A Short Communication for Shipbuilding Industry in Vietnam

Dinh Tuyen Nguyen, and Danh Chan Nguyen

***Abstract*—According to Shipbuilding Industry Corporation (SBIC), in 2017, shipbuilding value reached more than VND 3,071 billion, equal to 69% of the plan. Other fields have increased significantly, such as: Ship repair reached VND 488.3 billion, equal to 125% of the plan; supporting industry reached VND 264.5 billion, equal to 123% of the plan. Although shipbuilding has not reached the plan, but looking back on the period from 2008 to now, this field is always in a situation of hardship and bottomless decline because of lack of jobs, these are quite satisfactory numbers. The cause of the decline is due to the world shipping and shipbuilding industry has experienced an extremely difficult period due to the heavy influence of the world economic crisis from 2008 up to now. The Vietnamese shipbuilding and shipping industry is also not out of that situation. For the shipbuilding industry to develop, specific policies, with specific support addresses, are needed, which are well-designed and visionary shipbuilding development programs.**

***Index Terms*—Shipbuilding, Industry, Material.**

I. Introduction

According to statistical reports, Vietnam now has about 120 factories to repair and repair ships with a tonnage of over 1,000 tons, with 170 lifting and lowering works. The total design capacity of factories is about 2.6 million tons / year, but the actual capacity is only 800,000-1 million tons / year. Since 2002, Vietnam's shipbuilding industry has been heavily invested. However, it is only in the process of receiving transfer from major shipbuilding centers in Asia. The overall picture of the shipbuilding industry is drawn as follows: Vinashin, which was established in 2006, is now the Shipbuilding Industry Corporation - SBIC is playing a key role. However, sadly, the breakdown of Vinashin has caused the shipbuilding industry and many other workers or shipyards to be canceled and fall into misery. In addition, Vietnam's shipbuilding industry also has shipbuilding facilities owned by Vietnam National Shipping Lines (Vinaline), Vietnam National Oil and Gas Group and a number of State corporations and corporations. other. Along with that are shipyards under the management of the Ministry of Defense, local businesses or FDI enterprises.

Geographically, Vietnam has a lot of favorable conditions for the development of the shipbuilding industry when we have a long coastline and exclusive economic zone in the East Sea more than 1 million km2 wide. Vietnam is one of the 10 countries with the highest index of coastline in the East, South and Southwest. With these characteristics, we have always been identified as the most favorable position in the region in developing shipbuilding industry. Not only natural conditions but also Vietnamese policies support the development industry [1-7]. By 2020. Vietnam has determined that the marine economy is a driving force to entice and promote other economic regions to develop. Thereby creating a fundamental and comprehensive transformation of the marine economic structure towards industrialization and modernization. An important step to implement the Marine Strategy by 2020 is to develop shipbuilding and shipbuilding industry. Not only that, currently, the demand for shipping by sea also increases, so the shipbuilding industry will have many opportunities for the market.

Fig. 1. Status of shipbuilding in Vietnam

On October 22, 2014, the Prime Minister signed Decision No. 1901/QD-TTg on the Shipbuilding Industry Development Action Plan to implement Vietnam's Industrialization Strategy within the framework of Vietnam cooperation- Japan toward 2020, vision 2030 according to the Decision No. 1043 / QD-TTg dated July 1, 2013 of the Prime Minister (Plan).

The Vietnamese shipbuilding industry has been heavily invested since 2002, and is currently in the process of receiving transfers from major shipbuilding centers in Asia. In addition to Vinashin, established in 2006 (now the Shipbuilding Industry Corporation (SBIC)), which plays a key role, Vietnam's shipbuilding industry also has shipbuilding facilities owned by Maritime Corporation. Vietnam (2) Vietnam National Oil and Gas Group and a number of other State-owned corporations and corporations, (3) shipbuilding facilities under the management of the Ministry of Defense, (4) local businesses and private, and (5) foreign-invested enterprises.

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tonnage of over 1,000 DWT, with 170 lifting and lowering facilities. The total design capacity of factories is about 2.6 million DWT / year, but the actual capacity reaches 800,000 - 1,000,000 DWT / year (31-39% of design capacity), of which 50% of demand domestic demand (300,000 - 400,000DWT / year); exporting 500,000 - 600,000 DWT / year accounts for 0.3 - 0.4% of the world shipbuilding market share. As of 2010, the whole industry has about 100,000 employees, of which Vinashin has about 43,797 employees (until July 2013 there are about 26,000 employees), but the workers with international certificates are very few compared to the requirements. The shipbuilding industry still has problems such as:

i) lack of specific vision and action plan towards developing shipbuilding industry in line with the cyclical development of the world shipbuilding industry.

ii) low efficiency of shipbuilding infrastructure utilization; scattered investment, equipment is not synchronized. Effective governance and IT applications for system administration (design-production-finance) are still low.

iii) weak research and development (R&D) capacity; R&D investment in the maritime and shipbuilding industry is almost negligible; skills and human resources have not been strengthened to keep up with the industry's development requirements.

iv) many investment plants are incomplete, patchwork investment through many stages, few factories meet international standards. Lack of organic cohesion among other economic sectors such as transport, oil and gas industry, tourism and fisheries with shipbuilding industry.

v) domestic supporting industries develop spontaneously and incompletely, rely too heavily on manufacturers of materials and equipment in China and other countries.

vi) Domestic shipping companies face many difficulties in finding capital to invest in expanding the fleet.

The objective of the Plan is to bring the shipbuilding industry into a key industry in implementing the Marine Economic Strategy; focus on producing some products in accordance with Vietnam's development conditions; establishing trust in the world market about Vietnam is a country with a high quality shipbuilding industry. Some quantitative targets by 2020: The growth rate of the industry's output value 5-10%; Spend 70-80% of production capacity to serve the needs of building ships of all types in the country, serving economic, social, defense and security development, except for a number of ships such as submarines and week ships. Battleships, battle ships, require high technology and technology; 3-10% for export; The number of exported vessels is expected to be 1.67-2.16 million tons / year.

Forming 3 associated groups of shipbuilding industries in the North, Central and South. Construction of three low-to-medium ship repair centers in the direction of concentrating in regions with geographical advantages, near major seaports and / or international maritime routes. Improving the localization rate on the basis of securing the linkage between shipbuilding industry and domestic supporting industries and encouraging the attraction of foreign investment in supporting industries for shipbuilding, First of all give priority to some ships with domestic and foreign consumption markets and have a competitive advantage. Develop institutions, legal documents system for the industry, develop product types, product scale, improve R&D capacity. Action plan to achieve objectives including:

- ✓ Restructuring the existing shipbuilding system in the whole country in the direction of using the concentrated infrastructure and human resources: Forming 3 clusters of shipbuilding industry and building a small number of enterprises core of the industry, joint ventures shipbuilding with foreign countries.
- ✓ Development of supporting industries for shipbuilding industry.
- ✓ Review the whole preferential tax rate for importing raw materials, components and propose import tax / list of materials and components to enjoy preferential treatment. Review of tax incentives: (1) corporate income tax; (2) Preferential taxes on high-tech product manufacturing, for manufacturing intermediate products for shipbuilding. Building and publicizing procedures and standards applicable to businesses. Simplify and minimize administrative procedures; modernizing administrative and customs procedures; procedures and appraisal process for incentives. Forming a fund to support shipbuilding industry development in the period 2015-2020.
- ✓ Development of domestic and export market for ships and ship repair services: Study and issue mechanisms and policies to improve the competitiveness of domestic shipbuilding enterprises with respect to the Ship that Vietnam has conditions to develop and strengthen linkages between other industries and industries with shipbuilding. Simplify sales procedures in the domestic market of export enterprises in order to develop supporting enterprises and increase localization rates for shipbuilding enterprises.
- ✓ Training of highly qualified, professional and international-level human resources for all levels: Funding for vocational training, allocation of foreign training targets to support industries, focusing on countries with shipbuilding industry developed; Developing standards for professional skills assessment in the supporting industry to serve the shipbuilding industry.
- ✓ Building R&D capacity, serving three industry-linked groups in the North, Central and South: Building an R&D center in the North to serve the three industry clusters with the participation of the State and of the business.

By 2020: focus on all kinds of hydraulic machine parts, equipment, deck accessories, specialized and mechanical electric pipes; step by step forming the industry of producing steel hulls for low to medium class ships.

II. Developing Orientation

The civil shipbuilding industry has always been determined to be an indispensable position for the economy. Recently, the whole industry has a crisis due to the sharp decline in demand for sea transport in the world as well as in the country. Shipbuilding Industry Corporation (SBIC) is gradually streamlining the apparatus, restructure products in

the direction of seeking market models with demand. With new directions, shipbuilding enterprises are still determined to stick to the profession [8-12]. Recently, the demand for sea transport has continued to decline, the freight rate has been low, there has been no sign of recovery that has directly affected shipbuilding units. If in the past, domestic shipbuilding units developed many models of cargo ships, carrying large tonnage containers up to tens of thousands of tons, now the order of building new ships is very limited. Therefore, each unit must strive to find new market segments to maintain production.

Saigon Shipbuilding Industry Company (SSIC) is currently focusing on passenger ferry lines with a special feature of aluminum, lighter but more durable. The company closed the seventh ferry, ready to hand over to the customer. SSIC Deputy Director Nguyen Manh Duc said: These ferries are self-propelled, serving the transport route from Ha Tien (Kien Giang) to Phu Quoc Island. Ferries can carry about 400 guests, in addition to transporting vehicles such as cars and motorbikes. From the successful completion of passenger ferries, it has opened up positive directions for SSIC in developing aluminum casing products. Realizing that the shipping market has not yet recovered, orders for traditional steel shipbuilding are increasingly sparse, right from 2016, SSIC has lobbied itself to find a new way to build traditional steel shipbuilding, ship to aluminum alloy shell [13-19]. On the market today there are many types of aluminum sheets with aluminum grades, origin and various sizes. In particular, shipbuilding aluminum always holds the absolute advantage in shipbuilding, civil and military industries. However, not everyone knows enough information about shipbuilding aluminum to be able to make the best choice for you. Below is the detailed information on shipbuilding aluminum, at the same time, suggesting that the company sells prestige and quality aluminum shipbuilding which is widely believed today.

A. What is shipbuilding aluminum?

Shipbuilding aluminum is a form of aluminum alloy with many properties that withstand harsh working environments. In particular, this type of aluminum alloy has a higher corrosion resistance than other types of aluminum to meet the needs of working in seawater. Using shipbuilding aluminum to ship is considered a new step to bring this industry further in the future [20-22].

B. Various types of shipbuilding aluminum

Currently, all kinds of aluminum sheet A5083, aluminum plate 6061 and aluminum sheet 5052 are commonly used in shipbuilding industry. A5083 aluminum sheet is widely used in civil marine industry. In particular, aluminum plate 6061 and aluminum plate 5052 are also used to build military ships, carriers, ... In addition, some other types of aluminum plates are also put into use in the shipbuilding industry [23].

C. Characteristics of shipbuilding aluminum

Due to working in harsh environmental conditions, the characteristics of shipbuilding aluminum also outperform other types of aluminum. Shipbuilding aluminum must ensure the following characteristics [24-27]:

- ✓ High durability when working in water and ensure light weight
- ✓ Shipbuilding aluminum is often easy to process and process quickly
- ✓ Good weldability and easy forming
- ✓ In particular, shipbuilding aluminum must be characterized by high corrosion resistance and good resistance in marine environments [28-31].

Fig. 2. Aluminum shipbuilding in Vietnam

Aluminum bauxite is a hot topic of Vietnam. For the maritime industry, aluminum alloy is a special need. Because it has good corrosion resistance, light weight. Cumulative experience for many years shows that aluminum alloys used in marine environments have a high level of safety and reliability in conditions of significantly stressed materials. So in the last 40 years aluminum alloys have been used frequently in the marine industry. Between 1970 and 1985 there were about 250 French marinas built for about half a million yachts. The structure of the berths consumes more than 10,000 tons of aluminum alloy. The docks constructed of aluminum alloy are both beautiful and durable. Excellent corrosion resistance makes maintenance unnecessary. Over the past 30 years the number and size of aluminum hulls has been steadily developed. In the 1960s, the shipyards only built single-body aluminum-alloy ships of 10 to 15 meters long. The double-hull aluminum hull for passenger transport has shown its superiority. Production from several units in a year with a length of 20m has increased to 30 units in 1988, including ships longer than 40m. Yachts with a length of over 12m are usually aluminum alloy shells. Aluminum alloy is also used to build sailing boats, fishing vessels, ships serving rigs, customs vessels, police. In Vietnam, the transfer of aluminum alloy processing technology actually started in 1994. In late 1995, the first aluminum alloy high-speed ship in Vietnam was designed by the Ship Technology Development Center. Brand ST112. The ship has the following parameters: Maximum length: 18.72m Maximum width: 4.6 m Height: 2.4m Average draft: 0.85m Water displacement (DWT): 25 tons Speed design: 25 nautical miles/hour The ship is fitted with two KTA-19M machines of CUMMINS: 2 x 550 horsepower capacity. In 1997 a type of aluminum alloy hull, welded structure was designed and manufactured in a series up to 1998, with 80 units closed, bearing the symbol ST660 Canoe with the following parameters: Maximum length: 6.6

m, The largest: 2.2 m, Side height: 1.0m, Capacity: 60 to 140 horsepower, Design speed: 22 to 35 knots/hour. In 1998 many pieces of aluminum alloy shell were designed and produced by Ship Technology Development Center. There are ships that have reached speeds of 35 knots. Through information at the Shipbuilding Technology Development Center, we see that the demand for Vietnam 's aluminum alloy ships is very high because of the two southern plains and the North with dense river routes. Why don't we focus on intellectual development of aluminum alloys that specialize in aluminum oxide production for export? We should not exploit and export aluminum oxide, but it is necessary to research and put the content of gray matter into the product, producing aluminum alloy to serve domestic demand and export.

III. Conclusion

The developed shipbuilding industry is the foundation for the implementation of the national maritime strategy to create power on the sea, which is the naval power and a merchant fleet serving the needs of nearly 100 million people with ambitious business interests. pure sea contributes about 10% of the national GDP; The economy of 28 coastal provinces and cities is estimated at 65-70% of the country's GDP. In the past years, after the failure of Vinashin and Vinalines, due to the requirements of life, the shipbuilding industry still developed in a spontaneous manner, serving the needs of sea and island travel, for the conversion of closed materials. Fishing boats ... of the internal requirements, not from the wobbly global market that had a dream period of fourth in the world. However, so far there have been no fundamental studies, clear directions for this important industry. In order to do so, it is necessary to clarify the needs of the navy and the marine economy, and it is necessary to have forecasts in the coming years such as what type of ship to demand (from ships to serve submarines to cruises to sea vessels and artillery ships to research ships Hai Duong ...) how many, what to buy from abroad, what plays in the country ..., a job can be done with a large number of research institutes today. Because, if you have not clarified the means of boats to serve many objectives from national defense, transport to resource exploitation, marine research, archeology ... then the goals are probably only qualitative without a basis to determine its feasibility.

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