

# The Role of the Northern Sea Route in Expanding China's Exports to Europe

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**Abstract**-Recently China has been facing a problem of reduced exports to Europe caused by the rise of the yuan, the increasing labour and transportation costs. This article aims to investigate the opportunities for expanding China's exports to the EU offered by the Northern Sea Route.

Comparison of the distances between the main sea ports connecting China and Europe via the Northern and Southern Sea Routes shows that the former may well prove to be a viable option if China uses the part of the route running along the Russian Arctic coast. One of the possible economic benefits of the Northern Sea Route is that, when navigable, it significantly saves transportation time and reduces shipping costs. In addition to China's already established trading partners in Europe, Finland, Norway and Ireland could provide new markets for Chinese goods since these countries have multiple ports, which can be easily accessed from the sea.

**Keywords**-northern sea route, China, exports of China

## I. RELEVANCE OF THE RESEARCH PROBLEM

The Northern Sea Route (NSR) is a vital transport and logistics route in the north of Russia, capable of competing with the southern maritime shipping routes - via Cape of Good Hope and the Suez Canal. The Southern Sea Route is overloaded, especially by big container ships sailing from Asia to Europe.

Russia is one of the main beneficiaries of the NSR: for Russia, the gains in developing the route primarily include easier access to remote regions in the winter period to provide them with food, fuel and other necessities; defence of its territorial interests from the external threat of the USA; extraction and transportation of mineral resources such as oil, gas, coal, nickel ore and so on; protection of the marine ecosystem from oil spills and other man-made disasters. For China, one of the primary benefits of the NSR is that it allows fast and cheap transportation of goods to Asia and Europe.

The Chinese government is aware of the NSR's potential for the country's export growth and therefore, engages in active cooperation with its Russian colleagues within the framework of the Belt and Road Initiative. The Initiative encompasses over sixty countries and seeks to attract investment to establish an extensive transportation network, including overland and maritime routes for passenger and cargo traffic.

The usage of the Southern Sea Route involves a lot of risk for China due to its geopolitical rivalry with the USA.

Their relationship is further complicated by the dispute over America's military bases in Singapore, Australia, and the Philippines near the Strait of Malacca, the waterway which is crucial to China's trade: over 80% of all Chinese exports and imports transit the Strait en route to Asian and European countries.

Among China's key trading partners there are other Asian countries. China's biggest trade rival is the USA, which has the trade turnover volume of 587.3 billion dollars. In 2017, as compared to 2016, China's exports to the USA and South Korea decreased by 0.5 percentage points and to Singapore by 6.3 percentage points due to the political tensions between the countries and U.S. restrictions on Chinese exports. In 2017, there was a growth in China's exports to only three partner countries: Hong Kong (+3.0%), Brazil (+0.6%) and Malaysia (+0.1%). As for European countries, such as Germany, Russia and the UK, there was a decline in the consumption of Chinese goods. China's strategic goal is now to promote its goods in internal European markets and thus create new jobs, new channels for Chinese products and address the problem of disparity between its eastern and western regions. The result of this strategy is that, for example, China's trade volume with Germany is 168.1 billion dollars and Germany now ranks 6th among China's top trading partners; the trade volume with the UK is 79.03 billion dollars (15th place), while other European countries account for smaller shares of Chinese exports.

## II. LITERATURE REVIEW

D. Kerr [1] and I. Torbakov [2] examine the ongoing process of division of spheres of influence among the three world powers - China, Russia and the USA. Special attention is paid to the question of how their interactions may affect European states. Two research teams - K. Li, M. Jin, G. Qi, W. Shi [3] and M. He and J. Zhang [4] - considered the transformations that developing countries undergo in their transition to higher levels of development in the context of the New Silk Road Project and its participants.

Russian studies lay a particular focus on Russia-China cooperation in the sphere of freight transportation as the two countries are jointly developing the infrastructure of the Trans-Siberian Railway (B.V. Bazarov [5], S.L. Sazonov, E.S. Kudryavtsev, and U. Zi [6]). Another focus is made on ways of advancing this bilateral cooperation (A. Lukin [7]).

### III. RESEARCH METHODOLOGY

Our research methodology is based on the methods of comparative and critical analysis, graphical and tabular methods. Comparative and critical analysis was used to show the feasibility of the NSR as a way to reduce the distance between Chinese manufacturers and European consumers. The analytical data are presented in the article in the form of graphs and tables.

### IV. RESEARCH OBJECTIVE

This article aims at investigating the potential of the NSR to expand China's exports to Europe.

Therefore, the advantages of the Northern Sea Route are shown by comparing it with the Southern Sea Route, which is now the major route ocean-going vessels use to deliver most freight.

One of the goals pursued by the New Silk Road Project is to expand China's exports, targeting the already existing markets and the newly emerging ones. The EU is an important market for China's exports and China can increase its share even more if it manages to cut the shipping time and costs and thus reduce the cost of the

transported goods. We compared the potential of the NSR with that of its southern counterpart to ship Chinese goods from the port of Shenzhen to European countries (see Table 1).

If we look at the data in Table 1, we can see that the NSR may prove to be a feasible solution for reaching such European ports as Rotterdam (Netherlands), Dunkirk and Brest (France), Oslo (Norway), Szczecin (Poland), Sillamae (Estonia) and Klaipeda (Lithuania). The usage of the NSR will allow China to cut from 1.5% to 33.9% of its transportation costs: the values of this indicator may change depending on the location of this or that Chinese port of departure and the distance between this port and the Russian port of Vladivostok. The Chinese port closest to Vladivostok is Qingdao, which is 899 nautical miles away. The distance between Guangzhou and Vladivostok is 1,728 nautical miles. It should be noted that the Southern Sea Route still remains the most economically viable option for delivering goods to Italy and Spain via the Suez Canal and the ports of Barcelona, Marseilles, and Genoa.

The fact that European markets hold considerable prospects for Chinese exports is supported by the data on their share in China's overall trade volume (see Table 2).

TABLE 1. COMPARISON OF THE NORTHERN AND SOUTHERN SEA ROUTES FOR CHINE-EUROPE SHIPPING, NAUTICAL MILES

Southern Sea Route* (Suez Canal, Cape of Good hope)		Northern Sea Route +Europa Canal		Miles saved/ overspent (-,+)	Saved/ overspent, %
Shenzhen-Rotterdam	9 918	Shenzhen-Vladivostok-Murmansk-Rotterdam	9 226	-692,0	-7,0
Shenzhen-Dunkirk	13 111,8	Shenzhen-Vladivostok-Murmansk-Dunkirk	9 309,7	-3 802,1	-29,0
Shenzhen-Brest	9 530,7	Shenzhen-Vladivostok-Murmansk-Brest	9 607,3	+76,6	+0,8
Shenzhen-Genova	7 997	Shenzhen-Vladivostok-Murmansk-Genova	11 449,2	+3 452,2	+43,2
Shenzhen-Antwerp	9 863,5	Shenzhen-Vladivostok-Murmansk-Antwerp	9 326,3	-537,2	-5,4
Shenzhen-Barcelona	8 165,1	Shenzhen-Vladivostok-Murmansk-Barcelona	11 092,8	+2 927,7	+35,9
Shenzhen-Gdansk	10 513,6	Shenzhen-Vladivostok-Murmansk-Gdansk	9 442,3	-1 071,3	-10,2
Shenzhen-Szczecin	13 993,1	Shenzhen-Vladivostok-Murmansk-Szczecin	9 327,7	-4 665,4	-33,3
Shenzhen-Helsinki	10 981,7	Shenzhen-Vladivostok-Murmansk-Helsinki	9 725,1	-1 297,3	-11,4
Shenzhen-Brevik	10 318,4	Shenzhen-Vladivostok-Murmansk-Brevik	9 000,1	-1 318,3	-12,8
Shenzhen-Oslo	13 731,6	Shenzhen-Vladivostok-Murmansk-Oslo	9 075,1	-4 656,5	-33,9
Shenzhen-Cork	9 584,6	Shenzhen-Vladivostok-Murmansk-Cork	9 438,2	-146,4	-1,5
Shenzhen-Klaipeda	14 184,7	Shenzhen-Vladivostok-Murmansk-Klaipeda	9 489,9	-4 694,8	-33,1
Shenzhen-Sillamae	14 561,8	Shenzhen-Vladivostok-Murmansk-Sillamae	9 815,7	-4 746,1	-32,6
Shenzhen-Riga	10 896,1	Shenzhen-Vladivostok-Murmansk-Riga	9 639,4	-1 256,7	-11,5

Note: \*Voyage Planner. <https://www.marinetraffic.com/ru/voyage-planner>

As Table 2 shows, the Netherlands, France, Italy, Belgium, Spain, Poland, Lithuania, Latvia and Estonia account for over 50% of Chinese exports (electric cars, electrical machinery and nuclear reactors constitute the largest part of these exports (see Fig.1, 2) [8], which means that European partners are highly interested in China's high-tech production. As compared to 2016, in 2017, however, there was a drop in Chinese exports to France, Italy, Belgium, Spain, Poland, Finland, Norway, Ireland and Latvia.

On the European market, China has to reckon with Germany, which is another major economic force. Germany is the largest exporter to the majority of European states (except for Ireland) as it accounts for 92.0% of the total export turnover. China accounts for 58.3%; France, 33.3%; Russia, Poland and Sweden, 16.7% each; the share of other countries remains insignificant.

TABLE 2. CHINA'S TOP EXPORT MARKETS IN EUROPE IN 2012-2017

Country*	Exporting country	The share of the market in China's trade volume, %						Divergence of 2017 compared to 2012, p.p.	Divergence of 2017 compared to 2016, p.p.
		2012	2013	2014	2015	2016	2017		
Finland	1) Germany	66,1	59,8	54,9	50,0	44,4	39,4	-26,7	-5,0
	2) Russia								
	3) Sweden								
Norway	1) Sweden	50,0	43,5	38,0	40,0	44,8	42,9	-7,1	-1,9
	2) Germany								
	3) China								
Ireland	1) UK	40,0	36,4	43,1	39,4	33,8	26,4	-13,6	-7,4
	2) USA								
	3) France								

Note: \*data.trendeconomy.ru/dataviewer/trade/statistics/total\_structure\_h2?time\_period=2017&reporter=Latvia&trade\_flow=Import&commodity=TOTAL&partner=China  
 Statistical Yearbook 2016 edition <https://unstats.un.org/unsd/publications/statistical-yearbook/files/syb59/syb59.pdf>  
 Statistical Yearbook 2018 edition <https://unstats.un.org/unsd/publications/statistical-yearbook/files/syb61/syb61.pdf>

The main European countries exporting to Germany (66.7% of the total import turnover) include the UK, 33.3%; France, the Netherlands, USA and Russia, 25% each; and Sweden 16.7%. None of these European countries imports its goods to China.

As Table 2 illustrates, China needs to place more emphasis on maintaining and building trading relationships with Finland and Norway, which make up from 66.1% in 2012 to 39.4% in 2017 of Chinese exports and from 50.0% to 42.9% in 2017. Meanwhile, the situation with Ireland is critical and China can end up losing this market, which accounted for 26.4%-40.0% in 2017.

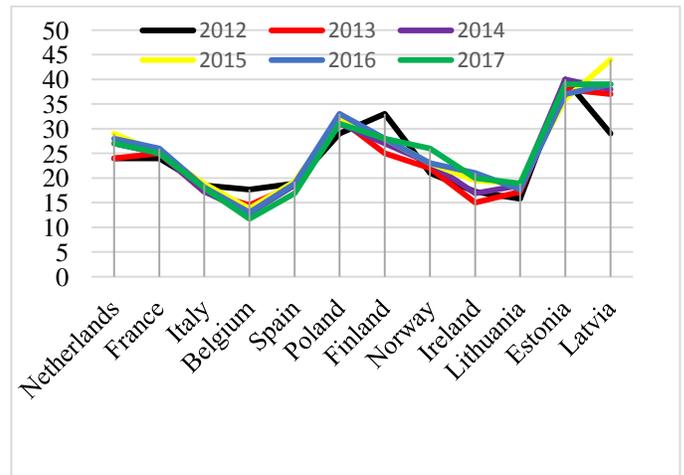


Figure 2. Share of electric cars and electrical machinery in China's exports to European countries, %

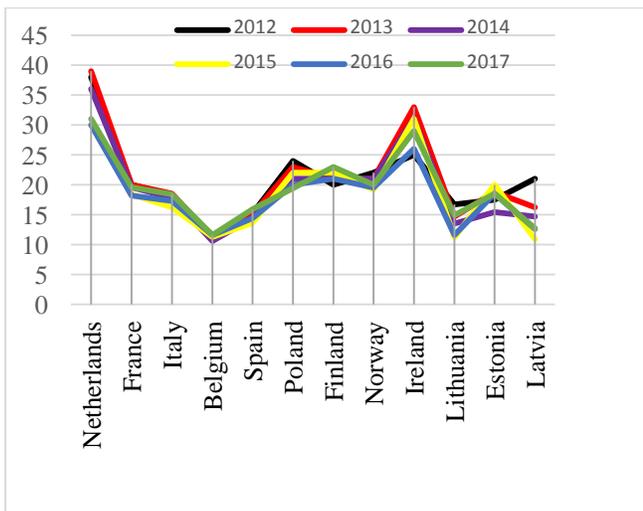


Figure 1. Share of nuclear reactors in China's exports to European countries, %

The reason behind China's dropping exports was the strengthening of the yuan in 2015 and 2016, which made Chinese products more expensive and, therefore, led to a declining demand in some European markets - the Netherlands, Poland, Spain and Baltic states. In the competition with their Chinese counterparts, European manufacturers enjoy the advantages of being physically closer to their customers, while Chinese companies have to find ways to cut their shipping costs. At the moment, the EU market is oversaturated with Chinese goods, which creates difficulties for everybody involved: European companies face difficulties entering the market while Chinese companies have to search for new export markets (see Table 3).

**TABLE 3. DISTRIBUTION OF CHINESE EXPORTS TO EUROPE IN 2012-2017, BY PRODUCT TYPE**

<b>Country*</b>	<b>Rising exports</b>	<b>Falling exports</b>
Finland	94. Furniture, bed linen 84. Nuclear reactors	42. Leather goods; harness and saddlery; travel accessories
Norway	85. Electric cars and electrical machinery 95. Toys, games and sports gear 94. Furniture, bed linen 90. Optical instruments and equipment; photographic equipment 39. Plastics and plastic products	89. Ships, boats and floating structures 64. Footwear, leggings, socks, leg warmers and similar products 89. Ships, boats and floating structures
Ireland	94. Furniture, bed linen 90. Optical instruments and equipment; photographic equipment	62. Clothing and accessories 95. Toys, games and sports gear 42. Leather goods; harness and saddlery; travel accessories

Note: \*data.trendeconomy.ru/dataviewer/trade/statistics/total\_structure\_h2?time\_period=2017&reporter=Latvia&trade\_flow=Import&commodity=TOTAL&partner=China

As Table 3 illustrates, there is a variety of trends driving the demand for Chinese goods in European countries: in the period between 2012 and 2017, in all the countries except for Latvia and Lithuania, there was a stable demand for product group 94 ('furniture and bed linen'); for the production of the chemical industry - product group 39 'plastics and plastic products' in Norway, the Netherlands, Poland, Spain. In Belgium and Latvia, however, the demand for these products was declining. The demand for goods from group 90 'optical instruments and equipment; photographic equipment' was quite stable in the Netherlands, France, Italy, Poland, Norway, Ireland, Lithuania, Estonia and Latvia, except for Belgium, Spain and Finland. For group 85 'electric cars and machinery' exports to Norway, Finland and France were increasing while in Belgium, Spain and Poland, the demand for these products was becoming weaker. For group 95 'toys, games and sports gear', there was a rise in exports to France, Belgium, Spain, Poland, the Netherlands, and Norway. Exports of this group of products to Italy, Latvia, Lithuania and Ireland, on the contrary, were shrinking. As for group 64 'footwear, leggings, socks, leg warmers and similar products', exports to Belgium increased and to Italy, Spain, the Netherlands, Lithuania and Norway fell. Between 2012 and 2017, the general demand was weakening for products of group 62 'clothing and accessories' and 61 'machine and hand knitted goods'; 42 'leather goods; harness and saddlery; travel accessories'; and 89 'ships, boats and floating structures'.

## V. DISCUSSION AND CONCLUSION

In conclusion, the following research results should be highlighted:

1. China's opportunities for capturing new European markets largely depend on such key factor as the product cost, which, in its turn, is determined by electricity prices, the cost of credit sources, the tax burden on the wage fund and social security contributions, and transportation costs.

2. So far, the EU-China trade has been flourishing with the exports reaching from 26% to 89% of the total trade volume and the most popular goods being electric cars, electrical machinery and nuclear reactors. The supply of

these products satisfies the needs of the European industrial sector as well as the needs of individual consumers.

3. By using the NSR, China may be able to cut its shipping costs, fuel costs, and the ship manning costs.

4. The potential export markets it may be worthwhile for China to consider are Finland, Norway and Ireland. In these countries, there is considerable interest in Chinese electric cars, electrical machinery, chemicals, optical instruments, furniture and bedlinen.

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