DEVELOPMENT OF SHIPBUILDING INDUSTRY IN BANGLADESH: PROSPECTS AND PROBLEMS

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INTRODUCTION

Bangladesh is essentially a maritime nation. Sea, rivers and water transport play a vital role in the economic and commercial activities in Bangladesh. The dependence of Bangladesh on sea borne trade and activities is enormous. Over 90% of all exports and imports travel by sea (Banglapedia, 2012). A vast number of ships and craft of various types and sizes operate at sea for trade, commerce, fishing, research, exploration and extraction of living and non-living resources. Bangladesh also has a considerable domestic shipping fleet for the transportation of passengers, food grains, machinery and oil products, etc. At present more than 20,000 inland/coastal ships have been plying all over the country, which carry more than 90% of total oil product, 70% of cargo and 35% of passengers (Zakaria, 2011). A strong shipbuilding industry to sustain this fleet and water borne activities is, therefore, essential. Bangladesh has a rich heritage of timber shipbuilding of many hundred years. Yet Bangladesh did not have well developed fleet for seaborne commerce nor adequate inland or coastal carriers at her independence in 1971 (Bari, 2010). However only over a period of 43 years after independence, Bangladesh has developed a large fleet of about 20,000 vessels comprising inland and coastal vessels of various types. Almost all these inland and coastal ships are constructed and repaired in local private and public shipyards (Hossain, 2010). At present there are more than 200 shipbuilding and repairing yards in various locations of Bangladesh (DANIDA, 2009). Moreover about 100,000 skilled workers are directly employed in this labor intensive industry (The World Bank [WB], 2013b).

Until very recently shipyards of Bangladesh have been engaged in building and repairing of only inland and coastal vessels up to 3,500 Dead Weight Tonnage (DWT), maintaining a locally adopted shipbuilding standard and using most of the raw materials acquired from the second hand market (local ship breaking yards) (DANIDA, 2009). Although the vessels produced by the local shipyards have been serving the desired

purposes, the quality and standard of these ships remained far below the international standard of shipbuilding (WB, 2013 b). Still in 2008 Bangladesh made a moderate but promising entry in the international market of shipbuilding by exporting a ship to Denmark. Export of ships continued since then, but with slower pace due to the worldwide recession that also struck the international shipbuilding market quite severely.

As a whole shipbuilding industry of Bangladesh is evolving and flourishing predominantly from the necessity of inland and coastal shipping ie to meet the commercial requirement of transporting passengers and goods through sea/river and also, to some extent, from the necessity of exporting ships. Its emergence as a promising industry in Bangladesh led the Government of Bangladesh to declare shipbuilding a "Priority Area"(DANIDA, 2009). But like every sector it has its opportunities and challenges. For the development of the sector it is necessary to identify the challenges and opportunities existing in the sector.

Objective of the Study

The objective of this paper is to examine the present state of the shipbuilding industry of Bangladesh and find out the problems and prospect of the same in order to recommend some ways forward.

Scope

With a brief history and pen picture of the existing shipbuilding industry of Bangladesh this paper will look into the dynamics of the domestic and export market to find out opportunities for Bangladesh. A detailed analysis of the sector will be carried out to identify the opportunities, prospects and problems (challenges) present in the sector. Based on the findings with respect to opportunities, prospect and challenges some ways forward would be suggested.

Historical Background

The history of indigenous shipbuilding in Bangladesh goes back a long way. It is one of the earliest industries developed in the Bengal area. During the first half of the 19th century many countries of Asia and Europe regularly bought ships built at Chittagong (DANIDA, 2009). However during the era of industrial revolution in the west (1760 -1840) technological progress continued at an unprecedented pace with the increasing adoption of steam-powered and steel bodied boats and ships. But this part of the world failed to keep pace with the industrial revolution and got out of the international shipbuilding market (Ahmed, 2011).

Domestic shipbuilding, however, continued at its own pace feeding the requirement of domestic market which was way behind the international market with respect to size and quality of the ships being built and technology used in building the ships. At the time of the independence Bangladesh had few reasonably modern public sector shipyards (like DEW, KSY and CDDL) and a good number of private shipyards with limited and rudimentary facilities.

The public sector shipbuilding and repair facilities were meager to meet the emerging shipbuilding and repair needs of a newly independent country that soon was swamped with requirement of repairing and building increasing number of vessels – inland and coastal. As a result private sector soon emerged as the major player of shipbuilding in Bangladesh (Hossain, 2010). While most of the shipyards remained busy with serving the demands of domestic market few shipyards were eying into the international market. In May 2008 Ananda Shipyard and Slipways Limited (ASSL) became the first exporter of ship built in Bangladesh by building and delivering a container ship (named Stella Maris) to Stella Shipping AS of Denmark (Rahman et al., 2009). Subsequently another shipyard named Western Marine Shipyard Limited (WMSL) joined the queue in 2010 by delivering Ice Class multipurpose dry cargo to its German buyer, Grona Shipping. Both these shipyards subsequently delivered number of vessels to foreign countries elevating the hope for an emerging export sector.

Existing Shipbuilding Infrastructure

There are around 200 shipyards (of which 124 are registered) that have been engaged in building and repairing ships. Out of these shipyards, approximately 70% are located in and around Dhaka and Narayangonj along the side of the river bank of Buriganga, Shitalakha and Meghna. About 20% shipyards of Chittagong division are located along the side of Karnaphuli river and 6% are located along the bank of Poshur river of Khulna division and remaining 4% are located in Barishal division. Almost all inland/coastal/bay crossing ships are constructed and repaired locally in these local shipyards (Zakaria, Iqbal & Hossain, 2010).

Type of Ships Being Built In Bangladesh

A number of diversified types of vessels are built in these shipyards. They include multipurpose vessel, fast patrol boat, container vessel, cargo vessel, tanker, dredging barge, Ro-Ro ferry, passenger vessel, deep sea trawler, etc (Zakaria et al., 2010). However, so far only MPVs and ferries have been exported.

Sizes of Ships Being Built in Bangladesh and Capacity of the Shipyards

Most of the inland and coastal vessels are rather small in size. Most of the yards are mainly engaged in building and repairing of inland and coastal vessels up to 3500 DWT (Azim, 2012). Only a few of these yards especially ASSL and WMSL have attained the capability of building ships up to 10,000 DWT.

Technology Used in the Shipbuilding Industry

Most of these ships are built using makeshift arrangements for construction works, rudimentary/indigenous technologies and low grade or second hand material (Hossain, 2010). Only few shipyards adopted modern technologies that is comparable to modern shipbuilding nations.

Dynamics of The Bangladesh Shipbuilding Industry

Domestic Market Demand

At present about 10,000 inland and coastal ships are plying all over the country, which carry more than 90% of oil product, 70% of cargo and 35% of passengers in total. All these ships are manufactured and repaired locally in Bangladesh (Imran, 2011). The average growth rate of domestic demand is 25% by number of vessels. Experts predict that there will be demand for 300-400 smaller ships over the next 10 years (WB, 2013b). This large domestic market for ship building and repair is the strongest factor for the growth and sustainment of the Bangladeshi shipbuilding industry.

In addition to the above prospect new opportunities are developing as the Bangladeshi government and private investors have initiated infrastructure projects that have created an additional demand for domestic water transport. These include classed Oil tankers for BPC, classed Container vessels for the new inland container terminals, and classed cargo vessels to transport freights under protocol between Bangladesh and India.

Global Market Demand

Despite having quite a huge numbers of shipyards (about 200), Bangladesh stepped in to the export market of shipbuilding only in 2008 when Ananda Shipyard and Slipways Limited (ASSL) handed over a 2850 DWT ship to her Danish owner. ASSL subsequently exported another seven ships. In the meantime another shipyard, Western Marine Shipyard Limited (WMSL) also handed over two 5200 DWT Ice Class Multipurpose Dry Cargo Vessels (MPC) to its German buyer Grona Shpping on 26 Nov 2010. To date 19 vessels have been delivered by these two shipyards, with a total export value of US$ 126 million. However, the exported vessels included only MPVs and Ferries up to now (WB, 2013b).

The promising picture of export did not last long. Many of the orders received by these two shipyards were later cancelled. In fact a boom was taking place in the global

shipbuilding market till 2008 opening up opportunities for emerging and aspirant shipbuilding nations like Bangladesh. But the financial crisis of 2009 brought the unprecedented growth of shipbuilding market to an abrupt halt. It will most likely take several years for markets to regain a healthy balance between supply and demand. Bangladesh will have to wait till the market picks up pace again. The Table 2 shows the declining state of new orders.

Table 2

State of New Orders

Year	Total No of Ships order	Gross Ton (000 GT)
2006	3828	99,600
2007	5404	169,600
2008	3260	88,000
2009	1408	33,600
2010	2780	82,400
2011	2252	56,800
2012	1926	38,430

Source : Shipbuilding Statistics March 2013, Shipbuilders Association of Japan (SAJ)

PROSPECTS AND OPPORTUNITIES IN THE SHIPBUILDING INDUSTRY

The strong demand of the domestic market and the potential in the international market (when the market picks up) gives positive indication for a prospective shipbuilding industry in Bangladesh. Few important prospects are enumerated below:

Labour Cost : The most Competitive Advantage

One of the most important reasons for the rise of export oriented shipbuilding industry in Bangladesh is some of its competitive advantages, of which Labour cost is predominant. Labour cost plays a very important role in the total cost of shipbuilding. Cost of labour in shipbuilding is typically around 20-30% of the total ship manufacturing

costs (DANIDA, 2009). The average hourly labour charge in Bangladesh is only US$ 1.00 which is the lowest in the world (Hossain, 2011). Bangladesh can, therefore, make use of her cost competitiveness to capture some of the global market share.

Employment Opportunity through Development of Shipbuilding Industry

Shipbuilding activities play a very important role in employment generation of a country. Shipbuilding activities, through its main industry and backward linkage industry, can create huge employment opportunity in Bangladesh. If the shipbuilding industry receives appropriate support from Government and other quarters and enjoys a full export order book, it is estimated that average employment per company would exceed 3,000 (Ahmed, 2011).

Forward Linkage Industry : Ship Design will Add Substantial Value.

Of late quite a good number of design firms have come in to the business who is getting increasingly involved in designing inland ships such as small oil tankers or cargo vessels for local market. Some of these vessels are designed with class approval from recognized classification societies (like GL, NK, BV, etc). As such there is good prospect of local design firms designing ships for export market as well. Depending on how much design is done in Bangladesh, value addition in the shipbuilding could be between 30% and 40% (Ahmed, 2011).

Backward Linkage Industry : An Opportunity

In merchant shipbuilding, material (including component) represents the largest cost element (57%). But only around 40% of component services required for construction of domestic inland/coastal vessels are believed to be manufactured in Bangladesh by various SMEs (DANIDA, 2009). On the other hand, only 10% of raw material and components for the exportable ships are believed to be produced in

Bangladesh today. All other material and component are imported (DANIDA, 2009). Therefore, it will remain difficult for Bangladesh to create a beneficial position for the most important single cost element, 'material', unless it develops its linkage industry through adding to the value chain (WB, 2013b).

It is believed that domestic produced components could easily be increased to around 70% if local companies join up with foreign investors with the know-how and skills to serve the local shipbuilding industry through Joint Ventures. It is also believed that the share of inland produced components for exportable ships easily could increase to 40% if the right guidance and support from skilled foreign companies could be given (DANIDA, 2009). Therefore, there is good scope to develop the linkage industries preferably through Joint Ventures and FDI. With production of steel, steel items, paints, generators, compressors and other items, the value added in Bangladesh could be pushed beyond 50% (WB, 2013b).

Repair and Maintenance Sector

Capabilities in repair and maintenance sector of Bangladesh are sound. Repair and maintenance of the whole fleet is carried out in Bangladesh. Irrespective of the state of the domestic or export market of shipbuilding the ship repair and maintenance sector will always be active and vibrant simply because of a large fleet in operation. Maintenance and repair services for fleet in service are more stable and labour-intensive businesses than building new ships. So this repair sector will keep on supporting the shipbuilding sector to grow.

PROBLEMS AND CHALLENGES IN THE SHIPBUILDING INDUSTRY

Both in the domestic and international market the development of this highly prospective industry has been facing lot of challenges that are impeding the pace and prospect of the industry. Some of the notable problems are mentioned below.

Cost of Financing: Very High for Export of Ships

Bangladesh has a disadvantage in terms of cost of financing. Despite low cost of labor Bangladeshi shipbuilder have to bear huge additional production cost for export in various forms such as Bank interest, Bank Guarantee Commission, L/C Commission, etc. At present, the total financial cost represents 15% to 17% of the total price of the ship. For export vessels, it increases the total cost significantly and diminishes the competitive advantage that can be generated from low labor cost (WB, 2013a).

Joint Venture and FDI (Foreign Direct Investment)

Despite quite bright prospect there have been only few successful Joint Ventures in the shipbuilding industry of Bangladesh. Joint ventures between High Speed Shipbuilding and Engineering Limited (HSSEL) and Mitsui Engineering and Shipbuilding Co Ltd of Japan and a recent one between Khulna Shipyard and China Shipbuilding and Offshore International Company (CSOC) are the two in last many years. In fact, FDI in the shipbuilding industry is currently close to zero in Bangladesh (WB, 2013b)

Human Resources

In about 200 dockyards around the country an WB (2013b) study estimates that the total number of people employed could be under 100,000. This large pool of workforce is one of the main strengths of Bangladeshi shipbuilding industry (Rahman et al., 2010 ; Bari, 2010). However, although the skill level of these workers has been found to be acceptable for building domestic vessels under ‘Domestic Vessels Code’, most laborers do not have skill level to produce vessels under international standard (WB,

2013b). The productivity of the laborers is also quite low. It is estimated to be 40 DWT/Person-Year (Islam, 2012). The productivity of different shipbuilding nation around the world has been compared and shown in the following table (Islam, 2012):

Table 4

Productivity of Different Shipbuilding Nations

Country	Completion DWT (million)	Employees	Productivity DWT/Person-year
Japan	23.2	80,000	290
Korea	23.0	71,800	320
China	8.8	158,000	56
India	0.6	12,000	50
Bangladesh			40

Source : Islam, 2012

Management And Labour Welfare Issue

Nature of Management. Most of the local shipyards do not follow corporate management culture; rather they are run by individual management (ie Sole Proprietorships) (Imran, 2011) dominated by family members and friends in the important managerial appointments (who are employed not necessarily on the basis of skill and qualification). As a result required 'management skill' and 'efficient organization' does *not* develop in the industry.

Labour Welfare. Workforce in the shipyards does not enjoy fringe benefit and other labour welfare benefits like medical, pension, travel and daily allowance, accident, compensation etc. (Iqbal et al., 2010). As a result poor job satisfaction is observed in most of the shipyards and employees do not feel belongingness to the organization. This gives rise to huge absenteeism of laborers and skilled manpower (Iqbal et al., 2010).

Safety, Health and Environment (SHE) – Must be a Priority. The safety and health issue, as a 'labor welfare' issue, has been by and large neglected in most of the Bangladeshi shipyard causing low labor motivation. Most of the local shipyards have little concern for maintaining /practicing safety, health and environmental standards. Failure to comply these requirements will discourage foreign buyers (Zakaria, 2012).

Sites, Geographical Location, Infrastructures

Since the Shipyards in Bangladesh are located in the hinterland, the maximum size of vessels (which for most shipyards is 3,500 DWT and for two yards it is 10,000 DWT) that can be built in the existing shipyard is eventually limited by the restricted draught (maximum 4.0-4.5 meters) in the vicinity of the shipyards. Furthermore, clearance of bridges and overhead cables puts a natural cap on ship size that can be built or repaired. Also a general shortage of suitable land in Bangladesh makes it difficult for shipyards to expand. Infrastructures around shipyards have been rated rather problematic by many stakeholders. Reliable rail and road connection do not exist for many shipyards, making transportation of supply goods difficult. Furthermore the supply of power, gas and water is not reliable. Existing sites are sufficient to maintain levels of production for small vessels, but growth and scaling up is hardly possible (WB, 2013b; Rahman et al., 2009 ; Bari, 2010).

Standard / Quality of Ships Built in Bangladesh

Most domestic vessels are built without application of international (class) standard due to cost factor and also due to lack of proper supervisory control. The supervisory body (the government) does not have enough qualified staff. Moreover, employees at the yards do not have sufficient training to put the rules in to practice (WB, 2013b). The non-adherence or lack of proper adherence to the domestic standard by many shipyards is an impediment for these shipyards to develop their capacity to build quality ships. Also, the level of local rule and standard are far below the international standards. As a result shipyards building domestic fleet cannot develop its ability to reach the international standard, even if it adheres to domestic vessel code. A regulatory body with

building codes comparable to international standard can allow the shipyards to attain the required international standard of construction.

Technology Used in the Shipbuilding Industry: Low Level

A very low level and rudimentary technology is still prevalent in the shipbuilding industry. The technology used is way behind then that of global shipbuilding industry in terms of use of modern shipbuilding tools, machinery and techniques. Particularly industry lacks expertise and technology for building larger and complex ships (Imran, 2011). Use of modern technology in the industry will not only boost the quality and productivity of domestic shipbuilding but also prepare the shipbuilding industry to slide in the export market smoothly.

Marketing Weakness

Since long Bangladesh has not been known as a potential supply source of ships. Lack of activities to promote Bangladesh as a shipbuilding nation is very evident. (Rahman et al., 2009). To capture Export market aggressive and extensive marketing is required.

ROADMAP FOR DEVELOPMENT: WAY FORWARD

Based on the analysis of the Bangladesh ship building Industry, the dynamics of domestic and international market and also on the findings of the opportunities/prospects and challenges some way forward are suggested below.

Domestic Demand to be Fostered. The increasing demand for small vessels on domestic and coastal trade needs to be fostered. This will provide an opportunity for the local yards to deepen their experience with classed vessels and broaden their capability base, which will also help the sector become more capable for entering in to international market.

Efforts for Quality Upgrading. To deepen the experience with classed vessel the quality in shipbuilding industry need to be enhanced. To enhance and ensure 'quality' the following actions are deemed worthwhile:

(a) Update and improve the 'domestic vessel code' with stricter technical rules and standards, and

(b) Enforce the rules by qualified surveyors employed by the government.

Broaden the Domestic Supply Chain (Backward Linkage Industries). Quality shipbuilding will demand use of quality material/items. Both for domestic and export market it is necessary that the backward linkage industries are developed to produce quality items that will meet the class requirements.

Attract FDI and Foster Joint Venture. One of the key ways for the development of the backward linkage industry is the use of FDI and Joint Venture schemes. All efforts are to be taken to create favorable atmosphere to draw FDI and undertake joint ventures, both by government and private entrepreneurs (WB, 2013b).

Infrastructure. An exclusive/special zone having technical and geographical facilities including deep channel, being connected to national highways by good roads, and having uninterrupted supply of all utilities including electricity and gas, has to be established for growth and development of the shipbuilding industries.

Improve Financing Situation. Problems with respect to financing in the shipbuilding industry (as discussed earlier) need to be addressed. Cost of Bank Guarantee, L/C Charges, imort duties, etc need to be reduced significantly to improve the situation in this regard.

Human Resource Development. Nothing works without appropriate human resources in right place. HRD efforts should be enhanced through introduction of appropriate academic curriculum in the education institutes, and also through effective and on the job institutional training.

Due Attention to Welfare and Safety and Health. Human Resource Development will not give dividend unless labor welfare is given due attention. Therefore, labour issues like labor welfare, working environment, job terms, safety, health etc. need to be addressed properly.

Eye on Global Market for Smaller Vessels. Considering the existing capability (of building less than 3500 DWT vessels) and the state of the world market Bangladesh should focus on the market of Small Ocean Going vessels and gear up the industry accordingly by enhancing skill and quality of construction and also by undertaking aggressive marketing campaign.

National Policy Guideline. Finally nothing will work without a firm commitment of the government and without a clearly laid out policy directives for all the concerned stake holders. A fully empowered apex regulating body to regulate the sector and a well devised government policy to work with need to be formed at the soonest.

CONCLUSION

The shipbuilding industry of Bangladesh is a promising and emerging sector. The domestic shipbuilding sector has made remarkable progress over the last many years and is quite vibrant with increasing demand of the ships (new and replacement) for inland and coastal fleet. An impressive average 25 percent annual growth in tonnage built since 2001 has largely been fuelled by construction of smaller vessels (up to 2000 DWT) for domestic market. The modest entry of Bangladesh shipbuilding industry in to the export market opened up a potential avenue for the sector to grow further. With the global recession of 2009 and resulting crisis in the international shipbuilding the global shipbuilding market is in a poor condition at the moment. Therefore, presently there is little prospect for Bangladesh in the global market. Bangladesh shipbuilding sector will keep on growing by leveraging its domestic demand of new building and expansion of

ship repair and maintenance service over the next few years till global market picks. For the development of the sector the present challenges need to be overcome and the opportunities identified to be exploited through a road map indicating planned actions and focused implementation. A firm and clearly articulated government policy guideline and required monitoring can ensure such implementation. As a whole the most viable strategy for Bangladesh's shipbuilding industry is to rely on stable domestic demand for growth and keep on improving quality, productivity, capacity, infrastructure and financial environment and develop export competitiveness on a broader base (WB, 2013b). This will allow Bangladesh shipbuilding sector to make an effective and strong entry in the international markets in an opportune time as the market picks up in few years and thus become the another most important export sector of Bangladesh.

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