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Increase Connectivity to Develop a Seaport System

Pham Thi Thanh Xuan, Nguyen Van Quy, Dong Thi Minh Hao
Ho Chi Minh City University of Transport, Ho Chi Minh City, Vietnam

Abstract**—** *Vietnam has a sea area of over 1.0 million km2, 3 times the land area; the coast is 3,260km long with many peninsulas, bays and bays full of waves, large natural depth, and the language on the most bustling maritime route in the world ... From the advantages of the sea, the seaport has come out. inevitable and inextricably linked with all production activities, people's life and the history of conquering the sea, preserving the boundaries of his father. Also from the advantage of the sea, the economy of port operation, shipping has been formed and increasingly important especially for the development of the marine economy and the process of international integration of the country. After nearly two decades of planning and development, Vietnam's seaport system has made certain achievements in terms of economy as well as science and technology. Besides, there are still some weaknesses that the seaport system needs to overcome such as low connectivity between seaports, overload of ports upon receipt of goods or uneven distribution of port systems, leading to goods shortage. However, other ports are in the situation of undercutting or not exploiting at full capacity.*

Keywords**—** *The Government, seaport, container, development, Vietnam.*

I. INTRODUCTION

According to the latest statistics of the Vietnam Maritime Administration, the country now has 281 ports with a total capacity of over 550 million tons/year. Port system is invested synchronously in infrastructure: wharves, buoys, loading and unloading equipment, basic development complete, fully functional, large scale and widely distributed by region. domain. Most seaports make full use of natural conditions, meet the requirements of transporting goods by sea, actively serving the socio-economic development process of coastal areas and the whole country, create motivations to attract and promote related industries and industries to develop together. Seaports are owned and operated directly by state-owned enterprises and other economic sectors. 4 ports invested with state budget and assigned the Vietnam Maritime Administration to act as representatives of state agencies to sign operating leases including Cai Lan port, Cai Mep ODA container port, total port. The international market of Thi Vai and An Thoi - Kien Giang port has brought about remarkable results [1]. Thanks to strong innovation, in the first 6 months of 2019, the volume of goods through Vietnam's seaport system is estimated at 308.8 million tons (excluding the volume of unloaded transit goods), an increase of 13% compared to with the same period in 2018. Exported goods reached 74.8 million tons, up 8% over the same period in 2018, imported goods reached 98.1 million tons, up 19%, domestic goods reached 134.9 million tons, up 11%. Passenger through the port reached 3.8 million passengers, up 32% [2]. Most of the regional major ports: Hai Phong, Da Nang, Ba Ria - Vung Tau, Ho Chi Minh City ... have been upgraded to receive ships of up to 30,000DWT. Typically, Cai Mep - Thi Vai port receives vessels up to 18,300 TEU (194,000DWT) into weekly operation, directly connecting Vietnam's import and export goods to the Northern European market. In the central region, the seaport is also on the "flourishing" momentum, especially the Danang port. Before 2014, Da Nang port had a limited wharf length, container ships had to queue for 6-8 hours. After equitization, the port focused on upgrading the wharf infrastructure and developing container services. The total investment for the period of 2014 - 2018 is more than VND 1,900 billion, 4 times higher than the previous period of 5 years (2009 - 2013). The port continues to put into use 2 new wharves in the project of expanding Tien Sa port phase 2, with a total investment of nearly VND 900 billion. The output of goods through the port in the past 5 years increased by an average of 10% / year. The receiving capacity has been raised from 1,800 TEU to 3,500 TEU, the situation of waiting ships is almost not available [3]. However, according to the Vietnam Seaport Association, the port system in Vietnam is still developing asynchronously between the seaport system and infrastructure, logistics services. In addition, the development and increase of members also have a clear difference between regions [4]. Specifically, while the volume of goods through ports in the North and the Mekong Delta decreased, the ports in Ho Chi Minh City, Dong Nai, and Cai Mep - Thi Vai (Ba Ria-Vung Tau) increased sharply. and accounts for nearly 60% of the national market share. Particularly, containerized goods through Cai Mep - Thi Vai port in 2018 increased by 21%, in the first 6 months of 2019 by 26%. Cai Mep - Thi Vai port cluster has great potential of the southern key economic region and when it is connected to Long Thanh airport, it will become an international maritime and aviation center. Despite the general growth, according to VPA, many ports still face difficulties in competition, business and are not accumulated enough to develop to modern such as low container service rates, subsidies for shipping. overseas when inland transport, port development fragmented [5]. Notably, Ho Chi Minh City has to expand urban traffic to "live" with very large containers of goods entering and leaving Cat Lai port and building large belt roads to minimize congestion in the inner city. This has caused a series of increasingly serious problems in urban transport, society, and the environment. Meanwhile, although there is a port in the Mekong Delta region, due to the lack of transportation, goods here and transit goods of Cambodia still have to go through the ports in Ho Chi Minh City and Ba Ria-Vung Tau. Ship. In addition, the strength of this delta is the network of inland waterways but recently there are large port projects proposed to occupy a lot of lands and compete with the port group No. 5 (ie the group of ports in the Southeast region). and Ho Chi Minh City) [6].

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II. Achievements that Vietnam's Port System has Achieved

Vietnam's seaport has shaped a port system of 45 seaports (32 inland ports and 13 offshore oil ports) with 281 ports, total length of nearly 87,550m wharves, the throughput capacity of about 550 million tons/year. Associated with centers, major economic regions of the country have formed large seaports with the role of a focal point for goods import and export and creating motivation for development of the whole region such as Quang Ninh seaport, Hai Phong is associated with the northern key economic region; seaports of Thua Thien - Hue, Da Nang, Dung Quat and Quy Nhon in association with the Central key economic region; seaport TP. Ho Chi Minh City, Ba Ria - Vung Tau, Dong Nai associated with the Southeastern dynamic economic region; Can Tho and An Giang seaports in association with the Mekong River delta key economic region. Some seaports have been invested with modern scale of international statures such as Ba Ria - Vung Tau seaport and Hai Phong seaport. These ports have been performing the role of international gateway ports and assume the function of transshipment.

A. Port Size

Compared to the first year of planning implementation (2000), Vietnam's seaport system has increased 4.4 times in terms of port length. The port capacity is concerned, upgraded and improved to receive ships with larger and larger tonnage. Most general ports and regional hubs, including: Quang Ninh, Hai Phong, Nghi Son, Ha Tinh, Thua Thien - Hue, Da Nang, Quang Ngai, Quy Nhon, Khanh Hoa, Ba Ria - Vung Tau, TP Ho Chi Minh City, Dong Nai and Long An have been newly invested and renovated to receive ships of up to 30,000 DWT and larger, in accordance with the development trend of the world shipping fleet. Many new investment ports with modern scale allow to receive large tonnage ships up to hundreds of thousands of tons such as the ports in Cai Mep - Thi Vai area in Ba Ria - Vung Tau province and the Lach Huyen - Hai Phong port. On February 20, 2017, CMIT port - Ba Ria - Vung Tau port has successfully received the world's largest container ship with a tonnage of 18,300 TEU (194,000 DWT). This is an important basis, confirming Vietnam's seaport capacity, creating a premise for shipping lines to use Vietnamese seaports as a link in the global maritime chain [7].

B. The Quality of Port Operation Services is Increasing Day by Day

From open investment policies, over the past time, we have attracted many investors who are professional port operators and large shipping lines of the world. participate in investment and construction of seaports in Vietnam such as DP World Group - UAE (the world's No. 5 port operator) participates in investing and exploiting the SPCT port - TP. Ho Chi Minh; SSA Marine Group - USA (the world's ninth port operator) invests in investing in the operation of CICT port in Quang Ninh province and SSIT port in Ba Ria - Vung Tau province; PSA - Singapore Group (the world's No. 3 port operator) invests in and operates SP-PSA port in Ba Ria - Vung Tau province; APMT Group - Denmark (the world's No. 2 port operator) invests in CMIT Port investment in Ba Ria - Vung Tau province; Hutchison Port Holding - Hong Kong (the world's No. 1 port operator) invests in SITV port in Ba Ria - Vung Tau province. The lines of Mitsui O.S.K line (Japan), Wanhai Lines (Taiwan) - the company in the top 20 of the world involved in investing and exploiting the international container port of Tan Cang - Cai Mep; MOL, NYK shipping lines (in the top 20 in the world) invested in Lach Huyen harbor ... Professional port operators in the world, shipping lines and a number of domestic port operators such as Saigon Newport Corporation, Vietnam Maritime Corporation have brought the best seaport services, contribute to improving service quality and competitiveness of Vietnamese seaports [8].

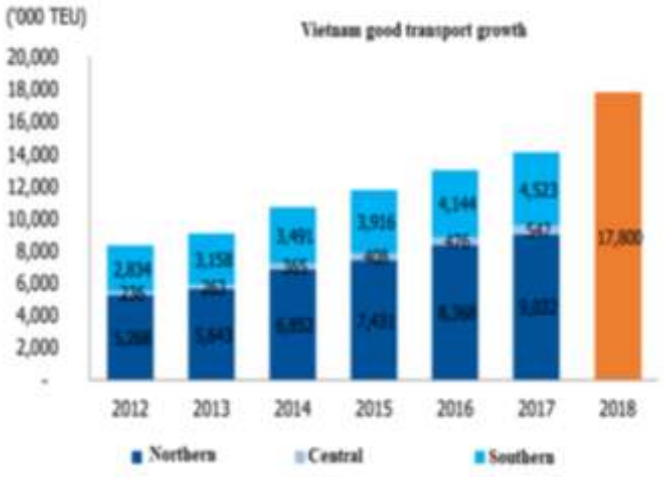

Figure 1. Vietnam good transport growth

The port services are increasingly improved, the administrative procedures for ships are constantly improved, shortening the waiting time for ships. On the other hand, due to the increasing demand for goods transport by sea, it has attracted shipping lines to open the mother ship route connecting to Cai Mep - Thi Vai. In 2013, this area had a total of 8 routes/week, by 2014 - 2015, the number of ships increased to 10 routes/week and now is 22 flights/week. Hai Phong international gateway port in Lach Huyen has officially inaugurated and put into operation 02 start-up berths, receiving 100,000 DWT vessels, this will be the next port in the Northern region to receive mother ships on international routes. The ports in Cai Mep - Thi Vai and Lach Huyen completed and put into operation capable of receiving large container ships are very important basis, creating a premise to make Vietnam seaports become a link in the chain. Global transport and logistics.

III. Inadequacies in the Planning of Harbor Systems in Vietnam

A. Inland Port System Has Not Been Developed

Inland ports are considered an important link in multimodal transport, contributing to reducing transportation costs and reducing the time of storage at seaports. Statistics of the Ministry of Transport and Transport (MOT) show that there are currently 20 ICDs and domestic clearance points like ICD, concentrated in the North and the South. In particular, in the North, there are 10 ICDs connected to Hai Phong seaport,

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mainly ICDs with road connections, only one ICD Lao Cai has a railway connection. In the South, there are 10 ICDs connected to Vung Tau and Ho Chi Minh City ports with 7 ICDs connected to inland waterways. ICD is a part of the transport infrastructure associated with the operation of the seaport and other infrastructure systems, the development of the ICD must be consistent with the port system development plan, the development plans. developing the transport network and socio-economic development planning of regions and localities. Therefore, it is necessary to develop the ICD system to meet the import and export needs of each region and economic corridor, especially for goods transported by containers. In order to gradually establish and develop the ICD system to meet the needs of transporting import and export goods, increasing the clearance capacity for seaports; rationally organize container transportation, reduce transportation costs, storage time at seaports and ensure goods safety; contribute to reducing traffic congestion, especially in big cities.

However, according to the Ministry of Transport, the current development plan of the ICD system has revealed many inadequacies, in each region of North, Central, and South, the number of ICDs was too small, not suitable with actual capacity and conditions. (ICD investment and connected infrastructure that do not meet ICD criteria must be connected to at least 2 modes of transport to facilitate multimodal transportation, prioritizing ICD location associated with mode have high transport capacity). Some localities have seaports but due to the wide area, the distance from some areas to the seaport is quite far, there is demand for ICD development, basic criteria to meet requirements but not yet planned for ICD development. At present, seaports have narrow storage areas, there is a need to create ICDs right at the back yards, at industrial parks adjacent to seaports to support capacity through goods but have not been oriented to develop. at the current planning.

Specifically, the establishment and development of 13 ICD locations covering an area of 70 to 400 hectares nationwide are not reasonable, although it can meet the service needs it will not be appropriate. In some areas and main container transport corridors, especially in Hanoi, Ho Chi Minh City, Binh Duong and Dong Nai, many industrial parks, export processing zones and ICD system development needs Support for seaports is huge.

B. The System of Seaports is Still Fragmented, the Connectivity is Not High

Currently, the biggest difficulty of Vietnam's seaport system is the lack of connected infrastructure. For example, the port of Cat Lai (Ho Chi Minh City), the port has a large volume of cargo but is located in the urban center, so the ability to develop is limited. While other major port areas have no goods to exploit. With the current growth rate of 17% / year, only 3 years from now, the volume of goods passing Cai Mep - Thi Vai deep-water port can double, to 5 - 6 million TEU / year. The problem of Cai Mep - Thi Vai port now is the need to clarify the exploitation market and the shortcomings and shortcomings in the management and development of infrastructure. The capacity of 7 million TEU / year of Cai Mep - Thi Vai port is based on the assumption of perfect traffic connection (road and rail) according to international standards, but in reality, it is not currently eligible to collect. attracting international transshipment goods compared with neighboring ports in the region. This is also a common limitation of Vietnam's seaport system.

In addition to the potential to attract international transshipment goods, Vietnam also has the opportunity to attract the development of hubs for regional and international cargo distribution of large corporations and shipping lines. To exploit this potential, Vietnam's seaport development needs a broader strategic vision. In addition, the port system in Cuu Long River Delta region has not been properly invested and paid attention to. Currently, there are 7 seaports in Tien Giang, Dong Thap, Can Tho, An Giang, Vinh Long, Nam Can and Kien Giang. In particular, there are 31 ports (14 general ports and 17 specialized ports), with a total capacity of 20.7 million tons/year. However, there is no port in the whole Mekong Delta region capable of receiving full-tonnage ships with a tonnage of 20,000 DWT. The largest port in the region, Cai Cui port group, Can Tho city can only accommodate ships of 20,000 DWT, but due to the limitation of Hau river flow, it has not been able to fully exploit the designed capacity. The remaining ports in the region are mostly small-scale, lack of storage systems, yards, loading and unloading technology, management and exploitation are quite backward. Not to mention the import demand for coal for thermal power centers in the Mekong Delta is very large. Currently, up to 70% of the region's cargo must be transported by road to ports in Ho Chi Minh City and the Southeast (belonging to the port group No. 5), resulting in a 10% increase in freight costs. up to 40% / shipment. Therefore, logistics costs also come from here. This is not commensurate with the expectations set for the Vietnamese port system when it wants to reduce logistics costs. The fragmented and unsynchronized development among ports has led to unhealthy competition, weakening and mutual damage among investors and port operators.

C. Railway is Underdeveloped

The railway is a type of transport that can transport super-sized and super-heavy goods in large quantities but the freight is cheap. However, the fact that the railway has not developed in recent years has caused difficulties for seaports. In fact, the railway is suitable for long-distance transport on land, if the railway lines can be directly connected with major seaports, it will help reduce costs, reduce pollution, reduce environmental emissions and ensure traffic safety. thereby reducing logistics costs. If there is no direct railway, cars will be used for transshipment, the cost will be high, major environmental pollution will indirectly reduce the competitiveness of seaports with international ports of surrounding countries. Despite great potential, the existing railway infrastructure is of poor quality, backward, and low speed. The ability of the railway to connect with other modes of transport is still very poor, although these connection points are still very few. Deteriorated warehouse system, cargo yards almost unqualified for loading and unloading containers (mainly bulk handling). Loading and unloading goods at the station on the railway line are mainly manual unloading, not applying mechanization, the organization of multimodal transport business is very limited, not able to access logistics services in

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freight transport. chemical, leading to large storage time, storage, increase freight rates, reduce competitiveness compared to other modes of transport. Moreover, the current initiative in finding sources of goods that need to be transported by rail is not high, mainly because the owners of the goods find the railway by themselves. Especially, it has not developed and synchronously connected transport modes on the same transport corridor to form multi-modal transportation, make the best use of each type of transport, minimize costs. The community-based connectivity of several groups of transport businesses operating on the same route, line, or transport service is not high. While the connection between the railway and other types of transport should be central to improving national transportation capacity, the railway should be the backbone of the transport axis, thereby reducing Transportation costs, shared for businesses. Approving capacity of the routes is low but basically the current routes are only exploited from 23% - 61% of the existing capacity and much lower than planned when the plan is from 79% - 100 %.

IV. Promote Seaport Connection to Attract Investment Capital

Currently, connecting major ports in the world is using large modes of transport such as railways and highways. However, the Vietnamese seaport system only has Hai Phong port connected to the railway (Cai Lan port has invested but has not been able to operate due to lack of synchronous gauge), and there is no separate highway for transportation. loading goods. Traffic connecting waterways is restricted by the static of bridges crossing the river. Therefore, the efficiency in transporting goods to the seaport has not been optimized in terms of time and transportation costs. Therefore, a problem posed is the need to link the seaport with multimodal transport for the port system to develop sustainably, logistics costs are pulled down.

Therefore, the continued planning and development of the ICD system will greatly help the port in its services, while contributing to the efficient organization of the transport network. The planning must simultaneously reserve the appropriate land fund behind the port to build a distribution center for goods and services after the port and conveniently connect with the national transportation network. It is necessary to link seaports with multimodal transport so that the port system can develop sustainably and logistics costs will be reduced. In addition, it is necessary to review and upgrade the transport routes connecting with the seaport, combining the synchronous development of logistics support services in the rear. Key port groups need to be developed in a direction with separate channels for seaport-centered freight.

A. Attracting Social Investment Capital

The mobilization of socialized capital sources for investment in the development of maritime infrastructure is an urgent task in order to attract socialized capital to share the budget burden and meet the requirements of a structural investment. Maritime infrastructure, contributing to the socio-economic development in the current period. Currently, seaports are mostly invested by enterprises. At present, there are only some ports invested by the State to lease such as Cai Lan Port, An Thoi, Cai Mep - Thi Vai. For ports assigned to state enterprises to manage and operate, it is also being equitized according to the Government's decision. One of the achievements of the Vietnamese seaport system has basically formed and created a nationwide network of seaports with various functional ports, including national general seaport, port localities, regions, gateway ports for key northern, central and southern economic regions. The seaport system has basically ensured through the import and export of goods and the exchange between domestic regions by sea, making a positive contribution to economic growth and initially meeting the needs of economic development - society of the country.

B. Attracting Investment Capital from Abroad

A bright spot in mobilizing other investment resources in seaport infrastructure over time is that many of the world's leading corporations in the field of transport and port operation in the world have been present in Vietnam. to form joint ventures to invest in the construction and operation of seaports such as Hutchison, PSA, DP World, SSA, Maersk A / S, CMA – CGM.

In addition, businesses have invested in loading and unloading technology, equipped with a number of modern loading and unloading equipment, specialized containers, the rest of most of Vietnam's ports mainly use unloading equipment. Usually, rudimentary or ship cranes are the main. Except for some newly built and put into operation, which are equipped with relatively modern loading and unloading equipment, most of the ports still use conventional loading and unloading equipment. The process of loading and unloading, preserving and forwarding goods with outdated technology, so the handling capacity of the ports is very low. The source of non-budget mobilized capital to invest in the seaport system in Vietnam has grown very strongly with the participation of major shipping lines in the world, a series of joint venture ports has changed the face of the system. Vietnam's seaport system, typically the ports in the Cai Mep - Thi Vai area ... The non-state investment capital is about US $ 7.88 billion (including FDI and capital sources). self-mobilized enterprises). In particular, there are projects where the proportion of foreign capital in joint ventures reaches 80% (VICT port). In addition, the specialized seaport system also attracts considerable off-budget capital with the establishment of a large-scale modern industrial cluster port (Nghi Son economic zone, Vung Ang - Son Duong, Dung Quat), Tra Vinh).

V. Conclusion

Although there have been many great developments, there are still shortcomings in the current port system. It is a fragmented development, the ability to connect between ports in particular and between modes of transport, in general, is still fragile, there is no solid link, especially between sea and rail. High connectivity helps greatly reduce logistics costs. Therefore, increasing connectivity between ports as well as between modes is extremely important.

In addition, calling for investment capital from abroad as well as from the Government of Vietnam is very necessary. It will make the development of seaports easier, the connection is also more seamless and the task among the modes is also

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clear, helping the ports in Vietnam do not fall behind. Major seaports in Southeast Asia as well as Asia. Helping Vietnam's seaport not to be too attached to foreign ports as before.

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