Baltic ports. Large marine terminals were constructed in the Far East, the Black Sea and in the Baltic region, conducted the development of railway infrastructure in the areas of major ports.

Railway transport infrastructure linking Brazil ore mines with deep-water ports, can deliver about 130 million tons of cargo per annum. This country constructed unique deep-water ore ports.

India not only builds new port terminals on the global ocean routes, but also constructs modern ground transport corridors in the direction of the largest seaports on the west of the country.

Companies in the BRICS countries have specialized fleet that is capable of delivering huge variety types of the cargo. Capacities of the largest vessels is up to 400 thousand tons DWT.

However, high-capacity fleet, large ports, and modern transport infrastructure cannot guarantee that transportation system will operate efficiently in a long term. Modern logistics methods should be utilized for stable and smooth operations of transportation system while making deliveries through international transport corridors. Logistics methods of cargo flows optimization (at international transport corridors level) allows to organize the process cargoes of transportation for the entire industries in the international intermodal connection (involving water and land transport).

In this paper, the author presents his method to organize continuous and sustainable cargo delivery process from producers to final consumers utilizing existing transportation infrastructure and fleet/rolling stock. This method also allows modeling the functionality of the new transportation systems, which is important for the projects of the new enterprises development.

The input data for this method is the cargo turnover of the existing or the new enterprise. The modeling results are: key parameters of ground transport infrastructure, essential logistical characteristics of marine terminals, and recommendations concerning the fleet required for the production delivery.

Author used this method while organizing multimodal transportation process between industrial enterprises of BRICS and other countries in various projects of the “Multimodal transportation center” of Russian Ministry of Railways (RZD). All accomplished projects resulted in establishing of the reliable logistic schemes and improving the overall profitability of the involved enterprises.

In the BRICS countries, there is room to improve the efficiency of the intermodal transportation process using various modes of transport for the existing and new enterprises. Therefore, the application of the proposed method for the existing and newly established enterprises can provide substantial economic benefits and improve the overall ecological situation by creating more efficient supply chains.