



THE SHIPBUILDING INDUSTRY IN BANGLADESH: PROBLEMS AND PROSPECTS FOR FUTURE GROWTH: BFTI RESEARCH PAPER 1/2008

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To be an internationally reputed institute for trade policy research, and a centre of excellence for education and training of the highest standard on trade and business related subjects.

Mission:

To enhance trade and business knowledge of the government and private sector officials through top quality research, policy advice, education and training.

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The views expressed in this research paper are those of the researchers and do not necessarily reflect those of the BFTI, the Ministry of Commerce or the shipping industry in Bangladesh.

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Glossary

| | |
|---------------------|---|
| Ananda | Ananda Shipyards and Slipways Limited |
| BFTI | Bangladesh Foreign Trade Institute |
| BSA | Bangladesh Shipbuilders' Association |
| DWT | Deadweight tonnage, an expression of a ship's carrying capacity, including the weight of the crew, passengers, cargo, fuel, ballast, drinking water, and stores |
| FAO | Food and Agricultural Organisation |
| GDP | Gross Domestic Product |
| High Speed | High Speed Shipbuilding and Engineering Co Ltd |
| KSY | Khulna Shipyard Ltd |
| LCs | Letters of credit |
| LDCs | Least Developed Countries |
| LDT | Light displacement ton - The weight of a ship without anything on board, used to determine the value of a ship which is to be scrapped |
| NBR | National Board of Revenue |
| SMART | Specific, Measurable, Achievable, Realistic, Timely analysis |
| Subsidies Agreement | WTO Agreement on Subsidies and Countervailing Measures |
| SWOT | Strengths, Weaknesses, Opportunities and Threats analysis |
| Western Marine | Western Marine Shipyards Limited |
| WTO | World Trade Organisation |

Executive Summary

Shipbuilding is synonymous with Bangladesh. Thousands of locally-built ships ply its inland waters. It also has a history of supplying ocean-faring vessels to European countries, including ships that partook in the Battle of Trafalgar. During the 20th century Bangladesh no longer produced ocean-faring vessels and concentrated on riverine and coastal water vessels.

In 2005, Ananda Shipyards and Slipways Ltd secured the first modern order for ocean-faring vessels and it delivered the first ship in the first half of 2008. It has received significant further orders, while a second company, Western Marine, has also received significant orders. There is growing interest in this sector, with several companies indicating that they will upgrade existing facilities to meet international standards or that they will invest in the industry. Sceptics remain and there are those that do not believe that growth in the industry will be sustainable. These views are supported by the current international economic crisis.

On the other hand, with decreasing international trade volumes there may be an opportunity to supply smaller ships that do not require the same operational costs as larger vessels. More than half the international fleet of small ships is more than 20 years old and need to be replaced. All expectations are that the international financial crisis will be relatively short-lived, whether that be two years or five years. Other countries, including India and Indonesia, are in the process of setting up shipbuilding facilities. If Bangladesh falls behind at this stage it may not be in a position to enter the market later.

This research paper will show that there are several options available to Government to support the domestic industry. While some of the options, for instance direct subsidisation on exported vessels, are not supported as it would place too high a burden on Government and as the actual positive impact on the economy as a whole could not be determined, there are options available that would place little burden on Government funds, yet would have far-reaching positive implications not only on the shipbuilding industry, but the economy as a whole. This includes assisting the upstream industry in obtaining the necessary "Class" standards to enable it to supply the shipbuilding industry. Once this has been achieved, the upstream industry could attain critical mass by also exporting raw materials and components, thus growing independently of the shipbuilding industry itself.

It is concluded that prospects for the industry are good, provided Government creates, as a matter of urgency, an enabling environment in which the industry can flourish.

1. Introduction

1.1. Introduction

Historically Bangladesh is a country with a very limited range of export products and textiles and ready-made garments have traditionally constituted the bulk of its exports. In the recent past, however, very significant export orders for small ocean-faring vessels have been placed with a number of Bangladeshi shipbuilders, with further Memorandums of Understanding signed, sparking interest in this industry. These export orders were obtained by the companies without any assistance from the Government of Bangladesh. This research paper provides a broad overview of the state of the shipbuilding industry in Bangladesh and possible government assistance that may create an enabling environment to ensure maximum growth of the industry.

It should be noted that this research was done over a short period of time and that additional research may be required as regards specific areas of interest, including the specific effect of different forms of Government assistance. In addition, a broader study may be undertaken to include the views of potential entrants to the shipbuilding industry.

1.2. Hypothesis

Shipbuilding is a way of life in Bangladesh and stretches back over several centuries. Most ships and boats built to date were destined for use on inland or in coastal waters. Since 2006 Bangladesh has shown significant growth in the shipbuilding industry, especially as regards exports or intended exports. Preliminary indications are that the industry can grow on a sustainable basis for several years.

Major shipbuilding countries such as China, Japan, Korea and Vietnam have all moved their focus towards building large ocean-faring vessels, for which less intensive labour is required. This, however, has left a void in the building of small-sized ocean-faring vessels, i.e. vessels with a capacity not exceeding 25,000 DWT. This gap is now being filled by *inter alia* Bangladesh, India and Indonesia, with at least the Indian government providing significant support to its shipbuilding industry.

Although there are some restrictions on the expansion of the industry in Bangladesh, e.g. the availability of raw materials and components such as steel and furnishings, as well as certain infrastructural shortcomings, the availability of skilled labour in the shipbuilding industry and recent gains and international recognition of product quality and technological cooperation can lead to significant growth in the industry

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over the medium to long term. It is envisaged that the shipbuilding industry can become Bangladesh's second largest export currency earning production industry after ready-made garments by the year 2015, provided the government creates an enabling environment for the industry to flourish.

1.3. Scope of the study

This study is limited to the shipbuilding industry in Bangladesh that produces or intends to produce ocean-faring vessels with a capacity not exceeding 25,000 DWT, i.e. "small" sea-faring vessels. In consultations with the industry it was found that although no fully-laden ships with a capacity exceeding approximately 10,000 DWT could sail the rivers in and around Dhaka as the rivers are not deep enough to allow passage, ships of a capacity up to around 25,000 DWT can be built and launched from Menghna Ghat just outside Dhaka. To a lesser degree the same is true in respect of shipbuilding in areas such as Khulna, Mongla and Chittagong. It is not anticipated that ships with a capacity exceeding 25,000 DWT will be built in Bangladesh in the foreseeable future.

1.4. Objectives/Importance of the study

As indicated in the hypothesis it is estimated that the shipbuilding industry could become the second biggest exporting industry in Bangladesh within a period of no more than seven years, i.e. by 2015. The purpose of this research paper is to determine the long-term potential of the industry and to identify the best ways in which the Government of Bangladesh can support the industry to attain its maximum growth potential.

In considering the long-term potential of the industry, cognisance has to be taken of several factors, including the long-term view for international demand for shipping and for small vessels in particular, the reasons why other shipbuilding nations have moved away from building small vessels, the sustainability of subsidies granted in competing shipbuilding nations and the potential of developing the necessary technology and skills to build small ocean-faring vessels in Bangladesh to international specifications.

1.5. Research methodology applied

The researchers started by carrying out a literature review, mostly through reference to information available on the internet. After acquiring the necessary background

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material and a basic understanding of the industry, separate questionnaires were drafted for the Bangladesh Shipbuilders' Association and for the three main export-oriented shipbuilders to elicit the necessary data required for incorporation of the study. These three shipbuilders represent the total industry that has entered into contracts or Memoranda of Understanding for the delivery of ocean-faring vessels.¹

In addition, the researchers conducted interviews with relevant parties. On August 13, 2008, the researchers visited the Bangladesh Shipbuilders' Association (BSA) to gain further insight into the industry, with visits to High Speed Shipbuilding (High Speed) on 28 October 2008, Western Marine Shipyards Limited (Western Marine) on 30 October 2008 and Ananda Shipyard and Slipways Limited (Ananda) on 9 November 2008. On 30 July 2008 an interview was also conducted with Mr Omar Faruq, the director at the Bangladesh Export Promotion Council responsible for shipping matters, and on 11 November 2008 an interview was held with Mr. Phillip Marsham of Maersk Line.

Questionnaire responses were received from High Speed, Western Marine and Ananda and these were analysed along with information obtained during the interviews to determine the medium and long-term potential of the industry.

1.6. Outline of study

Chapter 2 covers the shipbuilding industry. It provides a brief overview of the history of shipbuilding in Bangladesh, as well as developments in other parts of the world that have led to the orders for ocean-faring vessels. It also considers the types of vessels that have been ordered from Bangladesh and vessels Bangladeshi shipbuilders could supply in future. Last, it identifies who the current and potential producers are and the investment required to enter the market.

Chapter 3 sets out the findings regarding all aspects of the research, including on the availability of raw material and labour, infrastructure, capacity, quality, technology, and government intervention. All information is analysed on the basis of a SWOT analysis and/or the SMART analysis. This includes an evaluation of cash flow during the construction of a ship.

¹ Considering the time frame within which this research was conducted there was not an opportunity to consult with potential shipbuilders. From consultations with the three shipbuilders and the SBA it appears that at least 5 more shipbuilders could enter the export market within a period of one year or less, while an additional 8 shipbuilders could enter the industry within a period of approximately 2 years if an enabling environment was created.

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Chapter 4 sets out the BFTI's proposals on how the Government of Bangladesh could best support the industry to grow, while Chapter 5 contains the researchers' conclusion.

2. Overview of the industry

2.1. Introduction

Bangladesh has a long history of shipbuilding as regards riverine, coastal and ocean-faring vessels. Since the beginning of the 20th century, ocean-faring vessels have not played in major role in economic development. However, in view of the large international market for small ocean-faring vessels, the impact of labour cost on such vessels and the abundance of skilled labour at low prices in Bangladesh, there is significant potential for Bangladesh to re-enter this market.

2.2. History of shipbuilding in Bangladesh

Bangladesh has a rich history in the shipbuilding industry with accounts found in writings of travellers to Bengal more than ten centuries ago and some travellers referring to Chittagong as the centre of building ocean-faring vessels.² By the beginning of the 19th century Chittagong produced ships of 1,000 tons.³ Bengali-built ships were used by the British Navy in the Battle of Trafalgar in 1805,⁴ while some of the current shipbuilders have indicated that some of the Portuguese and Dutch discoverers of the 15th and 16th century returned to Europe from Asia using Bangladeshi-built ships.⁵ Between 25 and 30 Chittagong-built ships were exported annually to various countries at the beginning of the 20th century. However, the industry started waning due to the emergence of steam engines and other factors, including protection granted to colonial powers to their own shipbuilding industries.⁶

Shipbuilding did not vanish, but retreated to focus on local demand and today there are about 300 small and large dockyards, generating about 100,000 jobs. Shipbuilding in Bangladesh therefore refocused and essentially delivered vessels for use on the inland waterways and within the coastal zones of Bangladesh only, i.e. ships that did not have to be approved for use in international waters. Bangladesh, through the company Highspeed, delivered eight vessels for use by the Food and

² http://banglapedia.search.com.bd/HT/S_0348.htm (accessed 11 November 2008).

³ http://banglapedia.search.com.bd/HT/S_0348.htm (accessed 11 November 2008).

⁴ http://banglapedia.search.com.bd/HT/S_0348.htm (accessed 11 November 2008); Parvez (2008); <http://www.bangladeshpositive.info/Bangladesh.html> (accessed 11 November 2008)

⁵ Interview with Mr. Sakhawat Hossain of Western Marine.

⁶ http://banglapedia.search.com.bd/HT/S_0348.htm (accessed 11 November 2008).

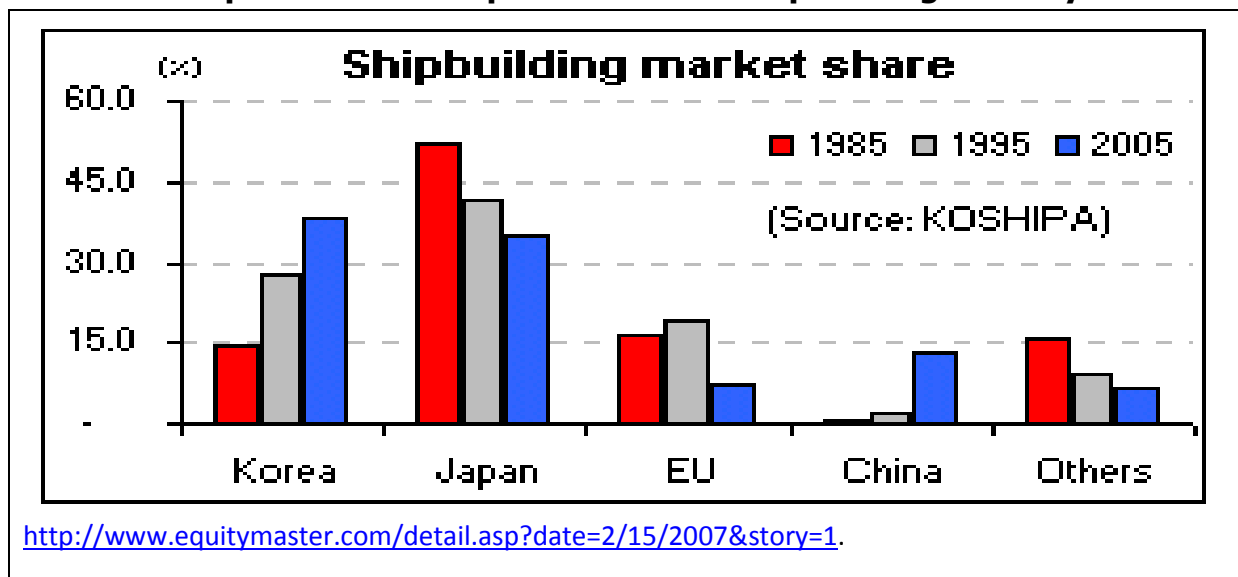
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Agricultural Organisation (FAO) to Rome, Italy, in early this decade. These 2,900 DWT vessels were used for shipping in coastal waters.

2.3. Changes in the international arena

During the first three decades following World War II most shipbuilding took place in Europe and Japan.⁷ Over the last two decades of the 20th century, shipbuilding started to move away from Europe towards lower cost countries in Asia, notably Korea, with China also entering the market in the last decade. India, Indonesia and Vietnam also entered the shipbuilding industry during the last decade. Owing to the high cost of skilled labour and the relatively larger cost of labour in the overall cost structure of smaller ships vis-à-vis larger ships, some these Asian producers have started to move away from building small ocean-faring vessels, rather concentrating on the larger and more profitable vessels.⁸ At present the shipbuilding industry is still dominated by Japanese and Korean shipyards which together accounted for 73% of the total world output in 2005. China has gained 13.5% of the world market share, with the European Union at 7%.⁹ Bangladesh currently has a market share of less than 0.1%.

Graph 2.3.1: Development of world shipbuilding industry



⁷ <http://www.equitymaster.com/detail.asp?date=2/15/2007&story=1>.

⁸ Khan (2008).

⁹ <http://www.equitymaster.com/detail.asp?date=2/15/2007&story=1>.

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Shipbuilding rules have also changed significantly over the past 15 years, i.e. since the Exxon Valdez accident and the subsequent oil spill that destroyed vast tracks of nature in Alaska. These new measures have increased the costs of shipbuilding significantly and have forced many shipbuilders out of business.¹⁰ In addition, during the early part of this decade, more ships were being scrapped than normal as a result of high scrap metal prices that developed as a result of the significant demand for steel in China.¹¹ All of this led to older ships being replaced with super-vessels in which labour costs, including engineering, represented a very low proportion of total costs.¹² At present, shipyards in China, Korea, Taiwan, Singapore and Japan are fully booked for the next ten years buildings super-ships, and the owners cannot find yards to build smaller vessels, which provided an opportunity for Bangladesh.¹³

As a result of the growth in international trade volumes, including to areas where shipments do not take place on large vessels, the market for small ocean-faring vessels grew significantly and is now estimated to be as big as \$400 billion annually,¹⁴ although some estimates place this figure at only \$200 billion.¹⁵ Several sources are optimistic that Bangladesh could achieve at least a 1% market share, i.e. exports of as much as \$4 billion annually. Considering a total GDP of \$72.42 billion,¹⁶ this could provide significant economic growth.

Value added in the shipbuilding is high when compared to the value added in other industries. While the shipbuilders estimate that value added in the ready-made garments industry may be between 20% and 25%, value added in the shipbuilding industry varies between 30% and 40% at present, depending on how much of the design is done in Bangladesh. Over the long term it is estimated that value added could increase to at least 60% if certain raw materials and components are produced in Bangladesh.¹⁷

¹⁰ Jamaluddin (2008).

¹¹ Jamaluddin (2008).

¹² Jamaluddin (2008).

¹³ Jamaluddin (2008).

¹⁴ Parvez (2008b); Kabir (2008).

¹⁵ Islam (2008).

¹⁶ CIA Factbook (2008) estimate in 2007.

¹⁷ Business Report (2008a).

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Some possible sales of ocean-faring vessels have already been lost by Bangladesh as a result of a lack of capacity.¹⁸

2.4. Types of vessels

One of the decisions that need to be taken by a shipbuilder is the type of vessel to be built. This goes further than the decision as to the size of the vessel. Germanischer Lloyd¹⁹ indicates the following types of vessels:

- Container Ships
- Multi-Purpose Ships
- Bulk Carrier
- Chemical Tankers
- Crude Oil Tankers
- High Speed Craft
- Passenger Vessels (ferries)
- Gas Carriers
- Others

Some vessels are also known as MPVs or multi-purpose vessels and Germanischer Lloyd indicates that Bangladesh should rather build MPVs than specialise.²⁰ This is partly as MPVs are not reliant on container terminal facilities and can therefore call on a wide range of ports.²¹ In addition, these vessels would all share similar designs and developmental costs might therefore play a smaller role. This could decrease the overall project cost and lead to increased efficiencies.

2.5. Current Bangladeshi ocean-faring shipbuilders

At present there are three Bangladeshi shipbuilders that have received export orders or that have entered into Memoranda of Understanding. These are, in alphabetic order:

¹⁸ Jamaluddin (2008).

¹⁹ Germanischer Lloyd (2008) slide 22.

²⁰ Germanischer Lloyd (2008) slide 43.

²¹ Germanischer Lloyd (2008) slide 43.

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- Ananda Shipyard and Slipyard Ltd (Ananda), with its head office in Naya Paltan, Dhaka;
- Highspeed Shipbuilding and Engineering Co Ltd (Highspeed), with its head office in Motijheel, Dhaka; and
- Western Marine Shipyard Ltd (Western Marine), with its head office in Chittagong

Of these three companies, in terms of executing orders, **Ananda** is by far the most advanced. Ananda has entered into a contract with Stella of Denmark to deliver a number of vessels in the 4,100 DWT range and the first of these, the Stella Maris, has already been handed over to the new owners. The second ship, the Stella Moon, was due to be launched from its shipbuilding yard in Meghna Ghat, Sonargaon, Narayanganj, on 13 November 2008 for trials, with the handover expected somewhere in the first quarter of 2009. Ananda has also already started producing the first blocks for construction of ships pursuant to a German order for vessels of 5,500 DWT each, with more confirmed orders for vessels of 6,100 DWT and of 7,250 DWT.²² In addition, during the second week of November 2008 it was busy with the trials of six vessels destined for Mozambique. These, although export orders, are not ocean-faring vessels, but ferries for use in coastal and inland waters. Reports indicate that since August 2005 Ananda has received export orders exceeding \$225 million (more than Tk155 crore),²³ all of which need to be executed by 2011.²⁴ Ananda is in the process of further expanding to take on larger projects both in terms of the number of ships it can build simultaneously and the size of ships to be built. Although newspaper reports quote Ananda as indicating that it wants to construct ships with a dead weight capacity of up to 100,000 tones, discussions with the Chairman of Ananda indicated that it would be in a position to construct ships with a capacity not exceeding 35,000 DWT once the new capacity has been installed. The depth (draught) of the rivers would not permit construction of larger vessels in Bangladesh. In 2008 Ananda received the Geneva Century Golden Award for quality.²⁵

Western Marine has also received orders from Stella and has already assembled the first of the blocks required in the construction of the first vessel. It anticipates delivering the first vessel in the third quarter of 2009, with additional orders to be executed thereafter. Western Marine is also in the process of expanding its

²² Ananda (2008).

²³ See e.g. New Age (2008); Business Reporter (2008b); FE Report (2008).

²⁴ Business Reporter (2008b); Parvez (2008b); http://www.anandagroup.biz/ananda_shipyard.php.

²⁵ Business Reporter (2008b).

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operations to be in a position to build a higher volume of ships. In total, Western Marine has received orders for 18 ocean-going ships, including 12 from Holland, five from Denmark and one from Singapore.²⁶ In 2007 Western marine received the “World Maritime Day Award 2007” in recognition of its contribution to ship building industry in the Bangladesh.²⁷

In the early part of this decade **Highspeed** exported eight grain carriers to the FAO. It has also, through its subsidiary Bay Trawlers Ltd, constructed five deep sea shrimp and fish trawlers.²⁸ Although entering into a Memorandum of Agreement for the supply of dry-cargo carriers and oil tankers ranging from 2,000 DWT to 4,000 DWT, Highspeed has not yet signed a contract for the production of such vessels. In terms of the Memorandum of Agreement the Highspeed shipyard would be extended to build the Japanese Class NK vessels, with all designs to be provided by the Japanese company. The Japanese company will also supply all capital machinery required in the production process²⁹ and will supervise the building process. Highspeed has, however, indicated that China has quoted to produce the vessels at a cost not much higher than the steel costs only for Highspeed.

2.6. Industry requirements

Several requirements play a role in a decision to enter the shipbuilding industry or to cross over from building riverine and coastal vessels to ocean-faring vessels. The following issues are some of the more important issues to be considered, but the list is not exhaustive and other issues may also play a role. Shipbuilding typically includes at least the following processes and installations:³⁰

- Accommodation and interior equipment
- Anchor equipment
- Boring
- Bow thrusters
- Communication and navigation system
- Cutting

²⁶ The Daily Star (2008).

²⁷ The Daily Star (2008).

²⁸ <http://www.highspeed-group.com/achievements.asp>.

²⁹ Note that although the Japanese company is to supply the machinery, Highspeed will still have to pay for such machinery.

³⁰ Note that this list is not exhaustive.

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- Deck and hull equipment
- Designing
- Diving equipment
- Dredging equipment
- Drilling
- Electrical system and components
- Engine control systems
- Engine starting control systems
- Engineering drawings
- Exhaust systems
- Fenders for ships and jetties
- Fire fighting systems and equipment
- Generator sets
- Hydraulic pressing
- Key slots
- Life saving equipment
- Marine deck cranes
- Milling
- Mooring and navigation buoys
- Painting
- Pipe bending and laying
- Planing
- Plate cutting (gas and plasma)
- Profile bending
- Propulsion systems
- Pumps
- Refrigeration systems
- Rudders and propellers
- Separators
- Shaft alignment
- Shot blasting, shot sweeping and shot recycling and purification
- Stocks and shats coning and threading
- Transformer and heavy electrical motor
- Valves and fittings
- Water treatment systems
- Welding
- Winches and Capstans³¹

³¹ www.ksybn.com; Ananda (2008).

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To enable a shipbuilder to perform these and other operations, there are certain requirements that limit entry into the industry. These include the following:

- **Suitable land.** At present, Ananda's operations extend over approximately 80,000 m² of which 20,000 m² are covered.³² Western Marine's operations extend over 15 acres of land, or approximately 60,000 m²,³³ while those of Highspeed are also sizable. In addition to requiring large tracts of land, the land has to be adjacent to relatively deep water into which the newly built vessels can be launched.
- **Significant funding.** During an interview with Ananda it became apparent that more than Tk200 crore (approximately US\$30 million) have been invested in the company over the past 10 years. The funds required to convert an established shipyard to one producing ocean-faring vessels is estimated to be around Tk60 crore (approximately US\$9 million). Highspeed has indicated that it would invest at least US\$5 million (Tk35 crore) between April and December 2008 to convert its operations to meet international standards, although some sources have placed this figure at around Tk100 crore (around US\$14 million).³⁴ In addition, cash flow requirements during the shipbuilding process increase funding requirements and as much as 20% of the total price of a ship could be consumed by financial costs, including bank guarantees and interest. Thus, if a ship is sold for \$7 million, at least \$1.4 million will be spent on financial charges.
- **Skilled labour.** Artisans, welders, painters and other skilled labourers are required in the construction of a ship. Ananda employs a workforce of around 700 people in the shipbuilding division only, including approximately 100 qualified managers, executives and engineers.³⁵ Western marine employs more than 500 people in its shipyard, most of whom are highly qualified.³⁶ Western Marine in 2008 also set up a Training Institute, which has already been accredited by the Government of Bangladesh. The Institute currently provides training for welders, but the Institute will soon provide training for other artisans and painters as well. Most of the trainees find work outside of Bangladesh in shipbuilding countries such as Singapore and Dubai, with a

³² http://www.anandagroup.biz/ananda_shipyard.php.

³³ The Daily Star (2008).

³⁴ Global Bangladesh (2008).

³⁵ http://www.anandagroup.biz/ananda_shipyard.php.

³⁶ The Daily Star (2008).

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positive impact on foreign exchange remitted to the country. Some of the trainees end up working for rival companies, while some also enter into employment with Western Marine itself. Highspeed also employs in excess of 1,000 workers, including engineers, specialists, skilled workers, and a team of marketing and accounting personnel.³⁷

- **Designers and naval architects, marine engineers and designing software** – a major proportion of the total cost involved in a ship is the actual design of such ship. Design takes place at different levels:
 - Basic design – for light vessels this consists of up to 150 drawings;
 - Engineering drawings – this could amount to an additional 650 drawings and expand on the basic drawings.

Basic drawings are often provided by the buyer and must be done by a qualified shipbuilding designer or naval architect. The basic design is agreed on between the buyer and the shipbuilder. The more of the drawings, whether basic or engineering, that can be done in-house, the more value that can be added.

- **Meeting international class standards and obtaining international recognition** – ocean-faring vessels are built to a certain “class” or standard, e.g. Germanischer Lloyd or GL class. If a vessel does not meet the required standard, it will not be certified and the buyer will not take delivery of the vessel. A large proportion of all ocean-faring vessels are certified by Germanischer Lloyd, which has offices in Bangladesh. Germanischer Lloyd is directly involved with the projects currently being undertaken by both Ananda and Western Marine and have also been in discussions with Highspeed. It is satisfied that these companies can meet international requirements,³⁸ but new entrants will have to prove that they have the facilities and can meet standards before they would be in a position to pursue customers. It is extremely difficult to achieve international recognition without having delivered at least one ship that meets all international requirements to a satisfied buyer, but it is equally difficult to contract with the first buyer without such recognition.
- **Access to raw materials and components** – several raw materials and components are required in the shipbuilding industry. The most expensive of

³⁷ <http://bangladesheconomy.wordpress.com/2008/11/02/high-speed-to-build-vessels-for-european-japanese-companies/>.

³⁸ Pakistan Defence (2008).

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these include engines, steel, furnishings, piping and cables. Engines have to be imported regardless of whether the shipbuilding takes place in Bangladesh, China, India, Indonesia or Vietnam as there are only a small number of engine builders. This therefore has no effect on Bangladesh's competitiveness, as the cost is the same to all players. However, where countries such as India and Vietnam can rely on domestic supply of a large proportion of raw material and component requirements, the opposite is true of Bangladesh and effectively all requirements have to be imported. In Bangladesh virtually all raw materials, ranging from engines to steel, electronics, furnishings, cabling, piping and washbasins have to be imported.

- **Import and export processing requirements** – this includes the procedures used to clear imported raw materials and components through the NBR; obtaining full "Green Channel" status for the industry; the procedures used to export the final product, i.e. the ship; duties payable and/or refundable.

2.7. Potential Bangladeshi ocean-faring shipbuilders

The following potential ocean-faring vessel shipbuilders have been identified in this study:³⁹

- **Khulna Shipyard Ltd** (KSY) is located on 68.97 acres (approximately 279,000 m²) of land at Labanchara, Khulna, on the bank of river Qazi Bacha, branch of the Rupsha. It is about 45 km north from Mongla Sea Port. The shipyard was founded in 1954 and commissioned in 1957. It was taken over by the Bangladesh navy in 1999. It has significant capacity for servicing ships and this can be transformed into ocean-faring vessel building capacity relatively quickly and with significantly less investment than founding a new shipyard.
- The **Meghna Group** recently signed a US\$35 million deal with South Korean shipbuilding giant STX to build the country's largest ship-manufacturing facility. According to its chairman a total of over \$100 million will be invested over a period of two years, although other sources have placed the investment at Tk220 crore (approximately \$32 million). The company will have the capacity to build ships with a capacity of up to 25,000 DWT and is situated on 33 acres of land (approximately 133,500m²) on the Meghna River.

³⁹ Islam (2008); Khan (2008b); Parvez (2008b); interviews with Ananda; Highspeed and Western Marine.

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The Meghna Group is also contemplating setting up a steel plant that could meet the requirements of the shipbuilding industry.

- **Dockyard & Engineering Works Limited** (DEWL) is the country's oldest shipbuilder and is currently run by the Bangladesh Navy. It has already made a decision to develop its existing infrastructure to international standards to lure export orders from overseas buyers. DEWL is situated on 22 acres (approximately 89,000 m²) of land at Sonakanda in Narayangaj district on the bank of Sitalakhya River. It currently has facilities for building Ro-Ro ferries, tugboats, inland and coastal vessels. DEWL plans to install capacity to build ships of up to 8,000 DWT.
- The Karnaphuli-based Rangs Group is in the process of setting up **Desh Shipbuilding** at a cost of Tk100 crore (approximately \$14.5 million) in Sadar Ghat in Chittagong.
- Meghna Ghat-based **Khan Brothers** has invested around Tk16 crore (approximately \$2.3 million) to develop a shipbuilding infrastructure at Gazaria in Munshiganj near the Meghna Bridge outside Dhaka.
- **Bengal Electric** has acquired approximately 50 acres (202,000 m²) of land in Munshiganj to start shipbuilding for export and has indicated that slipway construction would be started before the end of 2008.

2.8. Other stakeholders

2.8.1. Suppliers of raw material

As indicated in section 2.6 above, a large volume of different raw materials and components are required in shipbuilding. As a result of "class" standards, all raw materials and components have to be certified as meeting the class requirement⁴⁰ and only approved sub-contractors may be used.⁴¹

At present, Ananda has indicated that it imports its total requirement of raw materials and components in order to meet the necessary standards. Western Marine, however, has indicated that it acquires a portion of its steel requirements in Bangladesh, albeit at higher prices. These prices will be decreased when certain taxes, including value added tax, are refunded on exportation of the final product.

⁴⁰ Germanisher Lloyd (2008) slide 23.

⁴¹ Germanisher Lloyd (2008) slide 29.

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Interviews with the shipbuilders, however, have indicated a strong belief that many of the raw materials and components could be manufactured in Bangladesh in future and that this backward-integrated industry could soon grow bigger than the shipbuilding industry itself. Once a certain, as yet undetermined, critical mass has been reached, there would be sufficient incentive for setting up a steel plant, or to invest in existing steel plants, to produce steel in suitable grades, thicknesses, widths and lengths for use in the shipbuilding industry. Bangladesh also has a cable industry that could, with the necessary volumes on order, be convinced to produce cabling to the required international standards, while the same applies to piping. In addition, Bangladesh has a vibrant furniture industry that could re-apply itself to provide furnishings for the shipbuilding industry. All of these materials and components can also be exported to other shipbuilding nations such as China, India, Indonesia, Korea and Vietnam.

2.8.2. Customers

Prospective buyers are interested in small vessels built to international standards at competitive prices. Considering the current world economic situation, there will be even greater pressure on buyers to obtain the best possible deals and many deals may either be delayed or cancelled until the world economic outlook improves.

It is critical that each shipbuilder demonstrates the ability to build ocean-faring vessels of exceptional quality meeting all international and applicable class standards at competitive prices and with the shortest possible lead times.

2.8.3. Government of Bangladesh

At present, the Government of Bangladesh is not too involved in the shipbuilding industry. From interviews with the industry and the Export Promotion Bureau it is clear that Government wishes to accord high priority to the sector and that some action has already been taken. This includes streamlining the procedures for export of a completed vessel, as well as the partial granting of "Green Channel" status on imports made by shipbuilders.

Government can, however, play a much more active role and be involved in the industry in several ways. This includes granting additional direct and/or indirect subsidies, as will be discussed in section 4 hereunder.

2.9. Conclusion

Shipbuilding has been established as an industry in Bangladesh over a period of many centuries. It has a lot of experience in building riverine and coastal vessels and has recently received several orders for small ocean-faring vessels. Labour costs play an important, yet not overriding, role in the construction of small ocean-faring vessels, i.e. vessels with a capacity not exceeding 25,000 DWT. Countries such as Japan and Korea have moved away from constructing small vessels, while China and Vietnam are also starting to focus more on medium and large vessels. In addition, more than 55% of all small vessels internationally are older than 20 years, with new double hull regulations coming into place in Europe in 2009. All of these factors combined present Bangladesh with an ideal opportunity to enter the small vessel market.

The largest single ship order to date is for 7,250 DWT, but indications are that industry will soon be in a position to build ships with capacities up to 25,000 DWT. To date only two shipbuilders have entered into contracts with buyers for the supply of ocean-faring vessels, with Ananda having already delivered the first such vessel. A third shipbuilder has entered into a Memorandum of Agreement with a prospective buyer, but has not yet entered into any contract. Several other shipbuilders have indicated that they are in the process of, or consider, adapting current facilities to be in a position to build ocean-faring vessels, while yet more companies have indicated that they have invested, or are planning to invest, in this sector. Most of the requirements to become a successful shipbuilder can be met, although all raw material and components currently have to be imported, which creates an additional opportunity to develop the upstream industry.

3. Analyses

3.1. Introduction

In light of the available information, it was found that only three analyses could be undertaken. The first is the SWOT analysis. The SWOT analysis considers the strengths, weaknesses, opportunities and threats of and to the shipbuilding industry. The second analysis is a SMART analysis considering the possible effects of government action. This measures specific possible support that Government can grant and determine whether the effects would be measurable, achievable and realistic. It also considers the time aspects related to any support, i.e. how soon a measure can be transformed into benefit or what the effect would be if a measure was not implemented within a certain period of time. Last, a cash flow analysis is done of the shipbuilding process from the time a contract is signed and the deposit received until the last ship is handed over.

3.2. SWOT analysis of the industry

3.2.1. Introduction

A simple SWOT analysis shows the following results:

| | |
|--|---|
| <p style="text-align: center;">STRENGTHS</p> <ul style="list-style-type: none"> • Long shipbuilding history • Ample supply of skilled labour • Low cost, high productivity labour • Skilled labour's knowledge of English (as compared to China/Vietnam) • Accredited training institute available to train artisans • Riverine nature of the country • First ship delivered and regarded as of high quality • Repeat orders received by first shipbuilder • Some spare capacity currently available | <p style="text-align: center;">WEAKNESSES</p> <ul style="list-style-type: none"> • Lack of access to domestically produced raw materials • Lack of access to domestically produced components • Lack of recent history of building ocean-faring vessels • Banking system that is not internationally recognised, thus leading to additional and high financial charges • Green Channel clearance of goods not fully applied • Clearance of goods through customs takes too long, leading to delays in shipbuilding process |
| <p style="text-align: center;">OPPORTUNITIES</p> <ul style="list-style-type: none"> • Infrastructure that can be converted rapidly to build ocean-faring vessels • International financial crisis and decreased international demand for products may increase demand for lowest cost ships | <p style="text-align: center;">THREATS</p> <ul style="list-style-type: none"> • General negative perception of Bangladesh and LDCs in general • Siltation of rivers, decreasing depth of waterways and affecting size of ships that can be built |

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| | |
|--|---|
| <ul style="list-style-type: none">• Decreased demand for shipping may increase demand for smaller ships• 55% of world's small ships older than 20 years - need to be replaced• Movement out of small ship sector by shipyards in Korea, China and to a certain extent Vietnam• Setting up a steel plant• Possible future production of pipes to Class standards• Possible future production of cables to Class standards• Possible future production of furnishings to Class standards• Utilising foreign currency accounts• Moving some accounts to internationally reputed banks such as HSBC and Standard Charter to save foreign accreditation costs on bank guarantees• Government providing bank guarantees• Creation of EPZs for shipbuilders | <ul style="list-style-type: none">• Over-investment by too many companies in the industry, leading to depressed prices for Bangladeshi-built ships• High start-up costs• Cash flow• International financial crisis and decreased international demand for products• Over-eagerness and lack of experience of new entrants may result in lowering standards, which will be to detriment of whole industry and not only a single shipbuilder• Non-recognition of Bangladeshi banks by buyers• High costs involved in the banking sector• Increased finance expenses as a result of slow customs procedures |
|--|---|

Some of these issues are further evaluated hereunder.

3.2.2. Infrastructure

Bangladesh has approximately 300 different shipyards building anything from small wooden boats such as ghhugis, podis and sampans, to tankers, barges and ferries for inland use and trawlers and other boats for use in coastal waters. In recent years some shipbuilders have also invested in building the facilities required to build ocean-faring vessels or adapting existing infrastructure to meet international requirements and standards. Several more shipbuilders have indicated that they are in the process in investing in the necessary infrastructure.

Herein lies both an opportunity and a threat. The opportunity can be found in the possibility of attracting additional contracts for the production of ocean-faring vessels. It has been indicated that Bangladesh has already lost some contracts simply because it did not have the necessary capacity in place. At the same time, if too much capacity is installed too rapidly it may lead to significant competition for business between Bangladeshi shipbuilders, thereby driving prices down to unprofitable levels and placing the whole industry at risk. In addition, the necessary infrastructure requires vast investment and if no or too few orders are received as a result of either the internal competition or as a result of extraneous factors such as

the international financial crisis, large tracts of investment will lie tied up in infrastructure whereas such investments could have been employed more profitably elsewhere.

3.2.3. Capital and financial expenses

In the cash flow analysis included in section 3.5 hereunder, it will be shown that at least the following financial costs elements play a role in the shipbuilding industry:⁴²

- bank guarantees
- foreign bank guarantees
- country risk
- 25% green channel requirement
- Changing \$ to taka and back to \$
- Loans at high interest rates
- Negotiating and confirming LCs

Each of these factors to needs be briefly analysed to determine whether it poses a strength, weakness, opportunity or threat in the industry.

(a) Bank guarantees: When a contract is entered into, this typically amounts to several million US dollars. A deposit of 15% to 20% is typically payable to the shipbuilding company on signing of the contract. The buyer, however, requires a bank guarantee that its money is safe and that it will be able to retrieve its investment if anything goes wrong. This requires the buyer to obtain a bank guarantee, i.e. the bank undertakes to guarantee payment should the shipbuilder be in default. The typical cost of obtaining such guarantee is approximately 4%, but may vary depending on the relationship between the shipbuilder and its bankers, as well as the amount involved. Most Bangladeshi banks, however, are not regarded as reputable in the international markets. The buyer then requires that the bank guarantee be confirmed by a reputable bank, normally the buyer's own bank or another bank in its country. This adds another 3% to 4% to the cost, which is for the account of the buyer. In addition, a country risk of 2% to 3% is imposed on Bangladesh, which brings the total cost of a bank guarantee to approximately 9% to 11% of the total monies received by the buyer. This poses a serious threat for the shipbuilding industry, as the cash flow analysis under section 3.5 will show that the total cost of bank guarantees on deposits could amount to as much as 7.6% of the total value of the project. At the same time, herein

⁴² No provision is made for any required return on investment, nor for interest payable on any loans incurred in order to set up the necessary infrastructure.

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lies the major opportunity for the Government of Bangladesh to become involved and to create an enabling environment for the shipbuilding industry. If the Bank of Bangladesh were to provide guarantees in lieu of private banks, the industry would save not only the cost of obtaining a bank guarantee domestically, but also that of the confirming bank. It may also affect the country risk, i.e. it may save the industry as much as 7.6% of the total project value. At the same time, it should not cost the government anything to provide such guarantees, unless industry defaults.⁴³ Another way in which the industry itself could decrease costs would be to make direct use of internationally reputable banks, e.g. to use HSBC or Standard Chartered to obtain the bank guarantees. This could save the foreign bank confirmation costs.

- (b) Green Channel bank guarantees: From interviews with industry it has been determined that government has granted partial Green Channel facilities to the shipbuilding industry.⁴⁴ However, whereas Green Channel treatment for the ready-made garment industry enables that industry to import raw materials without any costs imposed on it (other than the actual cost of the materials), Green Channel treatment for the shipbuilding industry still requires the industry to provide a bank guarantee for 25% of the total value of the imported raw materials and components. Considering a bank guarantee cost of 4% on 25% of total cost, this equates to a cost of 1% of all raw material and component imports. In the cash flow analysis under section 3.5 this was shown to constitute 0.88% of the total project value. This is a direct cost imposed by Government without Government itself receiving any benefit. It is therefore economically an inefficient tax. If government were to provide full Green Channel treatment, without requiring a bank guarantee, this could save the industry a significant amount without placing any additional burden on the industry. If this were combined with the bank guarantees under paragraph (a) above, this could save the industry more than 8.4% of the total project value.
- (c) Currency exchange costs: One of the shipbuilders has indicated that it has to exchange foreign currency into domestic currency at a cost of 1.88% to the company. When it wishes to import raw materials or components it then has to convert currency again at a cost of 2.10%. The net effect is 3.25% on the total project value. Although this may indicate a weakness in the financial system that spills over to the shipbuilding industry and although it may pose a

⁴³ Should industry default government would still have security in the form of the shipbuilding yard.

⁴⁴ New Age (2008).

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threat to the growth of the industry, these costs can be averted at least in part. In terms of banking regulations companies may retain up to 50% of foreign exchange received in foreign currency accounts. If the shipbuilders were to make use of this facility, it means that only 50% of the monies received would have to be converted to taka and that only 15% of the monies would have to be reconverted to foreign currency, bearing in mind that raw material and component imports at present represents approximately 65% of the total value of the contract. If this were done the direct effect would be to decrease total costs from 3.25% of the project value to approximately 1.74%, a saving of 1.51% of the total project value. Government could, however, decrease these costs further without relaxing foreign exchange controls. By limiting conversion costs to e.g. 1% each way would further decrease costs to only 0.88%.⁴⁵ Another opportunity lies in the possible future production of raw materials and components in Bangladesh. If some of the materials, e.g. steel, were produced in Bangladesh, this would decrease the industry's foreign exchange requirements, thereby further decreasing its foreign exchange costs.⁴⁶ Assuming current conversion costs this could lead to a saving of up to 0.80% of contract cost if total imports were decreased to 50% of the project value.

- (d) Interest rates: Interest rates in Bangladesh are relatively high and not competitive. There are only three possible ways of decreasing interest costs:
- a. Increase capital and thereby decrease the loan requirements;
 - b. Decrease interest rates, which may have other effects, e.g. increase inflationary pressures; or
 - c. Borrow money in foreign currency. Considering that the taka is linked to the US dollar and that US dollar denominated loans can be acquired at significantly lower interest rates, this could save the industry a considerable amount of interest.⁴⁷

⁴⁵ This assumes that the company has retained the full 50% of foreign exchange in foreign currency and used this for external payments.

⁴⁶ In such a case the conversion cost would still have to be paid for converting foreign currency into domestic currency, but lower (or no) conversion costs would be required for reconvert to foreign currency.

⁴⁷ Note, however, that currency conversion costs will be payable both ways, i.e. to convert to taka and again to convert to US dollars, and that Bangladesh companies may attract a higher interest rate. These costs should be carefully determined before a company enters into such loan arrangements.

- (e) Letters of credit: the industry needs to raise a letter of credit before it will be in a position to import raw materials. These LCs need to be confirmed by a foreign bank, which may lead to significantly increased costs. These costs can only be averted if the industry can make use of a government-sponsored export credit guarantee system that would negate the requirement of confirmation by a foreign bank.

3.2.4. Raw material availability (upstream industry) (domestic and import)

At present virtually none of the raw materials and components required by the shipbuilding industry is available domestically. One shipbuilder has indicated that it can source part of its steel requirements domestically, but no other raw materials are available. It is an absolute requirement that all raw materials and components used must meet the required standard.⁴⁸ Several of the raw materials required by the shipbuilding industry are currently produced in Bangladesh, including steel, pipes, cables, sanitary ware (toilets, taps, etc.), furnishings and paint. None of these materials are currently classed. A significant opportunity for the shipbuilding industry lies in the possibility of future classing of the raw materials. This will allow the industry to source raw materials and components domestically, thereby saving currency conversion costs. In addition, once a certain critical mass⁴⁹ has been achieved the component producers will also be able to export their products.⁵⁰ A study in India has also shown the shipbuilding industry in that country to be a major driver of the heavy engineering industry.⁵¹

3.2.5. Availability of skilled labour

Labour is required at four different skill levels. At the bottom end unskilled labour is required. There is no shortage of cheap unskilled labour in Bangladesh. Most of the labour required is at the semi-skilled level, i.e. welders, pipe-makers, ship-fitters,

⁴⁸ Germanischer Lloyd (2008) slide 23.

⁴⁹ It will require separate studies to determine the critical mass required in each of the sub-industries, e.g. the volume of steel required by the shipbuilding industry to make it worthwhile for a Bangladeshi steel producer to start producing classed steel or for a pipe manufacturer to have its product classed.

⁵⁰ At least one shipbuilder has indicated that it believes that the raw material and components industry could surpass the shipbuilding industry's exports in future years.

⁵¹ KPMG (2008).

painters, etc. There is also an abundance of semi-skilled labour in Bangladesh. In addition, Western Marine has recently set up a Government accredited training centre, while Ananda also trains its own staff. At the third level there is need for junior engineers and foremen. As a result of many Bangladeshis working in the shipbuilding industry in places such as Dubai and Singapore, and as a result of Bangladesh's own shipbuilding history, there is no shortage of these skills.⁵² At the top end there is also a need for highly skilled naval engineers, naval architects and the like. Although some Bangladeshis have been trained to this level, including in countries such as Sweden, there is an urgent need for training additional naval engineers and architects if more companies are to set up ocean-faring vessel production facilities. Without additional qualified highly skilled staff, the salaries for those already qualified will be increased significantly as companies vie for their scarce qualifications. Alternatively, if these skills are not available they will have to be imported, either in the form of foreign experts hired or in the form of outsourcing engineering drawing designs. In both instances this could add significantly to the overall cost of constructing a ship.

Germanischer Lloyds has indicated that the cost of semi-skilled labour (welders, ship-fitters, painters) in Bangladesh costs approximately 1/3 that of China and 2/3 that of Vietnam, thereby giving Bangladesh a comparative advantage which increases logarithmically with decreased size of vessels.⁵³

3.2.6. Quality and technological database

Quality and technology play a major role in international shipbuilding. First, all ocean-faring vessels have to be produced to class, i.e. one of the international standards. Second, specialised technology is required to build to class.

No buyer will enter into a contract without proof that the shipbuilder can build to class. At the same time, no shipbuilder can achieve class if it has not actually built a ship to class. This therefore creates a difficult situation in which Bangladeshi shipbuilders cannot prove that they can meet international standards without selling a ship, but cannot sell a ship without meeting the standards. In this regard, the fact that Ananda has achieved the required standard and built to class in delivering the Stella Maris ship may create further opportunities for Bangladeshi shipbuilders to show that they can meet the standards.

⁵² Parvez (2008b).

⁵³ Germanischer Lloyds (2008) slide 20.

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While shipbuilding technology is expensive, a large proportion of the technology already exists in Bangladesh as a result of building inland water and coastal ships. Technology may also be acquired through entering into technology agreements with the buyers. In addition, substantial technology transfer takes place when the first ship is built and this technology can then be applied in building future ships. It does, however, present a significant hurdle to new entrants into the market.

3.2.7. Effect of current international financial crisis

The recent financial crisis in the West (from September 2008) has had a direct impact on the volume of international goods shipped and, therefore, indirectly on the volume of orders for new vessels, including small ocean-faring vessels.⁵⁴ On the other hand, Germanischer Lloyds indicates that a large proportion of the international small ocean-faring vessel fleet is already more than 20 years old, which means that many of these vessels would have to be replaced in the near future.⁵⁵

A BBC program broadcasted on 12 November 2008 showed that the over-capacity of available shipping has resulted in the price of shipping falling for bulk carrier rentals from \$234,000/day to \$4,200/day for a 178,000 ton ship.⁵⁶ This related specifically to the transportation of raw materials such as iron ore. Maersk Line has indicated that containerised shipments on certain routes have already decreased by as much as 35%. This will result in significant over-capacity and may defer orders for new ships. On the other hand, lower trade volume may necessitate precipitation toward smaller vessels. In such cases, the price of vessels will play a crucial role. Accordingly, while the international financial crisis may be a severe threat to the Bangladeshi shipbuilding industry, it might also be a golden opportunity provided the industry is ready to perform, can meet price and standards requirements and can decrease the lead time for production.

⁵⁴ Interview with Mr. Phillip Marsham of Maersk Line in Dhaka on 11 November 2008.

⁵⁵ Germanischer Lloyds (2008) slide 42 indicates that 55% of the small ocean-faring container vessel fleet is more than 20 years old, as compared to only 37% of the medium and 42% of the large container vessels.

⁵⁶ BBC program screened on 12 November 2008 (17h35 Bangladesh time).

3.3. SMART analysis on possible government intervention

3.3.1. Introduction

Analysis of the shipbuilding industry in India shows that the industry in that country had grown from Rs10.17bn (\$257m) in 2002 to Rs36.57bn (\$924m) in 2007 as a result of government support over those five years, with sales expected to increase to Rs52.83bn (\$1,553 million) in 2008.⁵⁷ The same study shows that the net effect of the subsidy, which equates to approximately 30% of the value of ships exported, is positive not only to the Indian economy, but also to the government itself. This confirms that Government can play a crucial role in setting up an enabling environment for the Bangladeshi shipbuilding industry.

A SMART analysis considers whether any measure or action is specific, measurable, achievable, realistic and whether it can be implemented in a timely fashion. This SMART analysis takes cognisance of different types of possible government intervention to determine whether such support would be feasible and would have a net benefit to the shipbuilding industry and the Bangladeshi economy in general. In determining the value of a subsidy cognisance has to be taken of the GDP of Bangladesh, its current budget and budget items, the effect any measure would have on job creation, technology transfer and the development of the shipbuilding and the upstream industry.

The Finance Advisor in presenting the 2007-2008 budget specifically indicated that the following were among the constraints to international trade:⁵⁸

- underdeveloped financial sector
- liquidity problems of the lending banks
- inordinately long turnaround time of ships in Chittagong and Mongla ports coupled with and administrative weakness lack of capacity in handling large volumes of merchandise⁵⁹

It was further indicated that the manufacturing industry contributed 30% to the total GDP.⁶⁰ The existing shipbuilders are confident that shipbuilding alone⁶¹ could

⁵⁷ Administrator (2008). It is not clear how much reliance can be placed on these figures, as another article indicates that the industry grew from Rs15 billion to Rs137 billion between 2002 and 2007 – see *Indian shipbuilding: An overview* (2007). The 2 articles, however, both indicate the significant growth in the industry as a result of government support.

⁵⁸ Rahim (2007) par 16.

⁵⁹ Note that this was despite significant improvements at the Chittagong port, as listed in par 26 of financial advisor's speech.

⁶⁰ Rahim (2007) par 107.

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contribute in excess of \$4 billion to the GDP by 2015, i.e. approximately 6% of the GDP at its present size.

3.3.2. Bank guarantees

As has been indicated in section 3.2 above, and as is shown in the cash flow analysis under section 3.4 below, bank guarantees constitute a very significant proportion of the total project cost. Bank guarantees on foreign monies received amount to approximately 7.6% of the total contract value. If Government were prepared to provide bank guarantees through the Bank of Bangladesh, this cost could be reduced significantly, if not negated completely. At the same time, providing such guarantee will not cost the Government anything and will only lead to a negative impact of approximately 3.0% of the contract value to Bangladeshi banks. The net positive impact on the economy could therefore amount to approximately 4.6% of the contract value. There should be no risk to the Government other than the risk that an exporter is not in a position to complete a project *and* is not in a position to refund the buyer. In such instances the Government would have to claim any amount guaranteed back from the shipbuilder. For these purposes the Government may require security, e.g. in the form of a notary over property, before providing a guarantee. In addition, to further minimise exposure to risk, the Government may decide to provide such assistance only in cases where a shipbuilder has already exported at least one vessel, thereby proving itself capable of performing internationally.

The impact of this specific assistance is directly measurable as the amount saved by the shipbuilder in the form of bank guarantees can be directly measured. The assistance is clearly achievable, as it only requires a specific decision by Government. The assistance is also realistic, as it will benefit the economy without placing an unreasonable burden on the Government. Last, the assistance can be given in a timely fashion in two ways: first, Government can take an immediate decision in this regard, and, second, such guarantee can be provided prior to entry into a contract, indicating that this may affect the possible outcome of negotiations between the shipbuilder and the foreign buyer. Such subsidy, although classified as an export subsidy under Article 3(a) of the WTO Agreement on Subsidies and Countervailing Measures, is not a prohibited subsidy for an LDC and Bangladesh may therefore make use of such subsidy.

⁶¹ This excludes any additional manufacturing of raw materials and components in Bangladesh.

3.3.3. Full Green Channel status for the industry

Government has already granted the industry partial Green Channel status. In terms of the current provisions⁶² no customs duties are payable on imports of raw materials and components for use in the export-oriented shipbuilding industry. On the other hand, the NBR requires that a bank guarantee be provided on 25% of the amount of the materials imported to ensure that the materials are used in the construction of vessels destined for the export market.⁶³ This is to ensure payment of the duties in case the final product is not exported. However, the cost build-up under paragraph 3.4 shows that the effect of requiring such bank guarantee is to add approximately 0.9% of the project value to the cost for the shipbuilder. Considering the loss at which shipbuilders currently operate, this could make a difference in the decision whether or not to enter into further agreements. Granting full Green Channel status to export oriented shipbuilders will not place any additional burden on the Government, but will save the industry 0.9% of the contract value. While it may be argued that the net benefit to the Bangladeshi economy is zero as the banks providing this guarantee will lose the same amount as that gained by the shipbuilding industry, this does not consider the effect of contracts that may be lost simply because of this cost. A typical contract involving only four ships could be in the order of \$28 million, none of which would materialise if costs were too high.

As part of the Green Channel a system should be set up under which the shipbuilder can pre-clear materials. Thus, a shipbuilder should be in a position to clear a consignment as soon as the necessary documentation has been received. This should negate delays in clearing the materials, which delays translate into a negative impact on the cash flow and overall profitability of any project, considering the finance cost implications. Shipbuilders have indicated that it often takes several months to clear certain materials through the NBR and this has an extreme negative effect on their operations.⁶⁴ Customs clearance should not take more than two working days at most. In addition to the shipbuilders, full provision of Green Channel status is supported by Germanischer Lloyd.⁶⁵

As with bank guarantees discussed under paragraph 3.3.3 above, Government could set up a system whereby full Green Channel status is only provided once a shipbuilder has exported its first vessel. This will minimise the risk of fraudulently abusing the systems to obtain raw materials free of customs duties.

⁶² The terms of the current provisions were obtained through interviews with the shipbuilders.

⁶³ Ahmed (2008).

⁶⁴ Ahmed (2008).

⁶⁵ Ahmed (2008).

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The impact of this specific assistance is directly measurable as the amount saved by the shipbuilder in the form of bank guarantees can be directly measured. The assistance is clearly achievable, as it only requires a specific decision by Government. The assistance is also realistic, as it will benefit the economy without placing an unreasonable burden on the Government. Last, the assistance can be given in a timely fashion as Government can implement such Green Channel status with immediate effect. Such assistance would not qualify as a subsidy under the WTO Agreement on Subsidies and Countervailing Measures as it does not relate to the payment of funds by, or forfeiture of funds to, the Government, but is based on the exemption of import duties on materials used for export purposes. This is specifically provided for under the said Agreement.

3.3.4. Creation of EPZs

Further support may be given to the industry by declaring shipbuilding yards export processing zones (EPZs). This would imply that all sales made to such shipyards will be deemed to be export sales. Accordingly, no VAT will be payable on purchases, along with other benefits. This would have a twofold effect: first, it would improve cash flow in the industry, thereby leading to lower reliance on bank loans during the execution of an order. This, in turn, would decrease interest rates and decrease the overall cost of the contract. Second, this would make it more attractive to buy domestically sourced raw materials, thereby providing impetus to the establishment of a domestic industry supplying the raw materials. At present, if the domestic material is selling at Tk115, including Tk15 VAT, the net price is Tk100. However, as a result of the effect of the VAT on cash flow, it may be beneficial to the shipbuilder to import the material at between Tk100 and Tk105.

The effect on Government will simply be that the VAT is forfeited earlier than is the case at present, *if* domestically sourced materials were purchased. In essence, very few materials are currently domestically. In future, as more domestic producers of raw materials and components are established it will lead to higher income-generation for government as the upstream industry will start adding value, earn foreign exchange and create employment. It will also lessen Government expenditure on social welfare as more people are employed. It follows necessarily that only shipbuilding yards that are 100% dedicated to export sales could be declared EPZs and that such shipbuilders would not be in a position to produce ships for domestic use. Alternatively, should such a shipyard wish to sell a ship for domestic use the final product will have to be officially “imported” and attract VAT and other import charges on importation.

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An additional advantage of EPZs may be the building of container depots and piers at the shipbuilders. This would mean that imported materials destined for Meghna Ghat could be placed on barges and shipped upriver, rather than having to rely on road and rail transport. From discussions with Maersk Line it was determined that it costs between \$200 and \$250 to move each container from Chittagong to Dhaka. In addition, the trucks also have an effect on the cost of the upkeep of the road infrastructure. The net benefit to the economy could be significant and it could even provide shipbuilders with the opportunity to build the required barges. Considering that the anticipated increased import volumes of shipbuilding material will not impact on the import of other goods, this will not have a negative effect on revenues or employment in the delivery industry.

The impact of this specific assistance may not be as directly measurable as the previous two assistance schemes discussed above as it may be difficult to determine the effect on the shipbuilding industry at present. A separate study may be required to determine the impact such a scheme would have on

- Shipbuilders buying patterns;
- VAT collection by Government;
- Growth of the upstream industry; and
- The competitiveness of the shipbuilding industry.

The assistance, however, is clearly achievable, as it only requires a specific decision by Government. The assistance is also realistic, as it will benefit the economy without placing an unreasonable burden on the Government. Last, the assistance can be given in a timely fashion as Government can implement such Green Channel status with immediate effect. Such assistance would not qualify as a subsidy under the WTO Agreement on Subsidies and Countervailing Measures as it does not relate to the payment of funds by, or forfeiture of funds to, the Government, but is based on the exemption of import duties on materials used for export purposes. This is specifically provided for under the said Agreement.

3.3.5. Currency charges

As is evident from the cash flow analysis included in paragraph 3.4 below currency changes are required in both directions, i.e. upon receipt of foreign exchange and again when imports are made against foreign currency. Certain costs are incurred in changing the money. Through interviews with the industry it was determined that the cost to exchange US dollars to taka amounted to 1.88% of the contract amount, while the cost to change taka to US dollars was 2.10%. Considering that only 65%

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of the contract value is spent on importing materials the total effect of these exchange costs was calculated to be approximately 3.26%.

Research shows that both the industry itself and Government can play a role in decreasing these costs. First, a provision exists under which any company may retain a certain proportion of foreign exchange in a foreign exchange (dollar-denominated)⁶⁶ account. In essence up to 50% of the total contract value may be retained in foreign currency. If a shipbuilder was to make use of this facility it would immediately decrease its overall exchange costs to 1.74%, a saving of approximately 1.5% on the contract value.⁶⁷ This is without any change in Government policy.

However, Government may do two things: First, it could increase the percentage of foreign currency that may be retained in a foreign currency account. Considering the amounts received as a deposit for a shipbuilding contract and the amounts required for materials purchases, Government may consider increasing the 50% ceiling to at least 75%. Alternatively, Government may provide that 100% of the foreign exchange may be retained in a foreign exchange account for a specified period of time after receipt, e.g. 30 months, but this may be more difficult to manage as it may not be possible to determine how old which money is. Second, Government may directly affect the cost of exchanging foreign exchange. If the rates of 1.88% and 2.10% were decreased to 1.00%, this, taken in conjunction with the shipbuilder operating a foreign exchange account, would further decrease exchange costs from 1.74% to 0.88% of the contract value, a saving of 0.86% or approximately \$240,000. This would be the direct gain to the economy, in addition to making the industry more competitive, thereby giving it the opportunity to enter into contracts that might otherwise not be feasible.

The impact of this specific assistance is directly measurable as the amount saved by the shipbuilder in the form of exchange commission paid. The assistance, i.e. increasing the percentage of foreign exchange that may be retained and decreasing the rates payable on exchange, is clearly achievable, as it only requires specific decisions by Government. The assistance is also realistic, as it will benefit the economy without placing an unreasonable burden on the Government. Last, the assistance can be given in a timely fashion as Government can implement such changes with immediate effect. Such assistance would not qualify as a subsidy under the WTO Agreement on Subsidies and Countervailing Measures as it does not relate

⁶⁶ Note that euro-accounts may also be opened.

⁶⁷ Note that this does not take into consideration the extra costs incurred in operating such an account. These costs may limit the benefit to the shipbuilders. However, considering a contract value of \$28 million, the potential saving is approximately \$404,000. It is estimated that the additional bank charges would not exceed, at worst, 5% of that amount, thereby limiting the saving to 1.4% of contract value.

to the payment of funds by, or forfeiture of funds to, the Government, but is based purely on a revision of the exchange control regulations.

3.3.6. Infrastructural development

In 2008 the commerce advisor indicated that the government “believes in the public-private synchronisation to expand the industrial sector by upgrading infrastructure facilities.”⁶⁸ It is not clear exactly what infrastructure Government would want to build in the shipbuilding industry. Possible ways in which Government could assist would be to dredge the rivers to increase the draught. This would enable the industry to build bigger ships. Whether this is feasible would, however, require an additional study. Government could also assist in building railway sidings to enable shipbuilders to receive materials direct via rail. This could decrease the waiting time for materials, thereby speeding up the shipbuilding process with a positive impact on cash flow. A separate study would need to be conducted to determine the cost to Government on the one hand and the benefit to the economy on the other. In such study it would also have to be determined which proportion of materials is likely to be received by rail if such a facility was available.

It would not be prudent for Government to build the in-shipyard infrastructure such as slipways and derricks. If assistance is to be given in this regard, it should rather take the form of a direct subsidy, with the shipbuilder then responsible for building the most cost-efficient infrastructure.

Another possible infrastructural development that is being touted is the development of deep-draft ports.⁶⁹ However, although this may enable larger ships to ply Bangladesh’s waters, it will not be of direct assistance to the shipbuilding industry.

3.3.7. Tax holidays

The shipbuilders have indicated that the Government has agreed in principle to “declare shipbuilding a thrust sector, meaning it will enjoy tax holiday for ten years and enjoy other benefits like any other export-oriented garment factories.”⁷⁰ There is no reason why the shipbuilding industry should not benefit from such an incentive

⁶⁸ New Age (2008).

⁶⁹ <http://bangladesheconomy.wordpress.com/category/shipbuildingmaritime-sector/page/2/>.

⁷⁰ Ahmed (2008).

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scheme. Although this would clearly constitute an export subsidy and therefore deemed to be a prohibited subsidy under Article 3(a) of the WTO Agreement on Subsidies and Countervailing Measures, LDCs are exempted from the application of Article 3.1(a) and may therefore grant such subsidies.⁷¹

The effect of such assistance would be to enable the industry to capitalise and to foster growth. Although it may be argued that Government will lose a significant amount of revenue, several issues need to be considered. First, on its ship, Ananda made a significant loss. It would therefore not have had to pay corporate tax in any event. Second, many contracts would not be entered into without this provision, in which case there would also have been no tax payable. If more shipbuilders enter the industry as a result of this benefit, it will lead to additional investment, including through foreign direct investment, and create job opportunities and technology transfer, all of which will be to the benefit of the economy as a whole.

The impact of this specific assistance will be both directly and indirectly measurable as the amount in tax saved by the shipbuilder and by the extent to which it encourages additional investment in the industry, whether in the form of new entrants to the market or in the form of capitalisation. The assistance is clearly achievable, as it only requires a specific decision by Government to grant the industry the same treatment as the ready-made garment sector. The assistance is also realistic, as it will benefit the economy without placing an unreasonable burden on the Government and as such assistance has already been provided to other industries, including the ready-made garment sector. Last, the assistance can be given in a timely fashion as Government can implement such tax holidays in its next budget. As indicated above, such assistance will also be in line with Bangladesh's obligations under the relevant WTO Agreement.

3.3.8. Direct subsidies on delivery

It appears⁷² that the Indian Government pays a direct subsidy of 30% on ships,⁷³ i.e. when a ship is sold for \$7 million, the Indian Government will make a payment

⁷¹ See Art 27.2 of the WTO Agreement on Subsidies and Countervailing Measures.

⁷² No access could be obtained to the official documentation of the two countries. These assumptions are therefore based on interviews with the Bangladeshi shipbuilding industry and on information available from the internet, including publications in India and Vietnam.

⁷³ Manoj (2008) indicates that a subsidy of 20% was approved by the Indian Government with effect from 15 August 2007.

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of \$2.1 million to the industry.⁷⁴ Likewise, indications are that the Vietnamese Government pays a subsidy of 40% on exportation of ships.

A total of Tk1,100 crore (approximately \$160 million) was set aside in the 2007-2008 budget for export subsidies.⁷⁵ Considering a total budget of only Tk79,614 crore,⁷⁶ this represents a significant cost of 1.4% of the total budget. This does not make provision for any export subsidies on vessels. Newspaper reports have placed the total orders received by Bangladesh at over \$500 million, which at 30% subsidy would equate to \$150 million. This alone would equate the total value of all other export subsidies granted. In addition, the shipbuilding industry is optimistic of growing to approximately \$4 billion by 2015, in which case a 30% subsidy would amount to eight times the total current export subsidies. It is clear that it would not be feasible for Government to pay these types of subsidies and different ways will have to be found to support the industry, including through the measures indicated in paragraphs 3.3.2 to 3.3.7 above.

Although such a subsidy, if granted, would be specific and would be measurable, it is not achievable or realistic as the exchequer does not possess the necessary funds to provide this subsidy at present.

3.3.9. Technology

Technology plays a major role in the shipbuilding industry. Technology is required *inter alia* to draw the necessary basic design drawings, the engineering drawings and to build the vessels.⁷⁷ In 2008, an agreement was signed between a Bangladeshi firm and two Danish firms to provide necessary training to Bangladeshi workforce in shipbuilding sector, including training to engineers and naval architects that cover architectural, piping, electrical and other designs in shipbuilding. Without specific agreements in this regard, the industry is required to purchase basic design drawings at an estimated cost of \$200,000. Considering the importance of this technology in shipbuilding, Government may consider subsidising the acquisition of technology, e.g. by undertaking to pay a certain percentage of the cost of acquiring such technology. Such assistance will enable the industry to obtain and apply the required technology. Once acquired, such technology can be adapted for use on new

⁷⁴ KPMG (2007).

⁷⁵ Rahim (2007) par 16.

⁷⁶ Rahim (2007) par 47.

⁷⁷ Denmark to provide training (2008).

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ship designs and elsewhere in the engineering sector. The benefits should therefore extend wider than the shipbuilding industry alone.

The impact of this specific assistance will be both directly and indirectly measurable as it can be translated into the direct saving by the industry and the wider effects. First, it may enable the industry to acquire technology that would not have been available otherwise and to enter into shipbuilding contracts that may have been too expensive to commit to. Second, it can assist in the development of technology in related industries, including in the heavy engineering industry in general. The assistance is clearly achievable, as the amounts are significantly smaller than the case would be with a direct subsidy on ships exported and would only be applicable to a single design for a ship, i.e. if a contract is entered into for the production of four ships, the amount is payable only in respect of one design and not on production of four vessels. The assistance is also realistic, as it will benefit the economy without placing an unreasonable burden on the Government and as such technology gains can be spread to the rest of the heavy engineering industry. Last, the assistance can be given in a timely fashion as Government can include such assistance in its next budget. Such assistance will also be in line with Bangladesh's obligations under the WTO Subsidies Agreement.

3.3.10. Development of upstream industry

At present shipbuilders have to import virtually all materials requirements.⁷⁸ Materials constitute approximately 65% of the total contract value. Thus, on a contract worth \$28 million, materials imports constitute approximately \$18.2 million. Although some raw materials and components cannot currently be produced in Bangladesh, including the engines and electronic equipment, a large proportion of raw materials are already produced in some form or other. This includes steel, pipes, cables and furnishings. However, before these materials can be used by the shipbuilding industry they have to be classed, i.e. it must be determined that the materials meet the required standards. Some new capacity will have to be invested in for instance the steel industry, where current plate width does not meet the requirements of the industry.

Government support could be provided to the raw materials and component industry to obtain the necessary class accreditation. Without Government assistance in this regard, the materials industry may not be prepared to incur the costs associated with classing as current volumes sold to the shipbuilders are relatively low. However,

⁷⁸ One of the shipbuilders has indicated that it sources some of its steel requirements domestically. All other materials requirements, as well as the rest of the steel requirements, have to be imported.

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if the class is obtained, shipbuilders will be in a position to source at least some of their materials requirements domestically. This will not only save certain costs such as currency exchange costs, but will decrease the trade deficit and increase domestic production. If sufficient materials are acquired domestically, it may also result in the materials producers reaching economies of scale that enable them to start exporting their products, thereby further increasing their contribution to the economy.

The impact of this specific assistance will again be both directly and indirectly measurable. The first measure would be to determine the volume of materials sourced domestically, with a corresponding decrease in the volume of materials imported. The second measure would be to determine the volume of exports by the upstream industry. The assistance is clearly achievable, as Government only needs to pay for the costs associated with obtaining the necessary certification from an institute such as Germanischer Lloyds. These costs may be relatively small in relation to the overall project value, but may be too large for an upstream producer to make. The assistance is also realistic, as it will benefit the economy to a much greater extent than the shipbuilding industry only. Last, the assistance can be given in a timely fashion as Government can implement such assistance in its next budget.

Care should be taken, however, how any such assistance is worded. In terms of Article 3.1(b) of the WTO Subsidies Agreement, no subsidies may be granted that are dependent on the use of domestic over imported materials. This prohibition also applies to LDCs. The subsidy can therefore not be made dependent on the shipbuilding industry buying from the accredited domestic materials producers, but should be based on the upstream industry itself.

3.3.11. Employment opportunities

Although some newspaper articles have conjured visions of huge employment opportunities in the shipbuilding industry, discussions with the industry have indicated that this perception is incorrect. Both Ananda and Western marine employ 1,000 or fewer workers directly in their shipbuilding yards. However, most of these workers are skilled, being artisans, welders, painters, engineers and naval architects. Western Marine has recently set up its own training institute where workers are trained as welders, with the project to be extended to other classes of workers over the next years. Government has already accredited the institute as a training partner. Considering the costs involved in training the workers and the possible revenue these workers may generate in future, not only working for the domestic shipbuilders, but working in shipyards in countries such as Singapore and Dubai and the monies they will remit as skilled workers, Government could consider subsidising the training of the skilled workers.

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The impact of this specific assistance will be small when related to the specific cost element to a specific contract, but could have a significant impact on the number of skilled workers working in foreign countries and remitting salaries to Bangladesh. It would also be measurable by determining the increased number of employees successfully undergoing technical training. The assistance is easily achievable, as Government could decide on an amount it is prepared to invest in each worker that either joins the training programme or successfully undergoes the training programme. Furthermore, the assistance is realistic as it will benefit the economy without placing an unreasonable burden on the Government. Last, such assistance can already be included in Government's next budget.

3.3.12. Shipbuilding licenses

At present, no shipbuilding is allowed along the banks of the Karnaphuli River near the Chittagong port area other than by the existing shipbuilders. However, if additional licenses were to be granted, the real possibility exists that international companies may be willing to set up joint venture shipyards so that vessels with a capacity of up to 25,000 DWT could be built and exported.⁷⁹

Such "assistance" will not cost the Government anything, but will enable foreign direct investments (FDI) to be made and allow further capitalisation of the industry. This may also increase the size of the industry to a level where it becomes viable to invest in the upstream industry to produce classed raw materials and components. Such assistance will be highly measurable as it can be clearly determined whether FDI was attracted in response to such licenses being granted. Other than conducting an environmental impact study, there are no reasons why such licenses cannot be granted within a short period of time.

3.3.13. Trade fairs

Trade fairs and exhibitions take place all over the world. Several of these trade fairs include engineering projects, which may include shipping. Government could subsidise the cost of companies wishing to attend these fairs. If any contracts are concluded following such fairs this would result in a significant positive inflow of foreign currency. Other Governments often support their industries in attending and participating at such fairs and exhibitions. Such expenses are generally regarded as

⁷⁹ Jamaluddin (2008).

negligible in the context of overall exports, but are permissible for LDCs under the Subsidies Agreement.

3.3.14. Establishing a Shipbuilders Exporters' Association

The Bangladesh Shipbuilders' Association (BSA) currently represents all shipbuilders in Bangladesh regardless of whether such vessels are for use in inland waters, coastal waters or ocean-faring. Standards vary between different vessels, with the Inland Water Ordinance standards, i.e. the standards applicable to riverine vessels, being significantly different from those applicable to ocean-faring vessels. The standards applicable to riverine vessels, although high, are often lower than those applying to ocean-faring vessels, while ocean-faring vessels are often significantly bigger than riverine vessels. This also requires different or additional infrastructure. Accordingly, the requirements and demands of ocean-faring vessel shipbuilders differ from those of riverine vessel shipbuilders.

Accordingly, export oriented shipbuilders have indicated that there may be the need to establish an association that is dedicated to their needs. Government could assist in setting up such an association if further research shows that this would be meaningful.

3.4. Cash flow implications

Cash flow plays a major role in the shipbuilding industry and is affected by a variety of issues. Important issues include

- the key events against which payments are made by the buyer;
- time taken to build the ship;
- cost of bank guarantees
 - on monies received from buyers; and
 - in respect of raw materials and components imported under the green channel procedure for clearing goods through the NBR;
- interest rate on monies borrowed;
- whether basic and engineering drawings are done internally or whether it is outsourced.

Discussions with the shipbuilders have indicated that five payments are receivable during a typical shipbuilding contract. Payments take place at

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- the signing of the contract (15%);
- plate cutting (10%);
- keel laying (20%);
- launching (25%); and
- delivery (30%).⁸⁰

Plate cutting cannot start until the necessary raw materials and components have been received from approved suppliers. This typically takes place approximately three to six months after contract signing, with keel laying taking place another three months later. Launching takes place six to nine months after keel laying, with another approximately six months required before the ship is delivered to the buyer. The total process until delivery of the first ship is therefore between 18 and 24 months after signing of the contract. To produce the second and subsequent ships contracted would take approximately six months each after delivery of the first vessel, as all production lines have already been set up. If two lines are operated in parallel, one ship could be produced every three months. Delivery schedule for an order of four similar vessels could therefore be as follows:

- Delivery of first ship – 18 months from date of contract
- Delivery of second ship – 24 months from date of contract
- Delivery of third ship – 27 months from date of contract
- Delivery of fourth ship – 30 months from date of contract

In preparing a cash flow analysis, certain assumptions have to be made about costs in the absence of detailed and accurate information from the shipbuilders. First, the shipbuilders indicated that raw materials and components accounted for approximately 65% of the total contract price, i.e. if the price for a ship is \$7 million, the raw material and component cost would be approximately \$4.55 million. Second, all raw materials are not purchased at the same time. For purposes of the cash flow analysis it was assumed that there are three stages at which materials are purchased:

- Major raw materials, accounting for 75% of total materials purchases, are purchased a month before production on the specific vessel actually starts;
- Furnishings are bought six months later and account for 15% of the total materials cost; and

⁸⁰ Note that the actual payment dates and the actual percentages would vary according to the negotiated terms of each individual contract.

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- The engine is bought another three months later and accounts for 10% of the total materials cost.⁸¹

The following additional assumptions were made:

- LCs are negotiated two months before they are due. LC charges were costed at 0.22% of the face value, plus 1.5% per annum. No costs were added for confirmation of LCs by a foreign bank. This could add another 3% to the cost of an LC, which would push the overall cost up from 0.31% to 2.26% of the contract value and increase the indicated loss to 12.84% from 10.89%.
- The basic design, i.e. the first approximately 150 technical drawings, are bought at a cost of \$200,000 rather than developed in-house and that all engineering drawings are done in-house.
- Bank guarantees need to be given against all monies received from the buyer until delivery of a vessel. Bank guarantee costs in Bangladesh amount to 4% of the sight value. In addition, as Bangladeshi banks are not regarded as reputable institutions in world trade, these guarantees have to be confirmed by foreign banks that charge between 2% and 4% for the guarantee. On top of this, an additional 2% is included for "country risk". The total cost of the bank guarantee is therefore 8% to 10% of the sight value. For purposes of the calculations a figure of 10% was used.
- It was assumed that all raw materials and components are imported. In terms of the Green Channel procedure established by the NBR for the shipbuilding industries, no customs duties are payable on the importation of materials, but a bank guarantee must be given for 25% of the value of the imported materials. Considering a bank guarantee cost of 4% and that the guarantee is internal only, i.e. it does not have to be confirmed by a foreign financial institution, the cost is 1% per annum.
- The shipbuilders indicated that they were required to convert all deposit received to the local currency, i.e. taka, at a bank cost of 1.88%. When they wished to purchase raw materials in foreign currency, a further conversion cost of 2.1% is incurred.
- As the cash flow analysis indicates that a significant shortfall in funds is clear from month 7, it was assumed that shipbuilders would have to turn to banks

⁸¹ Note that from interviews with Ananda and Western marine it transpired that materials costs constituted approximately 65% of the total project price and that the cost of engines amounted to approximately 7% to 8% of the total project cost, i.e. 10% to 12% of materials cost. No indication was given as to when which materials are purchased.

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to fund this shortfall. An interest rate of 16% was used to determine the interest payable on the outstanding loans. No allocation was made for possible interest earned for loans unutilised and that were in the bank.

- It was determined that overheads constitute approximately 25% of the total cost of the project. This value was simply divided over the 18-month period for which each ship was under construction.

Bearing the above assumptions in mind and applying these to an order for 4 ships each valued at \$7 million, the cash flow statement over the period of the contract (30 months) could look as follows:

Table 3.5.1: Incoming cash flow

| Mth | Event | Ship 1 | Ship 2 | Ship 3 | Ship 4 | Monthly inflow |
|-----|--|--------------------|--------------------|--------------------|--------------------|---------------------|
| | | Inflow | | | | |
| 0 | Contract | \$1,050,000 | \$1,050,000 | \$1,050,000 | \$1,050,000 | \$4,200,000 |
| 1 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 3 | Plate cutting 1 | \$700,000 | \$0 | \$0 | \$0 | \$700,000 |
| 4 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 5 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 6 | Keel laying 1 | \$1,400,000 | \$0 | \$0 | \$0 | \$1,400,000 |
| 7 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 8 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 9 | Plate cutting 1 | \$0 | \$700,000 | \$0 | \$0 | \$700,000 |
| 10 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 11 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 12 | Launch 1; Keel laying 2; Plate cutting 3 | \$1,750,000 | \$1,400,000 | \$700,000 | \$0 | \$3,850,000 |
| 13 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 14 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 15 | Keel laying 3; Plate cutting 4 | \$0 | \$0 | \$1,750,000 | \$700,000 | \$2,100,000 |
| 16 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 17 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 18 | Delivery 1; Launching 2; keel laying 4 | \$2,100,000 | \$1,750,000 | \$0 | \$1,400,000 | \$5,250,000 |
| 19 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 20 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 21 | Launching 3 | \$0 | \$0 | \$1,750,000 | \$0 | \$1,750,000 |
| 22 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 23 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 24 | Delivery 2; launching 4 | \$0 | \$2,100,000 | \$0 | \$1,750,000 | \$3,850,000 |
| 25 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 26 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 27 | Delivery 3 | \$0 | \$0 | \$2,100,000 | \$0 | \$2,100,000 |
| 28 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 29 | | \$0 | \$0 | \$0 | \$0 | \$0 |
| 30 | Delivery 4 | \$0 | \$0 | \$0 | \$2,100,000 | \$2,100,000 |
| | Total | \$7,000,000 | \$7,000,000 | \$7,000,000 | \$7,000,000 | \$28,000,000 |

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Table 3.5.2: Outgoing cash flow (in US\$)

| Mth | Event | Design | Bank guarantee | Raw materials | BG on green channel | Currency charges in | Currency charges out | LC charges | Interest | Overheads | Outflowing | Total outflow |
|-----|--|---------|------------------|-------------------|---------------------|---------------------|----------------------|---------------|------------------|------------------|-------------------|---------------|
| 0 | Contract | 200,000 | | | | 78,960 | 4,200 | 7,508 | - | - | 286,468 | 290,668 |
| 1 | | | 35,000 | 3,412,500 | 2,844 | - | 71,663 | 4,266 | - | 98,000 | 3,624,272 | 3,914,939 |
| 2 | | | 35,000 | | 2,844 | - | - | 4,266 | - | 98,000 | 140,109 | 4,055,049 |
| 3 | Plate cutting 1 | | 35,000 | | 2,844 | 13,160 | - | - | - | 98,000 | 149,004 | 4,204,053 |
| 4 | | | 40,833 | | 2,844 | - | - | - | - | 98,000 | 141,677 | 4,345,730 |
| 5 | | | 40,833 | | 2,844 | - | - | - | - | 98,000 | 141,677 | 4,487,407 |
| 6 | Keel laying 1 | | 40,833 | | 2,844 | 26,320 | - | 9,009 | - | 98,000 | 177,006 | 4,664,413 |
| 7 | | | 52,500 | 4,095,000 | 6,256 | - | 85,995 | 5,119 | - | 196,000 | 4,440,870 | 9,105,283 |
| 8 | | | 52,500 | | 6,256 | - | - | 5,119 | 42,667 | 196,000 | 302,542 | 9,407,824 |
| 9 | Plate cutting 1 | | 52,500 | | 6,256 | 13,160 | - | 8,509 | 42,667 | 196,000 | 319,091 | 9,726,916 |
| 10 | | | 58,333 | 3,867,500 | 9,479 | - | 81,218 | 4,834 | 42,667 | 294,000 | 4,358,031 | 14,084,947 |
| 11 | | | 58,333 | | 9,479 | - | - | 4,834 | 100,000 | 294,000 | 466,647 | 14,551,594 |
| 12 | Launch 1; Keel laying 2; Plate cutting 3 | | 58,333 | | 9,479 | 72,380 | - | 9,009 | 100,000 | 294,000 | 543,202 | 15,094,795 |
| 13 | | | 90,417 | 4,095,000 | 12,892 | - | 85,995 | 5,119 | 100,000 | 392,000 | 4,781,422 | 19,876,217 |
| 14 | | | 90,417 | | 12,892 | - | - | 5,119 | 140,000 | 392,000 | 640,427 | 20,516,644 |
| 15 | Keel laying 3; Plate cutting 4 | | 90,417 | | 12,892 | 39,480 | - | 2,503 | 140,000 | 392,000 | 677,291 | 21,193,935 |
| 16 | | | 107,917 | 1,137,500 | 13,840 | - | 23,888 | 1,422 | 140,000 | 392,000 | 1,816,566 | 23,010,501 |
| 17 | | | 107,917 | | 13,840 | - | - | 1,422 | 140,000 | 392,000 | 655,178 | 23,665,679 |
| 18 | Delivery 1; Launching 2; keel laying 4 | | 107,917 | | 13,840 | 98,700 | - | 2,503 | 140,000 | 392,000 | 754,959 | 24,420,638 |
| 19 | | | 93,333 | 1,137,500 | 10,996 | - | 23,888 | 1,422 | 113,333 | 294,000 | 1,674,472 | 26,095,110 |
| 20 | | | 93,333 | | 10,996 | - | - | 1,422 | 113,333 | 294,000 | 513,084 | 26,608,194 |
| 21 | Launching 3 | | 93,333 | | 10,996 | 32,900 | - | 1,001 | 113,333 | 294,000 | 545,564 | 27,153,758 |
| 22 | | | 107,917 | 455,000 | 11,375 | - | 9,555 | 569 | 113,333 | 294,000 | 991,749 | 28,145,506 |
| 23 | | | 107,917 | | 11,375 | - | - | 569 | 113,333 | 294,000 | 527,194 | 28,672,700 |
| 24 | Delivery 2; launching 4 | | 107,917 | | 11,375 | 72,380 | - | - | 113,333 | 294,000 | 599,005 | 29,271,705 |
| 25 | | | 81,667 | | 7,583 | - | - | - | 80,000 | 196,000 | 365,250 | 29,636,955 |
| 26 | | | 81,667 | | 7,583 | - | - | - | 80,000 | 196,000 | 365,250 | 30,002,205 |
| 27 | Delivery 3 | | 81,667 | | 7,583 | 39,480 | - | - | 80,000 | 196,000 | 404,730 | 30,406,935 |
| 28 | | | 40,833 | | 3,792 | - | - | - | 60,000 | 98,000 | 202,625 | 30,609,560 |
| 29 | | | 40,833 | | 3,792 | - | - | - | 60,000 | 98,000 | 202,625 | 30,812,185 |
| 30 | Delivery 4 | | 40,833 | | 3,792 | 39,480 | - | - | 60,000 | 98,000 | 242,105 | 31,054,290 |
| | Total | | 2,126,250 | 18,200,000 | 245,700 | 526,400 | 386,400 | 85,540 | 2,228,000 | 7,056,000 | 31,054,290 | |
| | Total % | | 7.59% | 65.00% | 0.88% | 1.88% | 1.38% | 0.31% | 7.96% | 25.20% | | |

Table 3.5.3: Net cash flow (in US\$)

| Mth | Outflowing | Total outflow | Monthly inflow | Total inflow | Surplus/ Shortfall | Loan | Cash |
|-----|--------------|---------------|----------------|---------------|--------------------|---------------|--------------|
| 0 | \$ 286,468 | \$ 286,468 | \$ 4,200,000 | \$ 4,200,000 | \$ 3,913,533 | \$ - | \$ 3,913,533 |
| 1 | \$ 3,624,272 | \$ 3,910,739 | \$ - | \$ 4,200,000 | \$ 289,261 | \$ - | \$ 289,261 |
| 2 | \$ 140,109 | \$ 4,050,849 | \$ - | \$ 4,200,000 | \$ 149,151 | \$ - | \$ 149,151 |
| 3 | \$ 149,004 | \$ 4,199,853 | \$ 700,000 | \$ 4,900,000 | \$ 700,148 | \$ - | \$ 700,148 |
| 4 | \$ 141,677 | \$ 4,341,530 | \$ - | \$ 4,900,000 | \$ 558,470 | \$ - | \$ 558,470 |
| 5 | \$ 141,677 | \$ 4,483,207 | \$ - | \$ 4,900,000 | \$ 416,793 | \$ - | \$ 416,793 |
| 6 | \$ 177,006 | \$ 4,660,213 | \$ 1,400,000 | \$ 6,300,000 | \$ 1,639,787 | \$ - | \$ 1,639,787 |
| 7 | \$ 4,440,870 | \$ 9,101,083 | \$ - | \$ 6,300,000 | \$ -2,801,083 | \$ 3,200,000 | \$ 398,917 |
| 8 | \$ 302,542 | \$ 9,403,624 | \$ - | \$ 6,300,000 | \$ -3,103,624 | \$ 3,200,000 | \$ 96,376 |
| 9 | \$ 319,091 | \$ 9,722,716 | \$ 700,000 | \$ 7,000,000 | \$ -2,722,716 | \$ 3,200,000 | \$ 477,284 |
| 10 | \$ 4,358,031 | \$ 14,080,747 | \$ - | \$ 7,000,000 | \$ -7,080,747 | \$ 7,500,000 | \$ 419,253 |
| 11 | \$ 466,647 | \$ 14,547,394 | \$ - | \$ 7,000,000 | \$ -7,547,394 | \$ 7,500,000 | \$ -47,394 |
| 12 | \$ 543,202 | \$ 15,090,595 | \$ 3,850,000 | \$ 10,850,000 | \$ -4,240,595 | \$ 7,500,000 | \$ 3,259,405 |
| 13 | \$ 4,781,422 | \$ 19,872,017 | \$ - | \$ 10,850,000 | \$ -9,022,017 | \$ 10,500,000 | \$ 1,477,983 |
| 14 | \$ 640,427 | \$ 20,512,444 | \$ - | \$ 10,850,000 | \$ -9,662,444 | \$ 10,500,000 | \$ 837,556 |
| 15 | \$ 677,291 | \$ 21,189,735 | \$ 2,100,000 | \$ 12,950,000 | \$ -8,239,735 | \$ 10,500,000 | \$ 2,260,265 |

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| | | | | | | | |
|----|----------------------|---------------|----------------------|---------------|----------------|---------------|--------------|
| 16 | \$ 1,816,566 | \$ 23,006,301 | \$ - | \$ 12,950,000 | \$ -10,056,301 | \$ 10,500,000 | \$ 443,699 |
| 17 | \$ 655,178 | \$ 23,661,479 | \$ - | \$ 12,950,000 | \$ -10,711,479 | \$ 10,500,000 | \$ -211,479 |
| 18 | \$ 754,959 | \$ 24,416,438 | \$ 5,250,000 | \$ 18,200,000 | \$ -6,216,438 | \$ 8,500,000 | \$ 2,283,562 |
| 19 | \$ 1,674,472 | \$ 26,090,910 | \$ - | \$ 18,200,000 | \$ -7,890,910 | \$ 8,500,000 | \$ 609,090 |
| 20 | \$ 513,084 | \$ 26,603,994 | \$ - | \$ 18,200,000 | \$ -8,403,994 | \$ 8,500,000 | \$ 96,006 |
| 21 | \$ 545,564 | \$ 27,149,558 | \$ 1,750,000 | \$ 19,950,000 | \$ -7,199,558 | \$ 8,500,000 | \$ 1,300,443 |
| 22 | \$ 991,749 | \$ 28,141,306 | \$ - | \$ 19,950,000 | \$ -8,191,306 | \$ 8,500,000 | \$ 308,694 |
| 23 | \$ 527,194 | \$ 28,668,500 | \$ - | \$ 19,950,000 | \$ -8,718,500 | \$ 8,500,000 | \$ -218,500 |
| 24 | \$ 599,005 | \$ 29,267,505 | \$ 3,850,000 | \$ 23,800,000 | \$ -5,467,505 | \$ 6,000,000 | \$ 532,495 |
| 25 | \$ 365,250 | \$ 29,632,755 | \$ - | \$ 23,800,000 | \$ -5,832,755 | \$ 6,000,000 | \$ 167,245 |
| 26 | \$ 365,250 | \$ 29,998,005 | \$ - | \$ 23,800,000 | \$ -6,198,005 | \$ 6,000,000 | \$ -198,005 |
| 27 | \$ 404,730 | \$ 30,402,735 | \$ 2,100,000 | \$ 25,900,000 | \$ -4,502,735 | \$ 4,500,000 | \$ -2,735 |
| 28 | \$ 202,625 | \$ 30,605,360 | \$ - | \$ 25,900,000 | \$ -4,705,360 | \$ 4,500,000 | \$ -205,360 |
| 29 | \$ 202,625 | \$ 30,807,985 | \$ - | \$ 25,900,000 | \$ -4,907,985 | \$ 4,500,000 | \$ -407,985 |
| 30 | \$ 242,105 | \$ 31,050,090 | \$ 2,100,000 | \$ 28,000,000 | \$ -3,050,090 | \$ 4,500,000 | \$ 1,449,910 |
| | \$ 31,050,090 | | \$ 28,000,000 | | | | |
| | Profit/loss | | | | -10.89% | | |

From the above three tables it is clear that

- Shipbuilding for export purposes is currently not profitable;⁸²
- Finance expenses, in the form of bank guarantees, currency conversion costs, interest and LC costs, play a significant role in the over-all cost structure; and
- The income and expenditure curve do not correspond, indicating that there is a need for extraneous financing especially during the 10th to 24th months of a 30-month contract. Interest charges on these external loans constitute the single largest financial cost in the project.

3.5. Conclusion

It has been shown that there are several opportunities for the shipbuilding industry to record strong growth despite the current international financial crisis. There is reason to believe that both the shipbuilding industry and the upstream industry can become major exporters and generate significant export earnings. The shipbuilding industry's value addition, as a percentage of the export value, already outstrips that of the RMG sector and can be significantly increased if the upstream industry acquires the necessary classing standards and if additional capital is invested in e.g. the steel industry to produce the required quality and size of steel plates.

If Government is prepared to assist the industry by providing bank guarantees and by providing full access to Green Channel treatment for imported materials, this will

⁸² Note that Ananda indicated that it had made a significant loss on the first ship delivered to Denmark.

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have a significant beneficial impact on the industry that could decrease overall costs by more than 10% of the contract value. It has also been shown that there are other possible supportive measures that can be taken by Government, including the establishment of EPZs, granting shipbuilders tax holidays, investing in the acquisition of technology and by paying a skills levy contribution for training skilled workers. On the other hand it has been shown that industry can improve its own situation by making use of existing facilities, such as foreign currency accounts, and that it is unrealistic to expect Government to supply an outright subsidy, as is done in India and Vietnam, based on the value of the vessels exported, or to invest in in-shipyard infrastructure.

It is, however, important that Government take immediate action. In light of the current international financial situation, any delay in taking the necessary action to support the shipbuilding industry may result in the loss of a golden opportunity to increase not only shipbuilding in Bangladesh, but to grow the heavy engineering sector, as prospective buyers turn to other markets.

4. Proposals

It is proposed that

- The Government gives serious consideration to directly providing bank guarantees to foreign buyers, rather than rely on the domestic banking industry, as this will result in a significant saving to the shipbuilding industry and could be all that is required, along with the second bullet point, to set up an enabling environment under which the shipbuilding industry can grow.
- Government grants full Green Channel status to shipbuilders, even if only after each individual shipbuilder has exported its first ship. The present system under which bank guarantees must be given on 25% of the value of the imports does not provide any tangible benefit to Government, yet imposes a cost on the shipbuilders.
- Government declares export-oriented shipbuilding yards as EPZs, which will reduce their costs on domestic purchases through the saving of *inter alia* VAT. Such decreased costs may provide a significant incentive to invest in the upstream industry and to obtain classing in such upstream industry.
- Government relax the rules pertaining to the conversion of foreign currency into domestic currency to allow the industry to retain a larger proportion of foreign currency, which larger proportion is required to import raw materials and components. In addition, Government may decrease the cost associated with buying and selling foreign exchange, as this has a direct impact on the cost of shipbuilding.
- Government grants the shipbuilding industry a tax holiday of at least 10 years, which period could either be fixed or be calculated separately for individual entities.
- Government assists the industry in acquiring the necessary technology required for the various shipbuilding contracts, through subsidising the cost of buying basic design drawings.
- Governments assists the upstream industry, e.g. the steel, cable, pipe and furnishing industries, to obtain the necessary classing that will allow these industries to supply the shipbuilding industry with raw materials and components.
- Governments provides assistance as regards training costs for skilled labour, either on the basis of the number of students enrolled in training or the number of students that successfully graduate from training.

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- Government allows additional shipbuilders to set up shipbuilding yards on the banks of the Karnaphuli River near Chittagong to attract FDI.

It is further proposed that

- Government does not provide a direct subsidy on each ship exported, as this would place too high a burden on the economy. Considering the present order volume, such subsidies, if granted at the same level as in India, would already equate to the total value of export subsidies granted by Government to all other industries combined.
- Government does not become involved in the development of in-shipyard infrastructure, other than possibly assisting with building container depots and/or piers that will assist inland shipbuilders to transport imported materials via waterways rather than by road or rail, thus decreasing pressure on the existing infrastructure and decreasing costs to industry.

Further research is required to determine whether it would be meaningful to set up a separate Shipbuilding Exporters' Association.

It is recommended that these proposals be considered as a matter of urgency as Government assistance is required in the short term if the industry, including the upstream industry, is to properly establish itself as a growing industry.

5. Conclusion

The shipbuilding industry in Bangladesh is in the process of establishing itself as a potential growth industry that could become the third biggest contributor to foreign exchange after remittances and the RMG sector within a period of less than 10 years. Government is in a position to significantly influence the future growth and success of not only the shipbuilding industry, but also the upstream industry providing raw materials and components to the industry if it makes the right decisions fast. These decisions include decisions on granting bank guarantees, providing full access to Green Channel procedures through customs (the NBR), declaring export-oriented shipyards as EPZs, assist industry in acquiring the necessary technology, subsidising the training cost of or for skilled workers, and assisting the upstream industry in acquiring the necessary classing, i.e. the approval of a class such as Germanischer Lloyd, to enable it to provide raw materials and components to the shipbuilding industry and to start exporting these materials to shipbuilders in other countries.

Government should not dwell over these decisions too long, as countries such as India and Indonesia are increasing their own small ocean-faring vessel capacities and as the current international financial crisis may have serious implications for the industry.

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