

Impact of the “Belt and Road” Initiative on the Orientation and Layout of China’s Ports

--Taking Dalian Port as an Example

Yi Xu

School of Transport & Communications, Shanghai Maritime University, Shanghai 201306, China.

Abstract

After the proposal of the “Belt and Road” initiative, ports along the routes have been guided by it and have new development orientation and layout. Regarding the impact of the “Belt and Road” initiative on the orientation and layout of the port, this article summarizes three points: first, it is conducive to the construction and transformation of the transit port; second, it is conducive to the integration of the port city and the construction of "building the city with the port"; finally, it is conducive to the layout of the port collection and distribution system. Selecting Dalian Port as a case, by comparing the annual cargo water transportation volume of Dalian Port, and the performance of container and crude oil transshipment in recent years, it characterizes the rapid development of the port transfer; secondly, the RCI index was used to show the promotion of the introduction of the port city characterizes of Dalian Port; finally, the Dalian Port's sea-rail combined container volume and its cross-border container volume was analyzed, and it shows its continuous development of sea-rail combined transport. The result shows the positive impact of the “Belt and Road” initiative on the construction of transit ports along the route, the construction of port-city relations, and the construction of collection and distribution system.

Keywords

“Belt and Road”; Port Orientation; Port Layout; Dalian Port.

1. Research Background and significance

In September 2013, the strategic initiative of building the Silk Road Economic Belt and the 21st Century Maritime Silk Road was proposed, also known as the Belt and Road Initiative. Released "area" initiative is China's active to promote China and Asia, Africa, Europe, the ancient silk road and the comprehensive economic cooperation of countries along the maritime silk route of major planning, "Marine silk road" in the 21st century is committed to Asia-Europe connectivity between the region on the ocean, play a port on the sea trade routes of node and the hub, with key port for the fulcrum, Jointly build smooth, safe and efficient transport corridors.

China and Asia, the European Union and African countries has been maintained a long-term and stable trade partnership, international trade and shipping is the main form of transportation, port as the main carrier of shipping network, naturally be-came the Eurasian non-state interconnectivity regional core protection, has become the important node to build "Neighbourhood" all the way. The proposal of "One Belt and One Road" initiative provides a rare historical opportunity for the transformation and upgrading of China's traditional ports, and puts forward new requirements for the positioning and layout of ports.

1.1 Research Background

At present, with the support of the Belt and Road Initiative, the global economic pattern is changing quietly, and the world pattern is also adjusting accordingly. The main manifestation is that the global shipping resources are "moving east" in the global scope, and the international shipping resources are further gathering in Asia, especially in China. Besides Shanghai, the ports of Guangzhou, Qingdao, Ning-bo-Zhoushan, Tianjin, Shenzhen, Xiamen, Dalian and other ports in Mainland China also rank among the international shipping centers. Therefore, under this important opportunity, the port's development positioning, scientific layout, and how to lever-age regional advantages and functions have become the top priority of all ports.

1.2 Research Significance

Port positioning refers to determining the orientation of a port in terms of its development direction, development scale and functions within a certain period of time and within the scope of its economic hinterland according to the basic external and internal conditions of the region where the port is located. With different port positioning, the development ideas, development strategies, policies, systems, strategies and measures adopted are necessarily different. The change of port positioning is beneficial to release the port potential and break the limitation. The layout of ports is mainly reflected in the aspect of distribution and transportation. Reasonable land use planning, increasing the proportion of railways in the comprehensive system of distribution and transportation, and carrying out the standardized construction of infrastructure can help dredge the economy and give better play to the distribution and transfer function of ports on logistics.

Under the strategic background of "One Belt and One Road" Initiative, the government has issued relevant long-term policies in succession. Based on the demand of strategic development, a new pattern of port positioning and a highly demanding collection and distribution logistics system have emerged. This initiative has activated the vitality of ports along the route and injected a shot in the arm for China's open economy.

At present, China's port and hinterland construction is actively responding to the call of the "Belt and Road" Initiative, and achieved varying degrees of success, but the actual process of promoting still faces many uncertainties. At the present stage, the research on the influence of "One Belt and One Road" on the positioning and layout of China's ports is conducive to further clarifying the future port planning route, adjusting the layout rules, and elaborating the development path under the guidance of the general direction, which is conducive to improving the planning effect, speeding up the pace of progress, and sharing the fruits of coordinated development at an early date.

2. The influence of the Belt and Road Initiative on the positioning and layout of ports along China's Routes

Most of the ports in China were established in the planned economy period, so the functions of many ports are not perfect. Now they are still in a relatively traditional state, relying on a single port mode. With the construction of the "One Belt and One Road" strategy, maritime transport and national transport are gradually closely linked. The slogan "economic power must be maritime power and shipping power" was put forward, and the positioning of port development in national construction has been elevated to a new level. The port of our country under the policy will appear on the international shipping economic stage with a new posture. The specific impacts of the Belt and Road Initiative on port positioning and layout are as follows:

2.1 Accelerate the transformation of transit ports

Transit port refers to the third port where the goods are shipped from the port of origin to the port of destination. Now in the stage of port development quickly in our country, in order to adapt to the current situation, not only depends on the develop-ment of fixed mode, will have economic and geographical location advantage, and have natural and operation conditions of port development

become a transit port, can strengthen the relationship between with other countries, and bring new opportunities for our country, and in conformity to the call of "area" initiative.

From the point of view of the conditions for the establishment of transit ports, no matter in the Pearl River Delta or the Bohai Rim, the ports have good geographical advantages. They connect various countries in Europe, Asia and Africa, and can meet the different needs of all countries in the world, shorten the transportation time, save the transportation distance, speed up the transportation efficiency, and increase the economic benefits.

Secondly, the economic advantage of the port is the economic factor of its hinterland, which determines the development space of port economy from the basis. In order to have advantages in the economy, it is necessary to be "open and free". Therefore, it involves the freedom factor of ports, that is, the establishment of free trade zones. Free trade allows goods to flow freely and exempt from taxes, so only a free port is attractive for countries to transship there. The free trade zones established by the Belt and Road Initiative for cities in the hinterland of coastal ports are a natural driving force for transshipment trade in coastal ports.

2.2 The port radiates the city and excavates the economic potential of the hinterland

As the strategic fulcrum of the construction of "One Belt and One Road", maritime ports should achieve the effect of driving the economic development of cities along the belt and Road through the radiation and linkage effect of points, lines and connections. In other words, with the maritime port as the center, we can build a collection and distribution system with the surrounding areas, broaden the regional radiation range, and connect the hinterland at home and abroad to form complementary industries, so as to realize the win-win development of regional economy.

To meet the strategic needs at the same time, the expansion of the function of port infrastructure and supporting facilities will be for the industry cluster development of regional economy is a great driving force, gave rise to the formation of the relevant industries chain, industry cluster and made to stretch on both ends of the industrial chain, pull logistics, trade, information, and other related industry development, promote the allocation of resources, optimization of regional industrial structure. Macau, for example, it is the silk road in history an important turning point, but the airport is very small, to a certain extent constrained the development of its economy, but in the strategy of "area", the tourism industry has developed rapidly, and construction to become air transit port, Macau route, the mode of transportation of aviation transportation to become more effective, which in turn lead to the development of the aviation industry.

2.3 Promote reasonable distribution and distribution system of ports

Port distribution system is the most important port layout. Port transportation system is the core of the transport of goods distribution system, the coastal port infrastructure and transportation at the present stage in China the imbalance between the main performance in the infrastructure supply greater than demand or to be greater than supply, will not be able to make full use of resources to meet the demand of transportation, greatly wasted capacity resources, increase the collecting and distributing the total cost of the goods. The opening of the "One Belt and One Road" channel makes the demand for transportation volume, the standardization of service and the requirements of information technology constantly improve, so as to achieve the effect of rearranging the collection and distribution system of the port.

To strongly support the Belt and Road initiative, the Ministry of Transport and other officials jointly issued the Plan for the Construction of the 13th Five-Year Plan Port Collection and Distribution System, which stated that by 2020, the port collection and distribution capacity will be significantly improved and the layout of ports will be further optimized. This plays a decisive role in the future development direction of China's port collection and distribution, which is embodied in the following three aspects.

2.3.1 Contribute to rational land planning

"Area" initiative is put forward, combining port hinterland development and urban development, which makes the port no matter from the construction level or are no longer independent of city planning and development level, urban integration into a system, but with the layout of the transportation system is no longer because of the jurisdiction of the city and the port authorities for split range of embarrassment, is beneficial to integration of harbour city. More reasonable connection between port traffic and urban traffic, build efficient modern logistics chain, form port city agglomeration effect, and realize complementary transportation functions.

2.3.2 Promote the establishment of a collection, distribution and transportation comprehensive information system

"Area" initiative to encourage the port information modernization, through constructing the online information system (IOT) for such as transportation between ports of data sharing, which makes the information such as shipment, loading and unloading, settlement will gradually realize the integration, can improve the utilization rate of roads, cost savings, and to reduce the uncertainty of hampering the logistics transportation. Enhance the robustness of the distribution logistics system.

2.3.3 Increase the proportion of railway transportation

Railway transportation plays a fundamental and leading role in the collection and distribution system. Making full use of railway facilities can not only improve the transportation efficiency, but also relieve the congestion caused by the transportation pressure on urban roads and alleviate the prominent problems such as urban environmental pollution. In developed countries, the proportion of railway transport is about 30%, and the proportion of sea-rail combined transport is usually 20%~40%. However, China's road transport occupies the largest proportion in the transport system, the proportion of railway transport is only 10%, and the proportion of container sea-rail combined transport is only 2%, which is far from the developed countries. In the development strategy of "One Belt and One Road" Initiative, it is clearly proposed to promote the construction of hot metal transfer and the construction of railway transport transfer station, which will directly provide strong political support for the optimization of the port collection and distribution structure in the future, so as to gradually make up for the shortcomings of China's logistics system and strengthen the efficiency of the connection between waterways, roads and railways.

3. Case study -- Dalian Port

Dalian is located in the southernmost part of northeast China, at the throat of Beijing, Tianjin and Tang, and at the head of the rim of Bohai Sea. It is an important international port in northeast Asia. Compared with other northern ports, Dalian Port is closer to the main international shipping channel, close to Japan and South Korea, and located in the center of Northeast Asia, so it is a rare natural port in both geographical location and port conditions.

At the beginning of 2015, the Vision and Actions for Jointly Building the Silk Road Economic Belt and the 21st Century Maritime Silk Road clearly stated that the port construction of 15 coastal cities including Dalian should be strengthened. As the only port city in northeast China to be included in the Vision and Action, Dalian has become an important maritime transportation hub in the development of Liaoning coastal economic belt and the core content of the construction of northeast Asia international shipping center. Therefore, Dalian Port is selected as a case to analyze the far-reaching impact of the Belt and Road Initiative on its positioning and layout.

3.1 Deepen and expand the status of transit hub port

Dalian port is located in the Dalian Bay at the southern end of Liaodong Peninsula, facing the Pacific Ocean, the port is wide and deep, no silt, no freezing, tons of cargo vessels unimpeded, the natural conditions are very superior, is the most convenient port to transfer goods from the Far East, Europe, Japan and South Korea. To build it into an indispensable transit hub port in Northeast Asia will have a significant strategic impact on enhancing China's status in the international economy.

Today, as the main transit port in Northeast Asia and the main hub of trade between China, Japan and South Korea and Russia and Europe, Dalian Port undertakes more than 40% of the trade transfer volume in this region. The development of Dalian port's transshipment business can be reflected by its cargo water transport volume, especially after 2015, the performance of Dalian Port's transshipment business has rebounded rapidly. See Table 1 for Dalian Port's water transport volume from 2010 to 2017. The transshipment volume of Dalian Port and its annual growth trend are shown in Figure 1.

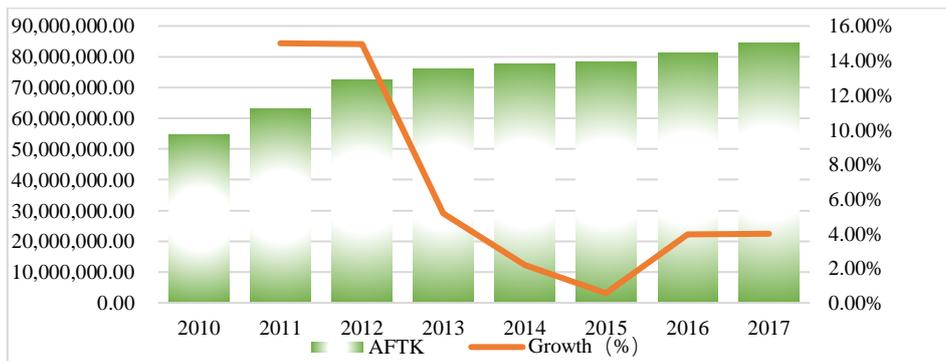


Figure 1. The trend of water transport volume and growth rate of Dalian Port from 2010 to 2017

Table 1. Transportation volume and growth rate of Dalian Port from 2010 to 2017

Year	Transshipment / AFTK	Growth(%)
2010	54,786,819.00	—
2011	63,003,640.00	15
2012	72,421,862.00	14.95
2013	76,178,846.00	5.19
2014	77,830,171.00	2.17
2015	78,263,012.00	0.56
2016	81,372,073.00	3.97
2017	84,620,023.00	3.99

As an important node of "One Belt and One Road", Dalian Port has actively laid out the strategic concept of "One Belt and One Road" since 2015, and made new breakthroughs in the construction of "Northeast New Silk Road". The "one Ring" strategy is to build a transit hub serving the Bohai Sea and facing northeast Asia. Dalian Port now has the largest Bohai Rim container feeder transit service network in north China, and has become the largest crude oil transit port in China, which is highly competitive in the world.

3.1.1 Container transfer Service

Dalian Port Group owns more than 90 container liner lines, 13 of which are ocean-going lines. The average weekly flight density is more than 100, and the route network covers more than 100 major ports around the world. CCA branch line service agreements have been signed with 36 major global liner companies, and a total of 15 specialized container ships have participated in the branch line operation, and there are newly built container ships in the fleet. With the help of the Bohai Rim extension, Dalian Port has become an important container transit hub port in northern China.

3.1.2 Crude oil transshipment business

Dalian Port Co., Ltd. has 19 berths for oil and liquid chemicals, including two 300,000-ton crude oil terminals (one of which can handle 450,000 ton tankers), with an annual handling capacity of more than 78 million tons and its own crude oil storage tank capacity of 4.1 million cubic meters. It has the largest oil tank group of domestic ports, and has a perfect integrated collection and distribution network of waterway, highway, railway and pipeline, which is an important storage, transportation

and distribution center of oil and liquid chemical products in northeast China. In 2016, the crude oil transshipment volume of Dalian Port exceeded 32 million tons, ranking first in China. It has also achieved reverse growth in spite of the influence of factors, in which its oil transport capacity can be seen.

3.2 The new port-city relationship from "Building the city with Hong Kong" to "building the city with Hong Kong"

Since the establishment of Dalian city, it is the fundamental characteristics of "in Hong Kong," after "area" initiative is put forward, based on the construction of Dalian port into an international port policy advantages, Dalian in northeast Asia in-ternational shipping center, logistics center, regional financial center, and the image of opening up and cooperation in northeast Asia regions, were devoted to the con-struction of "area" all the way to go. For example, in 2016, Liaoning province was approved as a free trade demonstration zone, and Dalian became a leading free trade demonstration zone, which maximally stimulated the potential of the city's economy. From then on, Dalian gradually moved to the road of "revitalizing the city with the port" and even "revitalizing the northeast with the port".

In order to more directly reflect the changes in the relationship between Dalian port and city, this paper introduces RCI as an indicator to measure the relationship between Port and city. Domestic and foreign research related to harbour city rela-tionship, the relative concentration index (relative concentration index, RCI) is used to quantify and evaluate a more practical indicator of harbour city relations. Pro-posed by Vallega in 1979, this index is used to analyze the organiza-tional relation-ship between port areas and associated settlements in the Mediterranean region. He defined RCI as the ratio of the throughput ratio of a certain port in a whole region to the population ratio of settlements related to the port. The formula is:

$$RCI = \left(\frac{T_i}{\sum_{i=1}^n T_i} \right) / \left(\frac{P_i}{\sum_{i=1}^n P_i} \right) \quad (1)$$

In the equation, T_i is the container throughput of city I port, which is an im-portant indicator to measure the size and status of the port; P_i is the total population of city I, which is an index reflecting the city size. N is the number of port cities in a certain region. The RCI value represents the relative size of ports and cities in a cer-tain region, as shown in Table 2.

Table 2. RCI value represents the index table of relative size of ports and cities in a certain region

RCI	The relative scale of ports and cities in a certain area
RCI→0	The status of cities is becoming more important
RCI=1	Port size is equivalent to city size
RCI→∞	The status of ports is becoming more important

The index of RCI value defining the type of port city is shown in Table3.

Table 3. Index table of RCI values defining port city types

RCI	The RCI Index's General Definition of Port Cities in Any Time and Space in the World	City Type
RCI<0.33	The scale of the port and the city is severely unbalanced	Transportation hub city
0.33<RCI<0.75	The importance of cities is remarkable	Coastal city
0.75<RCI<1.25	Ports and cities are in a relatively balanced state	Typical Port City
1.25<RCI<3	The importance of the port is remarkable	Gateway city
RCI>3	The scale of the port and the city is severely unbalanced	General city

After reading and comparing research literature in related fields, it is found that replacing urban construction land area with urban total population can better reflect the status and level of overall urban development scale. Therefore, formula (1) is modified:

$$RCI = \left(\frac{T_i}{\sum_{i=1}^n T_i} \right) / \left(\frac{C_i}{\sum_{i=1}^n C_i} \right) \quad (2)$$

Where, T_i is the container throughput of the port of city I , C_i is the construction land area of city I , and n is the number of port cities in a certain region. The data selection is as follows: According to the location characteristics of Dalian Port, the region is Liaoning Province, and the regional ports are coastal ports of Liaoning Province: Dalian Port, Yingkou Port, Dandong Port, Panjin Port, Jinzhou Port and Huludao port; the selected regional cities are coastal port cities of Liaoning Province: Dalian, Yingkou, Dandong, Panjin, Jinzhou and Huludao. The construction land area of coastal port cities in Liaoning Province is shown in Table 4.

Table 4. Construction land area of coastal port cities in Liaoning Province from 2010 to 2018

Year	Urban construction land area / Square kilometers						
	Dalian	Dandong	Yingkou	Panjin	Jinzhou	Huludao	Total
2010	390	53.4	99.24	60.83	71.45	75.15	750.07
2011	390	53.4	102.5	60.8	71.5	80	758.2
2012	395	53.4	103.8	66.9	71.6	80	770.7
2013	395.5	53.4	109.6	69.6	77.1	80.8	786
2014	395.5	53.4	109.6	73	77.1	85.2	793.8
2015	395.5	77.1	110	74.9	77.1	85.9	820.5
2016	433.3	77.1	188.8	92.3	88.3	87.3	967.1
2017	488.6	142	252.9	94.6	137.2	144.8	1260.1
2018	488.6	142	253.1	125.9	145.9	149.4	1304.9

The container throughput of coastal ports in Liaoning Province from 2010 to 2018 is showed in Table 5.

Table 5. Container throughput of coastal ports in Liaoning Province from 2010 to 2018

Year	Throughput / 10000TEU
2010	969
2011	1200
2012	1514
2013	1798
2014	1860
2015	1838
2016	1879.7
2017	1950
2018	1926

The container throughput of Dalian Port from 2010 to 2018 is shown in Table 6.

Table 6. Container throughput of Dalian Port from 2010 to 2018

Year	Throughput / 10000TEU
2010	526
2011	640
2012	806
2013	1002
2014	1013
2015	945
2016	959
2017	971
2018	977

Through calculation, the change chart of RCI index of Dalian Port City from 2010 to 2018 is obtained, as shown in Figure 2.

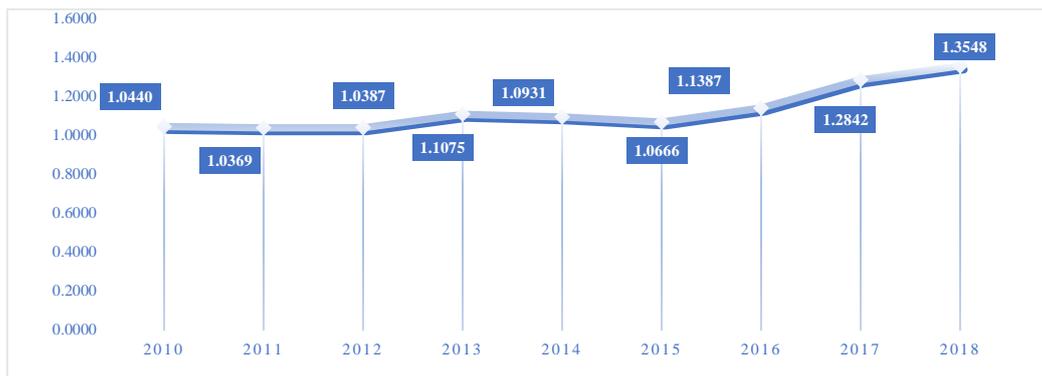


Figure 2. RCI index change curve of Dalian Port City from 2010 to 2018

As can be seen from the figure, especially after 2015, the RCI index of Dalian Port City has shown an obvious upward trend, and the importance of ports has become more and more significant. Dalian has also gradually developed from a typical port city to a gateway city, gradually playing a positive role in "revitalize the city with port".

3.3 Construction of Dalian Port sea-rail intermodal transport

The development and construction of Dalian port sea-rail combined transportation is a transition process from domestic sea-rail combined transportation to international sea-rail combined transportation. Under the premise that the domestic sea-rail intermodal transportation has begun to take shape, it is an inevitable choice to expand the international sea-rail intermodal transportation of Dalian port under the new situation. The construction of domestic and international sea-rail combined transport can not only accelerate the turnover of goods in Northeast Asia, improve the transport efficiency of freight transport, but also help to improve the status of Dalian port in the international port, and promote the comprehensive development of Dalian port.

Figure 3. shows the change in the proportion of the sea-rail combined transportation container volume and the total container throughput in Dalian from 2010 to 2017. Figure 4. shows the trend of the cross-border container volume and the proportion in the sea-rail combined transportation from 2014 to 2017. The data in the table are based on the data in the traffic news of Liaoning Provincial Transportation Department and related research papers. As can be seen from the figure, although the sea-rail combined transportation container volume of Dalian Port still accounts for a small proportion of the total annual container volume of the port, the proportion is slightly increasing, and the cross-border transportation part of the sea-rail combined transportation container volume is increasing year by year, with an obvious increase, indicating that its "outward" degree is increasing.

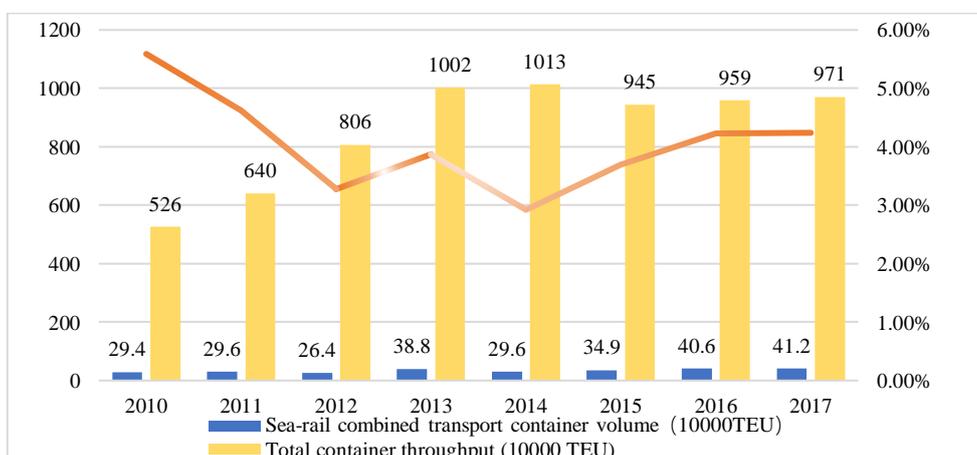


Figure 3. Trend chart of sea-rail combined transport box volume and proportion in Dalian Port from 2010 to 2017

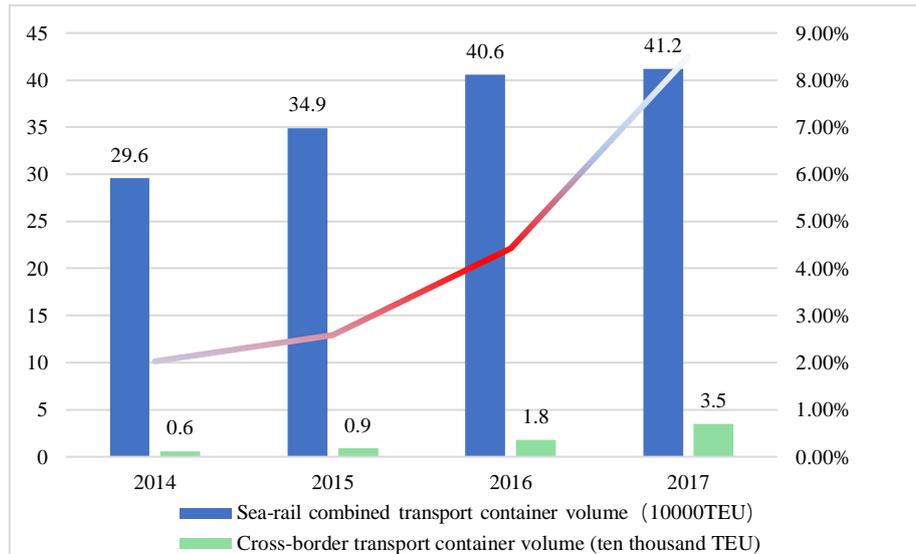


Figure 4. The trend chart of the volume and proportion of the cross-boundary transport box of sea-rail combined transport in Dalian Port from 2014 to 2017

Under the national strategy of "area" the all-round, Dalian port railway has always followed the port construction pace of synchronization is perfect, since the opening of Asia-Europe trains, the reuse after concentrated railway channel advantage, from Dalian, full container trains go the Siberian continental bridge channel (Dalian, Russia, Belarus, Poland), will soon arrive in Europe, significantly reduce operating costs. In addition, since the opening of the first China-Europe transit freight train in July 2013, Dalian Port has successively opened up 18 China-Europe freight trains, such as "Liao-Manchuria-Europe", "Lian-Ha-Europe", "Liao-Mongolia-Europe", "Liao-Xinjiang Europe", etc. The service network of sea and rail transportation covers many international combined transport and logistics channels in northeast China, Russia, Europe, Mongolia and Central Asia, etc. It has greatly promoted the infrastructure connectivity between Dalian and countries along the Belt and Road, fully played the pivotal role of Dalian Port in the construction of the Belt and Road, and facilitated the smooth flow of investment and trade.

4. Conclusion

"The Belt and Road" is a historic strategic initiative put forward by China, which can be called the engine of world economic growth. By using its technology, capital and unique economic model, the Belt and Road has fully opened up the economy of countries along the routes, and has a groundbreaking impact on the positioning and layout of ports along the routes. "Area" initiative not only in the countries along the route guides a group of successful transformation and the port of transshipment hub, and the development of the relationship between the new harbor city, using the port open port city economic path, the more perfect the construction of the port transportation system, promoting the port "integration" process, to upgrade port competition and development to regional and national level. Not only Dalian port benefited from this, but also Shanghai Port, Tianjin Port, Guangzhou port and other coastal ports benefited from the "Belt and Road" policy, which enabled them to accurately position themselves in the new era with careful planning, reasonable layout, rapid development and rank among the world's first-tier ports.

It is the same with port development. Only by finding a good positioning and planning the layout can we have a good beginning, but all these must rely on the macro strategic policy as the backing. The Belt and Road Initiative is a great historical opportunity for the development of China's coastal ports. At the same time of steady development, regular data analysis and comparison of the international status changes of ports along the route must be carried out continuously, which is more conducive to the future strategic deployment. Only with far-sighted port development strategy can the port grow

healthily into a sustainable port that plays an important role in the shipping industry. The port positioning and layout under the policy of "One Belt and One Road" initiative is the full embodiment of the inclusive development spirit of The Times and the ideological realm of economic win-win in con-temporary China.

References

- [1] Sen Bi, Li Zhang, Yu Gu, et al. Analysis on the relationship between ports and port cities along the 21st Century Maritime Silk Road [J]. Journal of the university of Chinese Academy of Sciences, 2020, 37(1):74-82.
- [2] Bo Lu, Weiquan Qiu, Jian Xing, et al. Research on the development strategy of China's coastal node ports and port cities based on the Evaluation of the belt and Road Initiative [J]. Systems Engineering-Theory & Practice, 2020, 6(40):1627-1639. DOI:10.12011/1000-6788-2020-0419-13.
- [3] Hongjian Mao. Speeding up the construction of world-class strong port and world-class port cluster [J]. China Water Transport, 2020 (01) :24-25. DOI: 10.13646/j.cnki.42-1395/ U.S.2020.01.006.
- [4] Jinghui Zhou, Fang Xi, Yu Li. Research on the development and layout of Gwadar Port [J]. Water Transport Engineering, 2019, 9:125-128,154.
- [5] Yanhong Shi. Research on Development Evaluation of Dalian Port-Sea-Rail Intermodal Transportation Hub [D]. Dalian: Dalian Maritime University, 2019.
- [6] Lili Ma, Guangcan Huang. Construction of overseas fulcrum of "Belt and Road" and expansion of port area construction mode [J]. Reform, 2019-09-14. <http://kns.cnki.net/kcms/detail/50.1012.F. 20190924.1347.002.html>
- [7] Zongsha Hu, Rui Nie. The Belt and Road Initiative: Achievements, challenges and future innovations [J]. Journal of Socialist Studies, 2019, 6: 162-170.
- [8] LI S, YUE M, Xujing Lv, et al. Analysis on the coordination of China's coastal port collection and distribution system under the belt and Road Initiative [J]. China water transport, 2019, 19(6):33-34.
- [9] Heng Cai. "One Belt and One Road" construction leads the high-quality development of Fujian shipping economy [J]. Fujian Transportation Science and Technology, 2019, 4: 146-148.
- [10] Chunyan Wu. Development and experience analysis of China's ports in the "Belt and Road" [J]. Belt and Road Construction, 2018(06):22-23.
- [11] Qizhi Chen. The transformation of China's port positioning based on the "One Belt and One Road" strategy [J]. Economic and Trade Practice, 2018(03):79-80.
- [12] Beizhan Lin. China's port layout optimization imminent [J]. Port Economy, 2017.08.
- [13] Yao Yang, Shuai Shao, Zhendong Qin. Analysis on the layout of Chinese ports in East Africa under the strategy of "One Belt and One Road" [J]. Transportation Enterprise Management, 2017,5:1-3.
- [14] Xin Hua, Jiying Chang. New positioning and layout of Bohai Rim ports [J]. Development Research, 2017, 4:73-78.
- [15] Changjian Liu. The development direction of China's coastal ports under the "One Belt and One Road" strategy [J]. Port Economy, 2016.12:13-17.
- [16] Weifeng Yang. Development countermeasures of Dalian Port international Sea-rail intermodal transport under the background of "One Belt and One Road" [J]. Modern Commerce & Trade Industry, 2016 (02):39-41.