

Report

**Activity 3 : Refinement of a Government One-Stop Service
(Work Package 3)**

**Programme No. TC/1514
Safe and environmentally sound ship recycling in Bangladesh
(SENSREC) – Phase I
WBS Element No. TC/1514-03-2320**

**Submitted by
National Consultant for Work Package 3 (WP3)**

Dr. Md. Mashiur Rahaman

**Assistant Professor
Department of Naval Architecture and Marine Engineering
Bangladesh University of Engineering and Technology
Dhaka-1000, Bangladesh
E-mail: mashiurrahaman@name.buet.ac.bd; mmzran@gmail.com
Phone: +8801787799655**

Table of Contents

Section	Title	Page
01.	INTRODUCTION.....	3
	A. The Ship Breaking and Recycling Rules-2011.....	3
	B. The Draft Bangladesh Ship Recycling Act-2015.....	4
02.	OUTCOMES OF PROGRAMME ACTIVITIES.....	5
	A. Obtaining land by the ship recycler to be used as ship recycling yard.....	6
	B. Obtaining permission to establish a ship recycling yard.	6
	C. Obtaining permission to recycle a ship.....	7
	D. Experience gained from Turkish Ship Recycler Association applied to Bangladesh.....	14
	E. Composition of Ship Recycling Board (SRB) under new Ship Recycling Act 2015.....	15
03.	CONCLUSION.....	16
	Acknowledgement	18

01. INTRODUCTION

Under Work Package 3, the SENSREC (Safe and environmentally sound ship recycling in Bangladesh) project aims to assist the development of a Government One-Stop Service for a more effective enforcement of national regulatory requirements. The Government One-Stop Service is consistent with the Single Contact Point referred to in the Hong Kong Convention, and it envisages the cooperation between the Ministry of Industries and other competent government departments, such as the National Board of Revenue, the Department of Environment, Department of Fire and Explosives, Department of Inspection for Factories and Establishments, Department of Shipping, etc. of Bangladesh.

A. The Ship Breaking and Recycling Rules-2011

At present, “The Ship Breaking and Recycling Rules-2011” are the rules in effect in Bangladesh in the context of ship recycling activities. In addition to “The Ship Breaking and Recycling Rules -2011”, The Environmental Law, 1995 (amended in 2010), The Explosives Law and The Labour Law are also applicable to the ship recycling industry.

The Rules were formulated following a writ petition to the High Court Division of the Supreme Court of Bangladesh in May 2011. The Rules are administered by the Ministry of Industries of the Government of the People’s Republic of Bangladesh.

Within the Ship Breaking and Recycling Rules-2011, there is a provision to form a Ship Building and Ship Recycling Board (SBSRB), which will provide One-Stop Service for ship recyclers. Additionally, the SBSRB will also carry out certain activities and responsibilities under the Ministry of Industries, Government of Bangladesh. The SBSRB is yet to be formed.

According to “The Ship Breaking and Recycling Rules -2011”, once the ship is anchored, the ship recycler has to submit applications to the SBSRB so that members of the SBSRB can board the anchored ship. These members are officials delegated from the following agencies.

- i. National Board of Revenue (NBR);
- ii. Department of Explosives;
- iii. Department of Environment;
- iv. The SBSRB (technical personnel)

B. The Draft Bangladesh Ship Recycling Act-2015

In July 2015, the Cabinet of Bangladesh cleared the draft of the “Bangladesh Ship Re-cycling Act 2015”. The draft Act proposed the following.

- The establishment of special ship recycling zones to enhance monitoring and minimize environmental hazards;
- The formation of a Ship Recycling Board for better regulation of the industry;
- The making of a provision of punishment for violating the Ship Recycling Act 2015.

In the draft Bangladesh Ship Recycling Act 2015, the Bangladesh Ship Recycling Board (BSRB) will be a legal entity under the Ministry of Industries (Mol) of the Government of Bangladesh.

The Government will select the location of the Head Office of the BSRB. The BSRB may establish branch office/offices at any location in Bangladesh with the permission of the Government. The BSRB will consist of 7 (seven) members from relevant ministries or organizations appointed by the Government. The BSRB will also consist of 3 (three) more members or representatives from the approved Trade Body related to Ship Breaking and Recycling activities of Bangladesh. A Chairman and a full time Director General will head the board. An Additional Secretary from the Ministry of Industries (Mol) will be its chairman. The functions of the BSRB will be:

- Overall supervision of ship recycling;
- To obtain necessary permissions from concerned authorities for the establishment of new ship recycling yard on behalf of the ship recycler;
- Overall supervision, issuing of No Objection Certificates, anchoring and dismantling activities;
- To approve ship recycling facility plans;
- To manage hazardous materials and ensure their proper storage;
- Wherever necessary, to cooperate with the relevant ministry/organization for health and safety of the workers as per the existing rules and regulations;

- To cooperate with the relevant ministry/organization for environment-friendly ship recycling as per the existing rules and regulations;
- To ensure international standards for ship recycling;
- To communicate with national and international organizations, research organizations and universities for the improvement of ship recycling;

02. OUTCOMES OF PROGRAMME ACTIVITIES

The Annual General Meeting of the Bangladesh Ship Breaking Association was held on December 5, 2015 in Chittagong, the port city of Bangladesh. During that time, the Consultant travelled to Chittagong to meet the Members of the Association as they gathered for the Annual General Meeting. The Consultant met with the President, Executive Members and three other members of the Association. The Consultant was introduced to Mr. Master Abul Kashem, owner of Mother Steel Limited, who offered to answer any questions that the Consultant may have regarding ship recycling activities in Bangladesh. The Consultant arranged to meet him in his office later on. The Consultant also scheduled meetings with other concerned authorities.

During the discussion with Mr. Master Abul Kashem in his office, another member namely Mr. Md. Anwar Alam, owner of M.A. Ship Breaking Limited was present.

On 09 January 2016, the Consultant held discussions over telephone with a representative from the Ministry of Industries as well as Mr. Md.Zahirul Islam, Executive Member, Bangladesh Ship Breakers' Association.

Thereafter, the Consultant had various meetings with Mol, BSBA and other departments involved in ship recycling activities of Bangladesh.

The summary of discussions, including the comments and observations made by the above-mentioned persons from their respective agencies, are presented below in sections according to subject matters.

A. Subject Matter: Obtaining land by the ship recycler to be used as ship recycling yard.

The Government of Bangladesh usually leases land to the potential ship recycler for a period of one year, making the ship recycler the lessee (i.e. the tenant) of the land on which the necessary infrastructure of the ship recycling yard is built. During the meeting with Mr. Master Abul Kashem, he indicated that the ship recycling yard owners would like to have this lease period extended to five years or more from the one year currently being granted.

Mol's comments: *The Government of Bangladesh has classified land on the basis usage. For establishing a ship recycling yard, the land is usually leased under the provision of The Non-Agricultural Land Settlement Regulation 1995. Under this provision, it may be not possible to lease the land for five years. However, Mol informed that the Mol will check the Regulation and if the Regulation allows leasing for at least five years, the Mol will not have any objection.*

Consultant's recommendations: *Even though the land for establishing a ship recycling yard is currently leased for a period of one year under the existing provision of the Non-Agricultural Land Settlement Regulation 1995, it would be most helpful if the Mol was to take the initiative to extend this period to at least five years, in order to encourage recyclers to make the necessary investments in better infrastructure for higher quality, safety and environmental protection.*

Recently, the Gujarat State government of India has announced "Ship Recycling Policy-2015" to give a boost to the ship recycling industry at Alang. The policy extends utilization period of ship-breaking plots to 10 years from five years, and provides for resizing, readjustment, realignment of the plots to enable accommodation of bigger vessels in a safe manner.

According to a news article entitled "Low scrap prices hurt recycling yard upgrades" extracted from the TradeWinds of 11th March 2016, at present private landlords in Pakistan are now only offering leases for establishing ship recycling yard for a period of up to 10 years whereas, their ship recyclers are looking for lease period of 15 to 20 years.

B. Subject Matter: Obtaining permission to establish a ship recycling yard.

Mr. Kashem informed that in order to be eligible to apply for the permission

to establish a ship recycling yard, a potential ship recycler/ship recycling yard owner has to complete the following requirements.

- The ship recycler is required to build the entire infrastructure for ship recycling on the yard.
- The ship recycler has to obtain IRC or Import license to import a ship for recycling. This license is issued by the Board of Investment (BoI) under the office of the Prime Minister of Bangladesh. Initially, the IRC is issued on ad-hoc basis for a period of one year. After two or three ships are recycled, the IRC is issued on a regular basis. In the case where the ship recycler obtains IRC and fails to recycle a ship within the period that the IRC is valid for, that particular recycler has to pay a penalty fee in order to apply for the renewal of the IRC.
- For each ship to be imported for recycling, the ship recycler has to get a Value Added Tax (VAT) registration certificate from the Department of Customs, Excise and VAT.
- The ship recycler has to obtain a Environmental Clearance license from the Department of Environment.
- According to the “The Ship Breaking and Recycling Rules -2011”, the ship recycler has to obtain a license from Ministry of Industries (Mol). But at present, Mol does not issue this license.
- The ship recycler must obtain membership from the approved Trade Body related to Ship Breaking and Recycling activities of Bangladesh

C. Subject Matter: Obtaining permission to recycle a ship

According to the information of Bangladesh Ship Breakers Association (BSBA) and the Mol, the following processes have to complete before a ship recycler can obtain permission to recycle a ship.

I. To obtain NOC from Mol:

- a) Memorandum of Agreement has to be signed between the ship recycler and the owner of the ship by which the ship will be sold to the recycler.
- b) Money receipt of fees paid through the bank for getting NOC

- c) The yard environment Clearance certificate approved by the Department of Environment (DOE)
- d) Letter of agreement to pay various government fees
- e) Declaration regarding hazardous materials

II. To obtain permission for inspecting the ship at the outer anchorage area, the ship recycler has to submit the following documents to the Mol.

- a) Money receipt of fees paid through the bank to inspect the ship
- b) Copy of Letter of Credit

III. The ship recycler has to invite the following officials to visit the imported ship in the anchorage area.

- a) The Customs officials or Rummage, usually on a one day visit.
- b) Bangladesh Navy personnel, usually on two to three days visit. However, they don't work on holidays or in rough weather. Another issue is that these officers visit only one ship in a day, and therefore the ship may have to be kept waiting for a long time before a visit can be scheduled. Another point is that, the communication and signaling equipment in the ship is destroyed by the navy personnel after the visit due to security concerns.

BSBA's comments: *Communication and signaling equipment are usable by the inland ships operating in the country. Bangladesh Ship Breakers' Association wants the permission to sell the signaling and communication equipment. However, if the permission is not granted, Bangladesh Navy should inspect, destroy, and take away the equipment after beaching to avoid delays which serve no purpose.*

Mol's comments: *Mol informed that they are trying to simplify the inspection by the Navy, and it was proposed in the last PSC meeting that the Navy should inspect the ship after beaching.*

Consultant's recommendation: *The Consultant feels that the Navy would consider whether any of the equipment that is currently being*

destroyed could be saved and made available for use in the second hand market, as long as there are no security risks, as probably not every item of signaling and communications equipment would pose a security risk.

- c) Department of Explosives personnel usually visits the ship twice; once at the anchorage area and the second time after beaching at the yard. Here, the ship recyclers would like to know why the personnel need to visit the ship at the two areas and not only after the ship is beached.

BSBA's comments: *Bangladesh Ship Breakers' Association wants the Department of Explosives personnel to visit the ship once, preferably or after beaching.*

Mol's comments: *Mol informed that the visit by the personnel of Department of Explosives had to be done twice according to "The Ship Breaking and Recycling Rules -2011".*

Department of Explosives comments: *Over a telephone conversation on January 14, 2015, Mr. Md. Tofazzel Hossain, who is currently the representative of the Department of Explosives for ship recycling works, informed that there is no particular rule pertaining to ship recycling made by the Department of Explosives. However, the Department is working with the "The Ship Breaking and Recycling Rules -2011", which requires that the Department visits the ship twice to issue gas-free and hot-works certificates. Mr. Hossain also informed that the Department is drafting a new rule pertaining to ship recycling for its future use. He informed that the first visit takes place at the outer anchorage area and the second visit takes place at the beaching area.*

At the outer anchorage area, they usually check the following for non-dangerous and dangerous carriers.

Non-dangerous carriers:

- *Check whether the cargo hold is clean or not;*
- *Check for gas free condition and the unused paints;*
- *Check whether the fire fighting system works or not;*
- *Check the chemical storage for quantitative ventilation and accurate placement.*

Dangerous carriers:

- *Check the cargo tank accurately using explosive meter;*
- *Check for gas free condition and the unused paints and*

ensure that it is clean and safe for hot works.

At Beaching, all types of tanks are checked for cleanliness, gas free condition and whether they are ready for man entry and hot works or not.

Consultant's recommendation: *The Consultant feels that the visit of the personnel of the Department of Explosives once at the beaching area is sufficient because*

- *The ship may be gas free at the outer anchorage. This condition however, does not imply that the ship will remain gas free after it is maneuvered into the beaching area.*
 - *The ship may not be gas free at the outer anchorage. In that case, it is brought into the beaching area and then necessary measures are taken to turn it into gas free condition.*
 - *Also, the gas free condition certificate for the different types of tanks such as fuel oil tank, lub oil tank, bilge tank etc are not issued after checking at the outer anchorage area because the ship has to be maneuvered to the beach area. After beaching, those tanks are emptied and cleaned and then the certificates of gas free condition and man entry and hot works certificates are issued.*
 - *At present, there is only one person from the Department of Explosives who is responsible for the all the checking carried out and for issuing licenses as mentioned. It is time-consuming for the one person to perform all the relevant tasks if there are multiple ships waiting at the outer anchorage area. The Consultant feels that increasing man-power for these responsibilities at the Department will shorten the waiting time of the ships at the outer anchorage.*
- d) The Department of Environment with members from Chittagong University, Chittagong Dry Dock Limited and Marine Academy, Chittagong visit the ship at the outer anchorage. This visit usually takes five days. However, sometimes it takes more number of days due to the irregularity of the visits by the Director of the Environment and in case he is absent, power of attorney usually is not given to anyone else. The ship recycler wanted to know why the team includes these many members. Here, it is understood that the Chittagong Dry Dock Limited is under the

Ministry of Industries, Government of Bangladesh. Therefore, they work on behalf of the Ministry of Industries. Recently, the Government of Bangladesh handed over Chittagong Dry Dock Limited to the Bangladesh Navy. Now a question arises as to who will work on behalf of the Ministry of Industries? It may be noted that the Ministry of Industries appointed two or three safety agencies for ship recycling through tendering procedure. The ship recyclers have suggested that these agencies could work on behalf of the Ministry of Industries for the purpose of the visit.

BSBA's comments: *Bangladesh Ship Breakers' Association wants only the representative from the relevant authorities to visit the ship in the anchorage area. In the present composition of members, BSBA particularly wishes to exclude the Chittagong University and Marine Academy, Chittagong. BSBA informed that recently, they have received communication from the Chittagong Dry Dock Limited that the Chittagong Dry Dock Limited will no longer be performing tasks related to ship recycling as they are now under the Bangladesh Navy.*

Mol's comments: *Mol informed that they will seriously look after the issue raised for exclusion of some members. Mol has already decided that safety agency that is appointed by Mol will look after the task earlier performed by the Chittagong Dry Dock Limited.*

Consultant's recommendation: *Too many people visit the ship at the outer anchorage area takes a long time and this penalizes the recyclers in making them uncompetitive in comparison to other recycling countries such as Turkey where all these visits or inspections take place after the ship has been beached, which in turn make the job easier and quicker to do .*

- e) The Department of Environment personnel usually visit the ship twice; Once at the anchorage area and the second time after beaching at the yard. The ship recycler questioned why the personnel need to visit the ship at the two areas. The Consultant has been able to discuss this question with Mr. Md. Mokbul Hossain, Director, Department of Environment, Ministry of Environment and Forests, Chittagong Division. He informed that they require to visit the ship at the anchorage area in order to assess the amount of environmentally harmful substances that the ship may

possess, and then they visit the ship after beaching to monitor the breaking process so that harmful substances are not spread.

Consultant's recommendation: *The consultant feels that it is appropriate for the Department of Environment personnel to visit the ship twice for the following reason:*

During the first visit at the outer anchorage area, the amount of environmentally harmful substances are assessed. During the second visit at the beaching area, the ship breaking process is monitored to check for pollution by the harmful substances from cutting or processing. Therefore, two or more separate visits are necessary.

III. To obtain permission for beaching the following documents have to be submitted to the Mol.

- a) Report of the ship inspection by the Department of Environment and Chittagong Dry Dock Limited at the outer anchorage area
- b) Money receipt of fees paid through the bank to beach the ship
- c) Report of the ship inspection by the Department of Explosives of safe for hot work and safe for man entry at the outer anchorage area
- d) Rummage Clearance Certificate
- e) Membership certificate from Trade Body related to Ship Breaking and Recycling activities of Bangladesh

BSBA's comments: *The Ship Recyclers informed that they also need to obtain beaching permissions from the Customs Department, the Bangladesh Navy, the Mol and the Chittagong Port Authority. However, the ship recyclers have urged that when they apply for NOC to the Mol, the Mol could request the other respective concerned authorities to provide their reports of inspections to the Mol as early as possible so that beaching permission only from Mol is sufficient.*

Mol's comments: *Mol informed that when the new Ship Recycling Act 2015 will be in effect there will be a Ship Recycling Board. After the establishment of the Board all the processes will be become smooth and easy.*

Consultant's recommendation: *The consultant discussed this issue with Mol and it is understood that the processes will be simplified after the formation of Ship Recycling Board under Ship Recycling Act-2015.*

IV. To obtain permission for cutting the following documents have to be submitted to the Mol

- a) Ship Recycling Plan (SRP)
- b) The yard environment Clearance certificate approved by the Department of Environment (DOE)
- c) Money receipt of fees paid through the bank to cut the ship
- d) Certificate by the Department of Explosives for Gas Free Test in relation to safe for hot work and safe for man entry after beaching
- e) Copy of Workers registration (*Workers registration means a record of information about the workers such as their ages, experiences and training certificates*).
- f) Copy of Vendor Chalan

BSBA's comments: *The ship recycler has to obtain cutting permissions from Department of Environment and Mol. The ship recyclers think that obtaining permission from the Mol only would be enough. Safety agencies can monitor recycling related matter during the whole process on behalf of Mol.*

BSBA also recommended that there is no need of any Vendor Chalan.

Mol's comments: *The ship recycler has to pay government fees for wastage and other things on the basis of Vendor Chalan. Also, safety agency fees are calculated from the Vendor Chalan.*

At present, Workers' registration is not mandatory. But after the formation of the Ship Recycling Board under Ship Recycling Act-2015, it will become mandatory.

Consultant's recommendation: *The consultant feels that permission from the Mol should be enough if the Department of Environment does not has its own rules to give permission for cutting the ship. The consultant also feels that since these safety agencies are appointed by*

Mol, they can work on behalf of Mol. The consultant proposes that this issue should be resolved after the formation of Ship Recycling Board under Ship Recycling Act-2015. The consultant feels that a copy of the Vendor Chalan should be submitted in order to obtain the cutting permission.

The Consultant feels that Workers registration should be made mandatory in order to comply with the various international standards for ship recycling activities.

D. Subject Matter : Experience gained from Turkish Ship Recyclers Association applied to Bangladesh.

A delegation from Bangladesh, together with IMO officers and two consultants for **Refinement of a Government One-Stop Service, WP3** visited Ankara and Izmir, Turkey from 19th -22nd October, 2015 in order to gain experience of the more advanced ship recycling industry in Turkey, and also to understand how the Turkish industry is regulated. A report was submitted to IMO on that field visit by Dr. Nikos Mikelis, Consultant to IMO.

The paragraphs of the report relevant to ship recycling yards in Turkey is cited below .

"The owner of a yard seeking the issuance of a permit to operate a ship recycling facility has to be granted a ship recycling facility authorization by Ministry of Transport Maritime Affairs and Communications, Government of Turkey (MoTMAC) and a ship recycling permit by Ministry of Environment and Urbanization, Government of Turkey (MoEU), both of which are valid for one year unless in the meantime the owner or the legal entity changes."

The paragraph of the report relevant to recycling of individual ships in Turkey is cited below:

"There are three permits, all of which are issued by the Harbour Master of Aliaga, who does this on behalf of the MoTMAC. The first is a permit for the landing (i.e. beaching) operation of the ship; the second is the ship recycling permit for the start of the recycling process; and the third is a permit issued at a later stage for the cutting of the ship's double bottom. The first and second permits may be granted at the same time or separately depending on the conditions. Often, inspections take

place after the ship has been landed."

In a comparative analysis, it is noted that in the present report, subject matters a, b, and c are outlines of the procedures involved for establishing a ship recycling yard and for recycling a ship in Bangladesh, while the cited paragraphs above outline the procedures for doing the same in Turkey. The flexibility and ease of the Turkish system can be observed from this comparison. However, the Bangladeshi system and the Turkish system are based on different models, and therefore the process for issuing a beaching permit in Bangladesh takes around 20 days, and sometimes a whole month. On the other hand in Turkey the same process takes around 10 days. Therefore, the consultant's key recommendation is to reduce the time without causing unsafe and unclean situations. The time can be saved by having fewer people visit the ship at the outer anchorage and by having necessary approvals issued after beaching, if that is safe.

In Turkey, Ministry of Environment and Urbanization issued license to a privately run integrated waste management facility named Sureko located about 130 km west of Izmir, for the disposal of various waste streams but not PCBs. The Ship Recyclers Association of Turkey (SRAT) has a commercial relation with this waste management company. The SRTA sends all the hazardous waste to Sureko and other similarly approved facilities for the required handling and processing. The Consultant feels that such type of arrangement between government authorities and private facilities can be introduced in Bangladesh as well for improved hazardous waste management.

E. Subject Matter: Composition of Ship Recycling Board (SRB) under new Ship Recycling Act 2015.

In the draft Bangladesh Ship Recycling Act 2015, the Bangladesh Ship Recycling Board (BSRB) will be a legal entity under the Ministry of Industries (Mol) of the Government of Bangladesh. The Government will select the location of the Head Office of the BSRB. The BSRB may establish branch office/offices at any location in Bangladesh with the permission of the Government.

The BSRB will consist of 7 (seven) members from relevant ministries or organizations appointed by the Government. The BSRB will also consist of 3 (three) more members or representatives from the approved Trade Body related to Ship Breaking and Recycling activities of Bangladesh. A Chairman and a full time Director General will head the board. An Additional Secretary

from the Ministry of Industries (Mol) will be its chairman.

The consultant discussed the composition of the Board with the concerned person of Mol which is tabulated below.

The consultant feels that if the Head Office of the BSRB is established in Chittagong, the procedures for ship recycling activities will be expedited compared to having the Head Office in the capital. Alternatively, if the Head Office is not situated in Chittagong, a branch office with full authority could be set up there as well.

The consultant also feels that, in order to save time and effort, the representatives of the government ministries and agencies within the BSRB should be fully empowered to issue the necessary licenses and permits rather than being the middle tier between the applicant and the issuing authority.

03. CONCLUSION

All the processes involved for establishing a ship recycling yard and to recycle an imported ship in Bangladesh have been described in this report. At present, ship recycling activities are regulated by the Ship Breaking and Recycling Rules-2011. In July 2015, the Cabinet of Bangladesh cleared the draft of the "Bangladesh Ship Re-cycling Act 2015". In the draft, the Bangladesh Ship Recycling Board (BSRB) will be formed under the Ministry of Industries (Mol) of the Government of Bangladesh. Until the formation of the Board, the following steps can be undertaken to enhance the ship recycling activities.

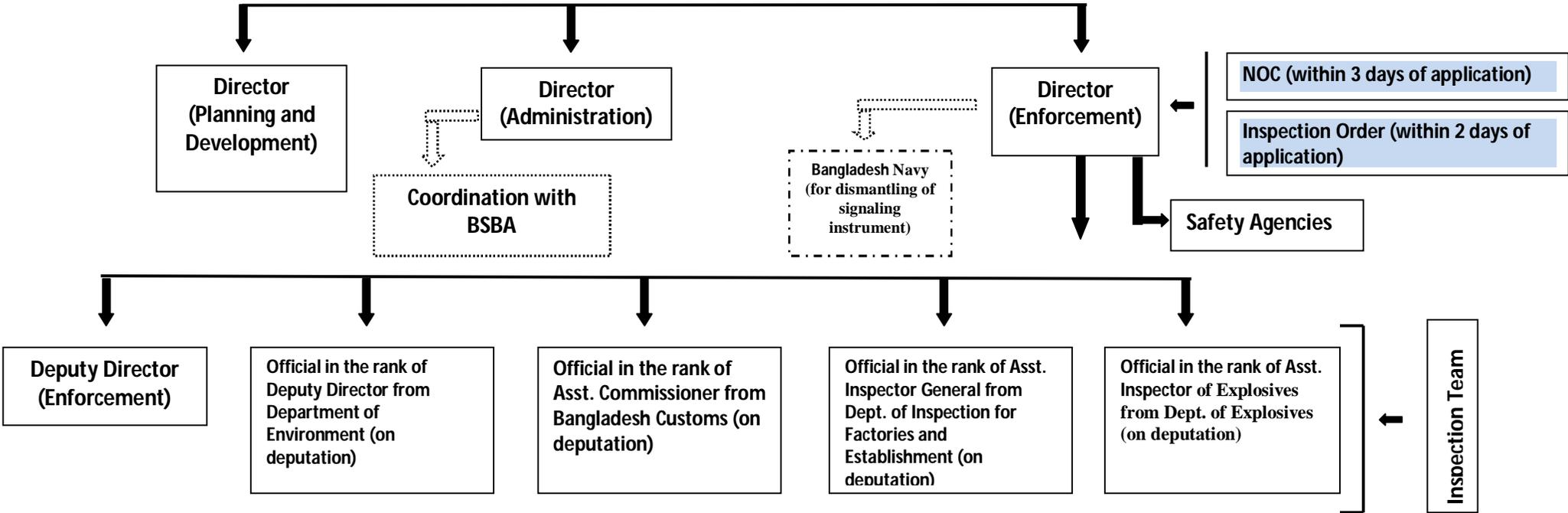
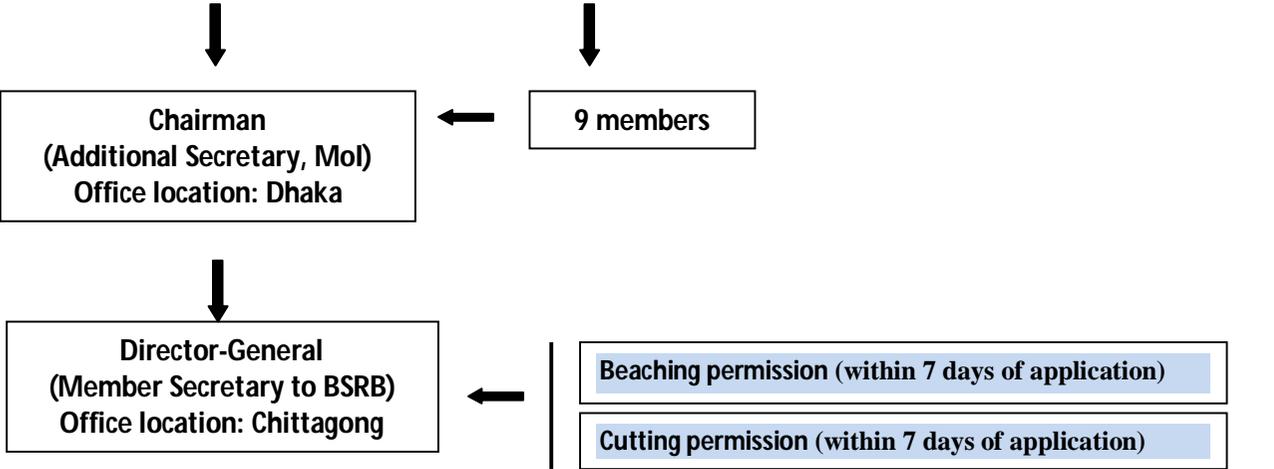
- The Mol can take initiative to reduce the number of organizations visiting the ship at the outer anchorage, for example, the Chittagong University, Bangladesh Navy and Marine Academy;
- To reduce the number of visits by the personnel of the Department of Explosives to once, at the beaching area
- Safety agency that is appointed by Mol can look after the task earlier performed by the Chittagong Dry Dock Limited.
- The Bangladesh Navy can visit the ship after beaching and take away and destroy the communication and signaling equipment.
- Cutting permission from the Mol should be enough if the Department of Environment does not has its own rules to give permission for cutting the ship. Safety agencies can work on behalf of Mol.

Govt. One-Stop Service for Ship Recycling Industry (proposed)

Bangladesh Ship Recycling Board (BSRB)

Note:

- Bangladesh Navy official will not be posted/deputed under the BSRB.
- The Officials from DOE, Customs, DoIFE and DoEx will be posted under deputation to the BSRB, and with the full power and authority of their original posts. They will sit in the Director General's Office at Chittagong.



Acknowledgement

The National Consultant for **Work Package 3 (WP3)-Refinement of a Government One-Stop Service** wishes to acknowledge the invaluable input and guidance received from Dr. Nikos Mikelis, the International Consultant of the International Maritime Organization (IMO) to the writing of this report. Through repeated long-distance discourse and exchange of ideas with Dr. Mikelis, the National Consultant was able to complete this report. His visionary approach and depth of knowledge on the related topics absolutely improved the exercise.

The National Consultant would also like to acknowledge the contribution of Ms. Yasmin Sultana, Joint Secretary, Ministry of Industries (Mol), Government of Bangladesh, Mr. Md. Mizanur Rahman, National Project Manager, SENSREC Project Bangladesh, International Maritime Organization and Mr. Zahirul Islam, Director, PHP Family and Executive Member of BSBA, for their continuous support and enthusiasm, and for providing necessary information whenever requested for, which were vital to the formation of the report.