Safe and environmentally sound ship recycling
SENSREC, WP4, Part I

FINAL REPORT

CURRICULA, TRAINING STRATEGY AND TRAINING NEEDS

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ABSTRACT

The final report summarizes the outcome of WP4 part 1. Indeed, the final report is constructed around the following outline:

- Review of the process that produced the training need assessment which is available in appendix of the present report
- The justification of curricula choices which are available in appendix
- A global overview of elements to consider in order to establish a strong training system in Bangladesh

Content

List of Abbreviations

ACM	Asbestos Containing Material
BC	Basel Convention
BMA	Bangladesh Marine Academy
BSBA	Bangladesh Ship Breakers Association
DOE	Department of Environment
ILO	International Labour Organization
IMO	International Maritime Organization
Facility Guidelines	2012 GUIDELINES FOR SAFE AND ENVIRONMENTALLY SOUND SHIP RECYCLING (Resolution MEPC.210(63))
HKC	HONG KONG INTERNATIONAL CONVENTION FOR THE SAFE AND ENVIRONMENTALLY SOUND RECYCLING OF SHIPS, 2009 (SR/CONF/45)
HSE	Health Safety and Environment
MEWOE	Ministry of Expatriates' Welfare and Overseas Employment
MoI	Ministry of Industries
MoS	Ministry of Shipping
OHS	Occupational Health and Safety
SBRR	Ship Breaking and Recycling Rules
SENSREC	Safe and Environment Friendly Ship Recycling Project
SRF	Ship Recycling Facility / Facilities
SRFP	Ship Recycling Facility Plan
STCW	Standards of Training, Certification and Watch Keeping for Seafarers

1 Executive Summary

The elements supporting the development of a training strategy were collected during the training need assessment and the field mission in Bangladesh with the aim to meet the local context.

The final report includes four sections:

- A short review of the tasks that supported the development of the curriculum
- Justification of the curriculum content and format
- Suggestions of strategic axis to support implementation
- Appendixes containing the curricula and training needs (previous deliverables)

After an extensive collection of data and a field mission to establish the training needs, three curricula were developed. Aforementioned three curricula integrate the national and international requirements and practice. The purpose of each curriculum is to provide comprehensive knowledge to trainers in order to distribute the appropriate and updated information to each target audience. Curricula are comprehensive and incorporate Occupational Health and Safety (OHS) and environment protection information. In addition, by being comprehensive, the curricula aim to last with minor but regular updates.

Inspired by the IMO system, three curricula (initial for all workers / additional for skilled and special workers / awareness for managers) have been developed to address various worker categories and managerial groups.

The first curriculum forms the core of knowledge to acquire. Second and third curricula provide specialized knowledge for particular categories of workers and for managers. It is expected that a manual presenting the core content and additions to be delivered. This manual integrates the eight modules of curricula and aims to present harmonized knowledge to trainers. In addition to the manual, slides must be provided. Considering the literacy level amongst workers, additional interactive material; such as video, animation, etc. must be developed to facilitate the delivery of the training.

Each curriculum is based on eight modules. Module content has been adjusted to various target audiences. In order to better adapt the curriculum to the needs of each category of workers, matrixes should be developed before each training session.

However, due to time, budget and other constraints, the content development priorities must be a manual for trainers in order to harmonize the knowledge of trainers and videos for workers to provide suitable teaching material to workers.

In order to enhance capacity building, to strengthen national expertise and to ensure long lasting training system for ship breaking in Bangladesh, the empowerment of national partners (e.g. Bangladesh Marine Academy, University of Chittagong, Bangladesh University of Engineering and Technology, etc.) is vital. Consequently, it is proposed that national experts and institutions will prepare the content of the training under the guidance of International experts.

Moreover, the creation of a national register for ship breaking workers is suggested in order to foster workers' management in the yards.

2 Final report of activities

2.1 Tasks supporting training needs and curriculum development

The development of the present curriculum required the mobilization of numerous data. The consortium and tasks assigned to each of its members was designed to organize and summarize this data collection.

In short, a systematic collection of data was organized through 5 tasks. In addition, a field mission to Bangladesh has enriched this data collection by capturing on-site elements. These tasks were integrated in the training needs assessment document.

Task number and title	Objectives
Task 1: Data Collection on OHS & Environmental Training in Bangladesh	• Assessment of present OHS training in the Ship Recycling industry • Collection of data on national OHS and environmental training and requirements related to ship recycling and any other relevant industries. • Supporting gap analysis
Task 2: Data Collection on OHS & Environmental Training – International practice	• Identification and review of current Ship recycling procedures at international levels. • Identification and review of current International practices for OHS and environmental training on ship recycling. • Identification and review of outputs of the previous research projects about ship recycling. • Identification and review of requirements of international regulations • Supporting gap analysis
Task 3: Short assessment of workers and their safety conditions	• Collect data on the manpower engaged in the ship recycling industry • Assess the working conditions as well as management and contractual system • Conduct survey and interviews with workers and stakeholders • Interaction with workers and feedback collection • Worker study to assess training needs
Task 4: Gap Analysis with regards to national requirements and international requirements / practices	• Prepare a structure for GAP analysis • Conduct GAP analysis in order to establish the present state of training in Bangladesh based on the following three elements - National regulations - Industry good practices - International requirements
Task 6: Training methods	• Describe of the various methods available for training adults • Select the most appropriate methods adapted to each category of workers • Consider graded courses and refreshment courses • Establish a list of required equipment and tools to support the training • Discuss the on-site / learning by doing / drills

The integration of the data collected on-site allowed the team to integrate the local context. Therefore, large quantities of relevant information were collected to prepare the training needs assessment.

As soon as the training needs in terms of items and delivery methods were identified and summarized in tables, the curriculum development was triggered.

2.2 Short summary on training needs

The main outcomes of the training needs assessment are presented below in two parts:

The work system

- Workplace and layout. As established by ILO, the quality of the workplace is paramount to enhance OHS.
- Categories of workers. The appreciation of the various categories of workers must be addressed. Often, workers are employed through contractors and are not connected to one particular breaking yard or occupation.
- Education, knowledge and literacy. Most of the workers are often poorly educated persons with limited (or no) knowledge of the risks related to the sector.
- Migrant workers. Majority of the workforce is composed of migrant workers, most of whom have low literacy levels and/or language difficulties.
- Stability of workforce. The sector employs a large proportion of daily workers. It is a way to compensate for the fluctuation of the sector's economy. However, each yard directly employs a small number of permanent workers (often for control and team management/supervisory functions).
- Awareness of managers. The field mission unveiled the need to enhance awareness at the management level. Awareness should be increased in order to meet HSE standards.
- Risk assessment and reporting. Systematic risk assessment and accident/incident reporting are not performed. Therefore, there is a need to enhance hazard identification to achieve complete risk assessment. Systematic reporting of incidents and accidents occurring during operations must be organized to understand weak areas needing additional focus.
- Hinterland support. Environment and health protection for workers and surrounding communities necessitates adequate resources like waste management support.

The training system

- Existing training system and gaps within international practices. Despite the existence of a SAFEREC manual and BSBA train-the-trainer manual, formalized training is lacking in numerous areas. These gaps need to be addressed in order to reach international training standards and practices.
- Training content. Present training proposed by BSBA has been self-developed. Despite the commitment of trainers, the lack of formalized training material and content details make the overall training system dependent on individual trainers' availability and resources. Consequently, harmonized and written training material need to be produced.
- Training method. To integrate the context of the ship breaking industry of Bangladesh, several training methods have been selected to facilitate transfer of knowledge. Visual materials such as training and demonstration videos or pictures developed for SAFEREC need to be integrated in training content development. Furthermore, practical demonstration and on-site exercises can improve trainees understanding and inspire the development of better ship recycling procedures.
- Eight modules to support curricula. The proposed curricula are composed of eight modules, each addressing a specific part of the training. The three curricula aim to support Bangladeshi needs: the first one constitutes the initial training for all workers, the second one considers additional training for skilled and special workers and the third one provides awareness for managers.

3 Justification of curriculum

3.1 Curriculum development process

3.1.1 Background information

The development of a training system to support a safe and environmentally friendly ship breaking industry is required by the 2011 Ship Breaking and Ship Recycling rules and backed by a Decision from the the Honourable High Court (verdict against writ petition by BELA).

In addition and as requested, the international instruments requiring training for workers (e.g. ILO, IMO, BC) have been taken into account, in particular the Guidelines developed by the IMO – the 2012 MEPC.210(63).

In short, the curricula were initiated and prepared on the basis of existing national and international framework.

To complement this framework, the existing training system in Bangladesh has been studied, particularly the three main sources of training available in Bangladesh:

- SAFEREC project – A short manual on Occupational Safety and Health is available.
- BSBA train-the-trainer programme on hazardous waste management and oil pollution control – A short manual is available.
- BSBA training for unskilled and skilled workers – no manual or formalized documentation available. The training has been self-developed and depends on each individual trainer.

The practice of training available in other ship recycling countries (e.g. Turkish and Indian practices) has been incorporated to enrich the present work.

While each training programme possesses its own strengths and weaknesses, after a complete gap analysis integrating the international requirements and practices, it has been decided to present eight modules encompassing numerous items to support an inclusive curriculum.

Eight modules comprise the training curricula:

- ***MODULE 1 - Ship Recycling Administration and Regulative Framework***
- ***MODULE 2 – Job Hazard Awareness – Hazard and Risks***
- ***MODULE 3 - Environmental Awareness***
- ***MODULE 4 – Inventory of Hazardous Materials (IHM)***
- ***MODULE 5 - Personal Protective and Safety Equipment***
- ***MODULE 6 –Worker Wellbeing and Health***
- ***MODULE 7 –Awareness and Handling of Hazardous Materials***
- ***MODULE 8 –Vocational Education and Training***

During the curricula preparation, the items identified during the gap analysis were organized and adjusted accordingly.

3.1.2 Choice of format

Inspired by the IMO model course and educational practices, the format of the curricula aims to meet present needs. Three curricula are provided to meet the present needs.

It is expected that the final content will consist of a manual for trainers and teaching material.

One of the intentions of the curricula is to be flexible. In other words, it will guide content development and leave the opportunity to insert trainers' knowledge into the teaching material.

3.1.3 Interactive and multiple training content

Each section of the curricula presents expected methods for delivery. However, a complete review of each item should be performed during the content development to adapt appropriate methods to each chapter as well as to consider the limited resources available (time and budget).

It is suggested that a manual providing essential information to the trainer should support each module. Each manual should use the existing material, for example, module 6 could use some of the documents available in the SAFEREC manual and modules 3 and 7 some elements contained in BSBA training for hazardous materials.

As highlighted in training method assessment, the use of visual training methods is preferable for low literacy workers. Therefore, short video clips and animations should be prepared for each module to illustrate some of the elements of the curricula.

Examples:

Module 1 - chapter 1.1. Regulations and Framework could easily be supported by interactive sessions with formal lectures. The background information should be available in the module chapter to meet the needs of the chapter. Inclusion of short video clips (e.g. interview of persons from administration) could support discussions and lectures. In addition, some slides could support the lecturer progression during the teaching process.

Module 8 – subchapter 8.11.2.3. Firefighting techniques could use practical demonstration, hand-on exercises and use of equipment. Again some videos on firefighting techniques could support the lecture before demonstration or highlight some areas and equipment that are not practical to bring into the training room. As well, a manual guiding the trainer should be available with some slides to support the training.

3.1.4 Diversity of workers to train

Considering the large variety of occupations involved in ship recycling processes, a pre-assessment of the audience's needs should be undertaken before each course in order to select best-fit content and methods.

The curriculum "initial training for all workers" encompasses the core of knowledge to disseminate among staff. In addition, dedicated elements (e.g. cutter equipment) should be prepared before each training session to meet the needs of participants (hoping that the composition of the audience is known in advance).

While the basics of regulation, hazards, safety and environmental awareness remain similar for most workers, some important differences between groups exist. As an example: the fitter group does not have the same needs as electricians.

In short, the components of the training should be selected before and during each session.

4 Supporting a sustainable training system

4.1 Integration and empowerment of local institutions

4.1.1 Importance of promoting national integration

Contacts, discussions, visits and meetings with Bangladeshi stakeholders and partners convinced consortium members that local knowledge and skills are available to support national expertise and promote good practices.

Therefore, it is strongly suggested that national partners and institutions should be involved in the development of module contents and teaching materials. This content would not only possess the local flavour but it would also promote and enhance national expertise and training capacities.

Presently distributed among various organizations and sectors, this national expertise needs integration. Adequate cooperation would enhance the robustness of national expertise and ensure the achievement of sustainable support for the industry in the long run.

The promotion of national expertise would empower local institutions and, consequently, provide a strong sense of ownership. It would also reinforce national expertise. While international experts provide technical support for short periods, national experts are there to stay.

For the time being, international experts remain important to catalyse and guide this process by coordinating knowledge sharing.

The first step towards the road of integration remains the identification of sectors and individuals with sufficient capacities and practice to sustain the ship breaking industry with their knowledge and practices.

Supported by observations and evidence gathered during the field mission, the consortium confirms that the Bangladeshi shipbuilding and shipping sectors possess undeniable qualities to support improvements in the ship breaking industry.

Therefore, the experiences and expertise of shipbuilding and shipping sectors can be utilised when improving the ship recycling yards, synergies between these related sectors can accelerate the improvements (as well as training) for ship breaking.

Among the many arguments supporting this assertion, the following are key:

- All these activities (shipbuilding, shipping and shipbreaking) are heavy industries with similar potential hazards in the working environments
- Ships, including their constituents, are the core of these sectors
- Ship breaking, shipbuilding and shipping industries possess numerous similarities in activities and occupations
- Shipbuilding and shipping have strong experience with safety and environmental management
- Shipbuilding and shipping have International exposure and the ability to absorb such constraints
- Shipping and shipbuilding possess well-structured training systems and reputable institutions in Bangladesh (training programmes, facilities, equipment, experienced trainers, etc.)

In short, Bangladesh possesses well-structured shipbuilding and shipping sectors. These sectors both demonstrate industrial capacities (e.g. Western Marine Shipyard, Bangladesh Shipping Corporation, etc.) and education abilities (e.g. Bangladesh University of Engineering and Technology, Bangladesh Marine Academy, etc.). Consequently, the shipbuilding and shipping sectors could provide their valuable experience and expertise to ship-breaking industry. Moreover, a good integration of shipbuilding, shipping and ship-

breaking could support a sustainable maritime industry and participate in the elaboration of a unique and circular “cradle-to-grave” maritime sector, which may trigger new opportunities.

Despite the importance of the technical support that may be provided by the shipbuilding and shipping sectors, assistance from other specialities remains vital. Specialists in natural science may be needed to develop certain aspects (e.g. sampling and analysis to assess hazardous material on board), and specialists in social sciences may also be required (e.g. to capture local context, to assess impacts on national/local economy, to analyse integration with the legal system, etc.).

4.1.2 Key institutions in Chittagong

As shipbreaking activities are undertaken in Chittagong, the support of local partners must be emphasized because of their geographic proximity and knowledge of the local context.

In this respect, Chittagong possesses a rich heritage of maritime-related activities and this provides clear assets in shipbuilding and shipping:

- Shipbuilding: Western Marine Shipyard and other shipyards are designing and producing ships for national and international markets. These yards possesse strong experience and positive records in handling OHS and environmental management. The experience and practice gained in this industrial context, which shares numerous activities and risks with ship breaking, would be invaluable. Moreover, many shipyards have their own training system to support workers.
- Shipping: in addition to the Bangladesh Shipping Corporation (national company) head offices, Chittagong also hosts the Bangladesh Marine Academy (BMA). This latter organization educates marine officers and engineers for ships. BMA also trains cadets, active seafarers and other groups on safety and emergency management (e.g. firefighting, first aid, etc.). BMA teaching and training blend both theory and practice. This pragmatic approach to safety is particularly relevant to the context of ship’s work. To meet the international requirements, the academy possesses, *inter alia*, facilities for hot work, and machinery handling, as well as facilities to perform safety training including firefighting in enclosed spaces.

In addition, Chittagong, being the second largest city in the country, possesses few high-profile universities, many polytechnic institutes and numerous vocational training institutes. This educational network may support studies and training to ameliorate ship-breaking activities as well as participate in long-term sustainability.

4.2 Training content development

4.2.1 Groups of workers to train

According to national regulation, all workers involved in ship breaking have to be trained, but, the numerous activities undertaken in yards imply a large variety of occupations.

Therefore, the first curriculum “initial training for all workers” aims to address all categories of workers and to establish the basic foundation for other curricula.

The second and third curricula address different categories of trainees. Consequently, the delivery and content must be adapted and in the content:

- Some areas need to be expanded to meet skilled workers and managers needs.
- Other topics have to be inserted and some chapters shortened or removed. For example, managers do not need vocational training on the procedures for using cutting torches, while workers do not need extensive details on the 2009 Hong Kong Convention.

Therefore, it is important to consider each group independently and to adjust the training accordingly.

4.2.2 What should the content be?

The content should consist of two priorities:

Priority 1: the core

- A manual for trainers encompassing each module – it provides harmonized knowledge for trainers and structures the courses
- A set of slides to guide the training – the slides organize the flow of delivery. The slides should be generic (but adapted to the Bangladesh context). It is expected that each trainer will amend and modify them to meet individual teaching styles and methods.

Priority 2: additional support

- Supplementary teaching/training material – videos, animations, drawings, pictures, etc.
- Exercises and tests – hands-on exercises, demonstration of equipment, tests to verify knowledge, drills, etc.

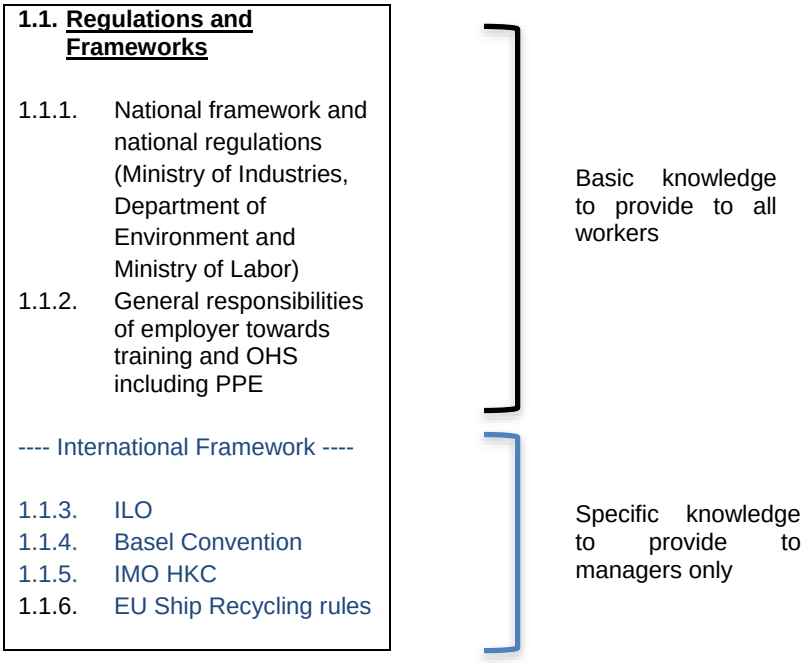
The development of the content should focus on the preparation of a manual for trainers and on the development of visual materials adapted to the audience, particularly video, animations, pictures and drawings.

4.2.3 How to develop the content from curricula?

Each module possesses a core which is available in the "initial training for all workers" (except module 4 core on IHM which is available in additional training for skilled and special workers). This core structures the basic knowledge to be acquired.

Around this core, additions must be made in order to meet the needs of each target group (support/operation/management levels) as well as to meet demands of workers engaged in different activities (e.g. loaders, cutters, etc.).

Example to clarify this approach with module 1:



- *First phase - Identify the core of the contents which are available in Curriculum "initial training for all workers*
- *Second phase – insert additional training needed for skilled and special workers as well as for awareness for managers. Example: in Curriculum 3 (awareness for managers) subchapters have been added to cover the international instruments*
- *Third phase – Develop chapter 1.1. which is composed of a core + additional subchapters. Clearly identify in training material what is the core and what are the additions. The core must be the absolute priority and the additions may be developed in the present SENSREC phase I only if resources (time and finance) are available.*

It is important to notice that resource restrictions in terms of budget and time, as well as lack of existing extensive material, make the development of a comprehensive manual and training material difficult to manage in the short time period demanded by the project.

Therefore, the priority for content development must be a trainers' manual and its accompanying set of slides. Additional delivery material (e.g. videos) will complement this core.

The content material should be available in Bengali and English and should use/integrate visual material as much as possible rather than purely relying on text.

The quality and experience of developers will determine the value of the content while the experience of trainers will influence the quality of conducted training. In this respect and as a basis, developers from shipbuilding and shipping seem particularly appropriate with the support of specialists in other topics (e.g. law, environment, etc.).

4.3 Training strategy

4.3.1 Role and quality of trainers

Trainers play a significant role in the transmission of knowledge. Therefore, selection of appropriate trainers is paramount. Trainers' effort, background, knowledge, skills, experience, and dedication have to be assessed before and evaluated during the programme.

In addition, the trainers must be able to deliver according to the audience. This includes the ability to use local language (Bengali) and terminology.

Trainers should be able to:

- Participate in design of training sessions – i.e. adapt the programme to the audience, choose appropriate training methods, support design and update, deliver train-the-trainer workshops
- Lead the training and focus on its objectives – i.e. plan the training, manage the group, meet the goals of the training, react and adjust in difficult situations, provide sufficient background knowledge beyond training contents
- Provide expertise – i.e. present the subject and expand it if necessary using his/her own expertise
- Develop a rapport with trainees – i.e. enhance confidence of trainees, support them, promote positive behaviour and support, and establish pleasant teaching environment to engage students but avoid overly friendly relationships
- Adapt to needs – i.e. make sure the training meets participants' needs
- Organize the training – i.e. before the training: collect information on trainees/prepare adequate material/prepare training facility; during the training: monitor trainees and training resources; after the training: collect feedback and sensitive material used (if any)
- Moderate the discussions – i.e. promote and encourage discussions to enrich the training, stimulate engagement of participants and experience sharing
- Present in attractive ways – i.e. introduce the objectives, structure the training, capture the attention of the audience, use well-prepared material blending various techniques, monitor the understanding and make sure trainees follow the language used, inspire and engage trainees, keep control of the training situations

Engagement of trainees through appropriate teaching methods and overall control of training sessions are vital to course success. In the context of the ship breaking industry, the use of workers' experience would enrich the training. In addition, use of on-site exercises and drills should be prioritized and supported (as required by workers during the survey).

In short, knowledge sharing and discussions with participants requires more than expertise.

4.3.2 Training of the Trainers (ToT) courses to expand the pool of trainers

Considering the number of workers and the volatility of the workforce, a restricted team would never reach the needs of the ship breaking industry. Therefore, an expanded pool of experts able to train frequently in various locations is required.

The ToT courses constitute unique opportunities to expand the pool of experts. However, careful selection, quality training and trainers as well as final assessment are paramount to verify the effectiveness of the training and assess the ability of individuals.

In addition, the pool of experts should acquire the knowledge and the ability to transmit it. Therefore, the development of train-the-trainer courses involving content and pedagogic capabilities is recommended.

4.3.3 Initial training and refreshment

Presently details of training requirements are limited. High Court Decision requires initial training to access ship breaking.

Currently under preparation by the Ministry of industry, the Act to regulate ship breaking activities will certainly provide details on training requirements. It is expected that the new act will highlight the need for refreshment courses at a later stage.

4.3.4 From awareness to in-depth HSE training for management

In addition to awareness training for managers provided in the third curriculum, the development of a complete academic course on OHS and environment protection management would be beneficial to Bangladesh ship breaking yards and other industries.

A complete curriculum with supporting material developed by Universities and/or Marine Academies could be a way forward to enhance the Health Safety Environment (HSE) in breaking yards as well as other industrial sectors of Bangladesh.

The goals of such a course would be to strengthen the ability of managers in charge of HSE to implement adequate policies and techniques to protect workers and the environment.

Such course should lead to a Master degree in HSE.

4.3.5 Location and frequency of training

As previously stated, the industry particularities render it difficult to determine with accuracy the number of workers to train.

As previously stated in the training needs report, “since its inception, following the 2011 SBRR, the BSBA training institute trained 3038 skilled workers and 1322 unskilled workers (data provided by BSBA training institute in October 2015). Despite this effort in such a short period of time, the workers trained still represent a small portion of the estimated number of 20.000 workers engaged in ship breaking yards (SAFEREC project in April 2005 estimated the number of workers in active yards to be 16.336)” (SENREC WP4 Training needs, 2015). At the present rate of 1.000 workers a year, it will take between 15 and 20 years to train all workers without considering newcomers!

Indeed, to incorporate numerous workers in training sessions, the multiplication of training locations must be considered. Alone, the BSBA training institute cannot accept a sufficient inflow of trainees. So, the question related to location of training becomes acute.

Therefore, it is important to study several options to support the implementation of efficient training (the following options are purely indicative – Appropriate options should be determined by National authorities in cooperation with stakeholders):

- Option 1 – expand the capacity of BSBA training institute. Located at the top of the BSBA hospital, it seems difficult to expand in the present building. However, some rooms are empty at the same level (during our visit in October 2015) and could constitute additional training capacity.
- Option 2 – establish partnership with training facilities available in Chittagong. During the field mission in Bangladesh, the consortium had the opportunity to visit facilities located in Chittagong, which provide huge training capacity, and possess equipment, knowledge and experience (e.g. Bangladesh-Korea Technical Training Centre).
- Option 3 – create an independent group of trainers able to circulate from yard to yard. A sufficient number of trainers needs to be trained, supported and pooled. In addition, trainers should have access to well-equipped facilities in each yard.
- Option 4 – certify some trainers working in yards. This option may require a complicated certification and verification processes
- Option 5 – any other option that can be discussed and agreed between national stakeholders

4.4 Registration and record keeping of workers

In order to comply with Bangladesh Labour Code 2006, employers have to maintain records (service book) of their workers (section 7 of Labour Code). Every worker should be registered in every establishment (section 9 of Labour Code). In addition, each worker should hold an appropriate letter of appointment and an ID card with photograph (section 5 of Labour Code).

While these rules apply at employer level, the National requirement of having National Identity Document (NID) together with training obligation of the sector would facilitate the establishment of a national registry of ship breaking workers. The implementation of a strict registration policy in the ship-breaking sector is vital to avoid risks of underage and untrained workers accessing yards as well as unlawful employment practices.

Keeping a national registry of certain categories of workers is not uncommon. Such registration system (e.g. seafarers) ensures a better administrative control and follow-up of workers. It is particularly recommended for workers exposed to hazardous working conditions as well as those required to perform mandatory or special training. In addition, worker registration could facilitate the stability and retention of an experienced and trained workforce as well as simplify the recruitment processes.

In the context of mandatory training and service book requirements, a proper registration of ship breaking workers would enhance the control of the workforce and avoid untrained workers accessing the activity. Such collection of data would contribute to demonstrating compliance and enhancing the reputation of the industry.

Moreover, numerous advantages are related to the analysis of records. Records should be kept and transmitted to decision-makers on a regular basis to monitor the performance and evolution of the sector. It will also help to support precise and efficient decision-making.

The establishment of a national registry of workers would ease the yard access control point. ID could be controlled and immediately compared to a central database and recorded in the yard. It would ensure the fast establishment of a service book listing the workers present inside the limits of the yard at any given time as required by section 7 of the 2006 Labour Code.

4.4.1 Record keeping of workers

Any employee accessing a ship breaking yard has to be registered and in possession of an appropriate ID demonstrating at least his age, training, capacity and other details as required by the Labour Code.

Therefore, each worker should be provided with a Ship Breaking ID (issue under BSBA or Ministry of Industry) demonstrating compliance with National requirements (particularly age and training).

The ID data should be centralized in a national registry and collected in the yard.

Such registry would ensure that

- Workers entering yards are properly recorded and in compliance with National requirements (e.g. no underage and untrained workers);
- Workers are carrying out only the activities they´ve been trained for, reducing the likelihood of incidents and accidents;
- Workers assigned to a particular task are aware of the related risks and safety measures because they have undertaken the adequate training (e.g. HAZMAT teams);
- A central registry would simplify for employers the identification of workers meeting their criteria in terms of training and capacity as well as ensure that workers accessing yards are in compliance with National requirements;
- It expected that such registration system would stabilize the workforce;
- It would simplify the establishment of a service book;
- It would facilitate compliance monitoring for employers as well as for administration.

Such registration system must also apply to all workers engaged and provided by subcontractors. In this respect, subcontractors must be selected according to their ability to provide registered workers.

This system may encourage unemployed workers to undertake shipbreaking training and be enrolled in the pool of ship breaker workers. (For example in Bangladesh, access to teaching job in primary education level required adequate qualification and presence in a recruitment pool).

The database ensuring the immediate verification of ID validity should be easily available.

The database of ship breaking workers should be centralized in order to simplify administration and verification. Maintained by the BSBA or the Ministry of Industry, such database should encompass all data required by the Labour Code and detailed information about training and capacity.

The centralized database should be accessible by each yard (e.g. web-based data recovery) in order to streamline access to yards and facilitate the creation of service books.

Such central database could also avoid the frequent issuance of ID Cards because each worker's data would be updated in the database. Then it is not necessary to list the trainings on the ID-Cards or renew ID cards after provision of training.

4.4.2 Identification and documentation of workers

Ship breaking ID-Cards should contain the essential information (the choice of the elements to insert in IDs must be determined by the authority in charge of the sector and must be in compliance with Labour Code 2006).

The following list could constitute a minimum:

- Identity of card holder (Name / Date of Birth / Place of Birth / Reference to National ID number)
- Registration number issued by centralized database
- Capacity and special functions (if any)
- Training: name of training / date and location of training / validity date
- Identification of employer (name and address of employer / ship recycling facility)
- Working condition details
- Issuance and expiry date
- Photograph and signature of card holder

Additional information, which may be included in ID-Cards:

- Blood group and allergies
- Name and contact of supervisor
- Required PPE
- Role in case of emergency
- Details of contact person in case of accident

In the ship recycling facilities, a department (e.g. security) must be appointed as responsible to verify the documentation of workers and record the information.
The information gathered should be connected with a central database to ensure effective control of the workforce and avoid non-compliance.

Simple, cheap, and fast options are presently available to automatize this process. QR-Codes or RF-ID Tags could be considered as options to facilitate recording and ensure identification of workers. These codes and tags allow storage of more details about each worker, automated control of access rights and much more but require some more hardware on-site.

Example of QR-Code

Types of RF-ID Tags

5 Conclusion

The determination of three curricula concluded the integration of numerous sources of information:

- The initial sources combined national and international information (gap analysis) related to training on Occupational Safety and Health and Environment Protection.
- The next sources combined an assessment of workers and an identification of training methods appropriate to the workers' situation.
- The outcome of the field mission in Bangladesh formed the third pillar of the process.

The integration of the information collected during the data collection phase of the work package supported the determination of the training needs (deliverable 1).

The main outcomes of the training needs assessment were:

- The need to develop three curricula (initial for all workers/additional for skilled and special workers/ awareness for managers)
- The identification of training methods adapted to the audience
- The determination of a complete list of items to address inside content

From the list identified during previous work, three curricula were developed (deliverable 2). Two curricula address workers and the third curriculum intends to raise awareness among managers. *The curricula are presented in annexes of this document and followed by the training needs (delivery 1).*

The conclusion of the work package considered the development of content and implementation of training in the Bangladesh context.

The training material used by present BSBA training institute is lacking harmonized documentation. Indeed, only SAFEREC and Train The Trainer course for Hazardous Material present complete manuals. The rest of BSBA training depends on individual trainers and is not formalized. Therefore, the content development cannot be an update; it requires the creation of a complete set of training material.

The core of such material is the manual for trainers, which constitutes the basis of the knowledge to transfer. Slides and visual teaching materials should complement this manual. In addition, hands-on exercises, drills, and demonstrations should be planned to support the content delivery.

It is expected that national institutions will be key participants in developing the training content. By empowering national institutions, present knowledge will be expanded and strengthened. This will benefit the industry and the country. In addition, the good practice and experience in place inside shipbuilding and shipping sectors in Bangladesh can support the ship-breaking industry and, eventually, prompt mutually beneficial innovations.

The implementation of train the trainer sessions should be considered from the beginning in order to create an expert pool large enough to support the needs of the industry.

Annexes

APPENDIX 1 – Training needs and methods Identification of Training Needs

Safe and environmentally sound ship recycling
SENSREC, WP4, Part I

DELIVERABLE 1:

TRAINING NEEDS AND METHODS

IDENTIFICATION OF TRAINING NEEDS

Duration: 4 months
Project Start: 09/09/2015
Project End: 15/01/2016

DOCUMENT NAME: TRAINING NEEDS AND METHODS – IDENTIFICATION OF TRAINING NEEDS

DOCUMENT AUTHOR/S: RAPHAEL BAUMLER / HENNING GRAMANN / RAFET EMEK KURT

DOCUMENT EDITORS: ANNE PAZAVER

DOCUMENT REFERENCE NUMBER: DELIVERABLE 1

CIRCULATION: INTERNAL

HISTORY

Version	Date	Description
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5	09.11.2015	5TH DRAFT
6	13.11.2015	6TH DRAFT
7	26.11.2015	7TH DRAFT
8	17.02.2016	8TH DRAFT

ABSTRACT

The aim of this work package is double:

- The identification of training needs in order to identify the elements to consider in curriculum and
- The identification of appropriate training methods to consider in the context of Bangladesh yards.

The training needs depend on:

- Work related aspects
    - categories of workers
    - job and activity specificities
- Social and organizational aspects
    - Position of workers in the working system (i.e. internal and external persons, permanent or daily worker, directly hired by the facility or provided by subcontractors, etc.).
    - Overall work organization, interference, coordination, supervision and management of Ship Recycling activities.
- Individual aspects
    - The education, literacy and language of workers.

Several matrixes supported the development of these training needs:

- Main focus
    - The 2011 Ship Breaking and Ship Recycling rules developed by the Bangladeshi Ministry of Industries and the BSBA training.
    - The 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (SR/CONF/45, successively HKC).
- Additional resources
    - Training material developed during SAFEREC and Basel Convention requirements related to training.
    - Additional requirements and projects deemed useful to be integrated (e.g. EU Ship Recycling Regulation, ShipDIGEST, etc.).
    - Practice available in other recycling countries (i.e. India, Pakistan, China, Turkey).

Training methods were investigated taking into consideration the following:

- Particular needs for adult learning
- Workers abilities to cope with the training – context of Bangladesh

In order to complete this work, the consortium team combined several data collection processes and methods:

- Literature review
- Surveys with workers
- Interviews, meetings and group work with stakeholders (workers, ministry officials, international organization representative, employers association, etc.)

- On-site observation during the field mission in Bangladesh. Visits to ship breaking yards, training institutes, shipbuilding yard.

This report integrates the following tasks undertook by the consortium during its investigation:

- Task 1 - Data Collection on OHS & Environmental Training in Bangladesh
- Task 2 - Data Collection on OHS & Environmental Training – International practice
- Task 3 - Short Assessment of Workers-Secondary and Field data
- Task 4 - Gap Analysis with regards to national requirements and international requirements / practice
- Task 6 – Training Methods
- Activity report of field mission

Despite the existence of training manuals (i.e. SAFEREC and BSBA Train the trainer programme on hazardous waste management and oil pollution control) and course structure self-developed by BSBA trainers, comprehensive training curricula and contents need to be expanded.

In short, the present report integrates two essential parts:

- Identification of training methods to enhance training efficiency (Chapter 5).
- Outcome of the gap analysis to support the development of curricula (Chapter 6).

Considering the workload to integrate the numerous items identified and to incorporate adequate methods in the training content, the consortium considers that the present time constraints of the project may hinder the development of high quality training content (next phase), Therefore, it is suggested that a minimum of 12 months should be allocated to content development (Justification of this view is available in Annex).

Content

List of Abbreviations

ACM	Asbestos Containing Material
BC	Basel Convention
BMA	Bangladesh Marine Academy
BSBA	Bangladesh Ship Breakers Association
DOE	Department of Environment
ILO	International Labour Organization
IMO	International Maritime Organization
Facility Guidelines	2012 GUIDELINES FOR SAFE AND ENVIRONMENTALLY SOUND SHIP RECYCLING (Resolution MEPC.210(63))
HKC	HONG KONG INTERNATIONAL CONVENTION FOR THE SAFE AND ENVIRONMENTALLY SOUND RECYCLING OF SHIPS, 2009 (SR/CONF/45)
HSE	Health Safety and Environment
MEWOE	Ministry of Expatriates' Welfare and Overseas Employment
MoI	Ministry of Industries
MoS	Ministry of Shipping
OHS	Occupational Health and Safety
SBRR	Ship Breaking and Recycling Rules
SENSREC	Safe and Environment Friendly Ship Recycling Project
SRF	Ship Recycling Facility / Facilities
SRFP	Ship Recycling Facility Plan
STCW	Standards of Training, Certification and Watch Keeping for Seafarers

1 Executive Summary

During the visits to SRFs – *field mission* - the current practice including types of workers and organizational structures were identified by means of semi structured interviews.

In addition, an assessment of the workers' situation has been prepared to better understand the situation. Key elements of this survey of 200 workers have been integrated in this report.

National experts in Bangladesh assessed the OHS training system available in the ship breaking industry as well as related industries, particularly in shipping and shipbuilding. This assessment demonstrates the availability of expertise in Bangladesh as well as existing facilities. However, it also showed the limited amount of training material presently available (SAFEREC Manual and BSBA Train-The-Trainer on waste management; BSBA training relies on trainers' expertise and does not incorporate authoritative support material).

International experts provided the international practice and requirements in order to assess and complement through a gap analysis the existing material available in Bangladesh by comparing it to available training in other major ship recycling countries (i.e. India, Pakistan, China and Turkey) and international requirements (i.e. ILO, BC, IMO).

In addition to Bangladesh rules, the team emphasized HKC requirements with regard to training for SRF staff members and workers (HKC training plan). From the gap analysis and the integration of national and international requirements, a list of items had been determined to guide the development of curricula.

The training curricula developed for this project aim to be comprehensive (within the limits and scope of the project requirements). In this respect and following the consortium investigation, it has been noticed that three levels of training should be implemented. Therefore, three curricula will be prepared. The initial training for all workers (first curricula) set the foundation on which the other curricula elaborate.

In addition, appropriate training methods to apply in the context of ship breaking in Bangladesh have been identified and summarized in a dedicated chapter.

To conclude, the content development should consider the integration of training resources available in Bangladesh as well as promote train-the-trainer courses to expand the pool of experts. Consequently, the development of training content will require considerable time and efforts to integrate all elements identified as well as to satisfy the training methods.

Noting the limited amount of existing training material and the need to expand the breath of knowledge and material to support the development of consistent OHS in Bangladesh Ship Breaking yards, it is expected that the next part of the Work Package 4 will allow sufficient time for the development of the content. First estimates suggest duration of at least twelve months for training content development.

1.1 Problem definition

This report elaborates on the results gained in Tasks 1 to 4 and task 6 on training methods. The aim is to assess available as well as gaps in training in comparison with the requirements of Bangladesh regulations and HKC in order to present an up-to-date documentation and list elements to support the preparation of curriculum and content.

An overview of the specific training needs of workers has been undertaken. This overview takes into account different categories of workers as well as the specificities of their tasks in the context of Bangladesh.

This includes:

- Workers' function inside the facility
- Interaction with other activities in the yard
- The overall organization of the ship recycling facility

1.2 Technical approach

Many sources of information were integrated to provide the useful training needs:

- Literature review
- Surveys with workers
- Interviews, meetings and group work with stakeholders (workers, ministry officials, international organization representatives, employers' association, etc.)
- On-site observation during the field mission in Bangladesh. Visits to ship breaking yards, training institutes, shipbuilding yard.

In addition to the previous methods, the following sources supported the development of the present work:

- Information provided by various stakeholders and other project partners
- On-site visits to Bangladesh ship breaking yards
- Training programs available in other SR-countries
- Training system available in comparable heavy industries (i.e. shipping and shipbuilding)
- Team experiences and activities in SR-countries (e.g. i.e. India, Pakistan, China and Turkey)
- Available material used in Bangladesh from ILO[1], Basel Convention[2] and BSBA[3]
- Available quality management documentation, job descriptions, training courses and records, results of other forms of information review
- Training methods and contents

These sources of information feeding the present report are detailed in reports related to each task (available at the secretariat). The drawing below summarizes the elements that fed this report.

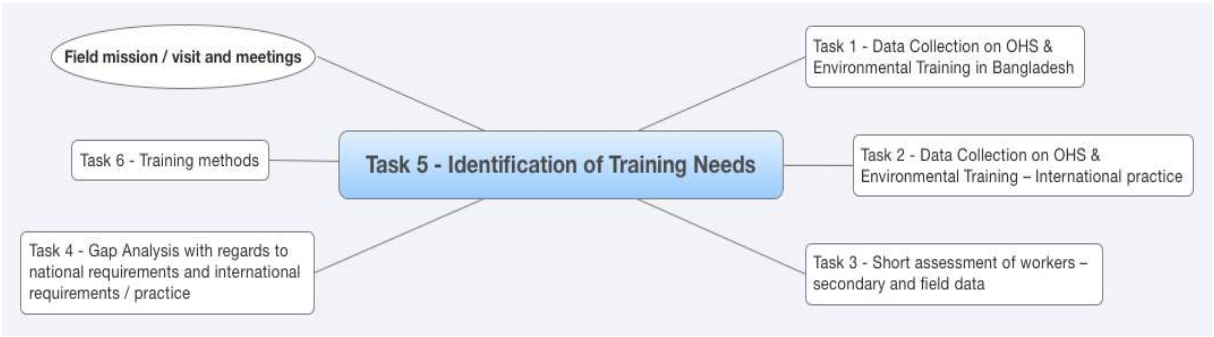


Figure 1 – Elements feeding training needs

[1] „Occupational Safety and Health Manual (for the ship recycling workers in Bangladesh)", Safe and Environmentally Friendly Ship Recycling Project - SAFEREC (BGD/03/005), Ministry of Labour and Employment, published by ILO in 2009

[2] "Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships", published in 2003 by Secretariat of the Basel Convention

[3] "Train the trainer programme on hazardous waste management and oil pollution control", part of Sustainable Ship Recycling Initiative (SSRI) funded by Embassy of Netherlands in Bangladesh and Bangladesh Ship Breakers Association (BSBA), prepared by Creative Consultants

1.3 Results and achievements

The results are:

- Training methods
- List of items to be considered in training
- Job-Trainings-Matrix

During the development, great care has been undertaken to ensure that the resulting training plan is practicable. The gained results form the basis for further development of a training curriculum and later training contents.

2 Working system influences

Ship recycling is a heavy industry. Huge and heavy components are extracted, handled and transformed; dangerous working conditions and hazardous materials are encountered.

In addition, the workplace (i.e. inside ships and on beach) and its surrounding environment (i.e. temperature, humidity, sea) have to be considered. Other elements such as waste stream management; separation and trading of valuables and the socio-economic status of the sector have impacts on its processes.

With regard to Occupational Health and Safety (OHS), workers are exposed to a huge variety of hazards, which may have immediate or delayed consequences on their safety and health. In addition, a diverse population of workers interacts in the yards, each with different experience and knowledge about activity risks. Therefore, risk exposure depends on the risks each category of worker may face as well as the vulnerability of workers and the quality of the workplace.

This combination makes ship-recycling activities particularly hazardous for workers and it is important that the surrounding aspects are considered in training as well. The following chapter provides an overview.

2.1 Categories of worker and activities

Only with full consideration of direct and indirect relevant factors can job specific, precise training needs be identified and developed:

- Direct factors: Factors directly related to the workers' tasks and activities at work (e.g. cutting plates).
- Indirect factors: Factors related to the working environment and organization. This category includes, *inter alia*: coordination of different activities carried out in parallel, gas free and safe for entry monitoring, firefighting, 1st aid, reporting on incidents, emergencies and environmental pollution, clean-up operations, evacuation of yard, notification of/from neighbouring yard about falling blocks, follow-up of incidents and accidents, etc.

2.1.1 Type of workers in ship recycling activities

The different types of workers identified in Bangladesh are contained in the following overview, which also reflects the type of documentation available in the SRFs:

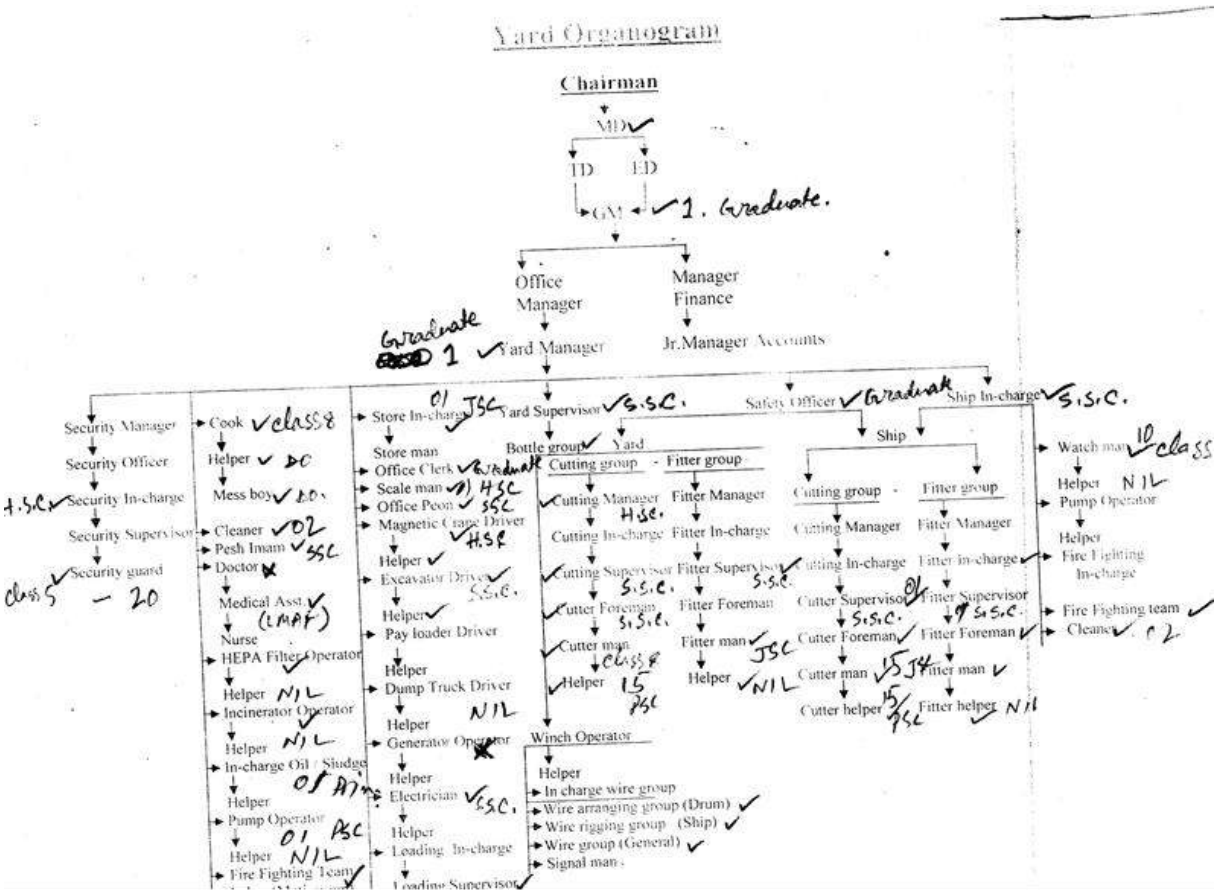


Figure 2: Types of workers / organogram of Bangladeshi SRF

The activities of the different types workers are relevant for the identification of their training needs and role in the overall operation of SRFs. An overview is provided in Table 1 with description of roles and responsibilities of staff and workers

Type: **Management Level** **Office and management workers**	**Activities**
General Manager	responsible for the overall operation of the SRF and ensuring that any activity at the SRF or contract entered into is in compliance with the SRFP and other relevant requirements.
Assistant General Manager	overtakes all roles and responsibilities of the General Manager when he is tasked to do so or the General Manager is not present
Production Manager	responsible for the overall production of the SRF. This also includes repair and maintenance activities on equipment and machinery as well as workshop activities.
HSE Manager	responsible for ensuring compliant activities within the Health, Safety & Environmental Department including safe for entry and safe for hot works certifications, nomination of competent person(s) who have to have sufficient training, experience, and qualification for the different HSE tasks, e.g. IHM training.
Health & Safety Officer	
Environmental Officer	
HazMat Expert	
Business Manager	is responsible for accounting and bookkeeping, purchasing and trading of materials, contract management with external companies and individuals as well as record management

Deliverable Final includes 1+2+3

Type: Workers, Field workers	Activities
Supervisors	Supervising the ongoing activities under their specific responsibility
Cylinder Handlers	Transportation of oxygen and gas bottles
Electrician	electrical works
Workshop Manager	Maintenance of machinery and equipment
Welder	Maintenance of equipment
Cutter	1. Cutting of blocks 2. Working zone (1st, 2nd, 3rd Cutting zone area) 3. May come into contact with hazardous substances 4. Maintenance of equipment such as hoses, bottles connectors, torches
Winch Operator/drivers	1. Driving and operation of cranes 2. Regular maintenance of cranes and winches on yard
Crane & forklift operators, truck drivers	1. Lifting operation of blocks and plates 2. Driving and operation of cranes 3. Maintenance of cranes 3. general oversight (e.g. oil spills) 4. Working zone (1st, 2nd, 3rd Cutting zone area and/or storage area)
Helpers / Housekeepers	1. Housekeeping of all items on yard on regular basis 2.Assisting all the gas cutters on yard 3.Provide feedback to Workshop Manager in charge
Wire rope handlers	1. Close co-ordination with winch operators 2.Handling of wire ropes during pulling of vessel 3.Pulling of vessel blocks
Waste handlers	1.Collection of all small pieces of metal on yard 2.Collection of all unidentified material on yard 3. Spraying of water on yard during tea breaks
Non-Ferrous Handlers	1.Collection and segregation of different heavy metal containing material on yard 2. Breaking of various material to recover heavy metal in non-ferrous storage room 3.Transfer of recovered heavy metals to safe location on yard
Plate handlers	1. Storage of plates on yard as per size and dimensions 2. Loading of plates in trucks 3. Co-ordination with crane driver and helper for storage of plates on yard.
Loaders	1.Loading of plates from yard to truck 2.Storage of plates based on convenience of loading in truck
Decontamination worker	1.Identification of hazardous material on board based on IHM 2. Planning and removal of haz mat on board 3. Storage of material in haz mat dedicated locations 4. Transport of hazardous material
Oil cleaner	1. Laying of pipes from ship to yard for collection of materials 2. Setting up of oil removal pump on board and in yard 3. Setting up intermediate oil collection container in yard
Other unskilled workers and helpers	Various

Type: Special Positions	Activities
Fire Fighting	1. Ensure that fire-fighting team is designated to trained workers 2. Conduct mock drill regularly 3. Take actions based on mock drill and review fire-fighting equipment on regular basis
1st Aid	1. Ensure that first aid kits are available on yard and on board 2. Regular training of supervisors in first aid 3. Monitor first aid incidents and take actions based on incident analysis
Security	1. Enter visitor details in visitor register 2. Brief to visitor on safety concerns in different areas of yard 3. Check all visitors and prohibit flammable items inside the yard
ACM Removal	1. Setting up of decontamination zones onboard a ship 2. removal of ACM from the ship and packing, or packing only and removal of ACM in negative pressure atmosphere in SRF 3. packing of ACM in bags and storage in asbestos storage room
External / new workers	depending on their assignment, includes also workers who are carrying out minor or short term tasks within the SRF

Table 1 Roles and responsibilities of staff and workers

2.1.2 The importance of the SRF layout – principle and examples

The organizational and practical "frame" for conducting ship recycling is provided by the layout of the individual SRF. Depending on the machines, equipment, overall arrangement, traffic, and size; the operation of SRFs is different. Therefore, the SRF layout affects risk diversity and, consequently, the training needs for workers to understand and control them.

As mentioned in the introduction of this chapter, the quality of the workplace seriously affects the hazard and risk exposure of the workers. For the ILO, "[…] there is, therefore, an urgent need for preventive and protective measures to be instituted at workplaces in order to guarantee the safety and health of workers." In the same document, the ILO recalls that: "*Occupational safety and health programmes and policies must aim at both prevention and protection*. Efforts must be focused above all on primary prevention at the workplace level. Workplaces and working environments should be planned and designed to be safe and healthy." (ILO, 2008)

Below, Figures 3 and 4 show two examples of layout. Figure 3 presents a typical Bangladeshi ship-breaking yard while the Figure 4 presents an arrangement in another beaching country. The second yard layout (Figure 4) has been developed recently in order to facilitate compliance with HKC requirements.

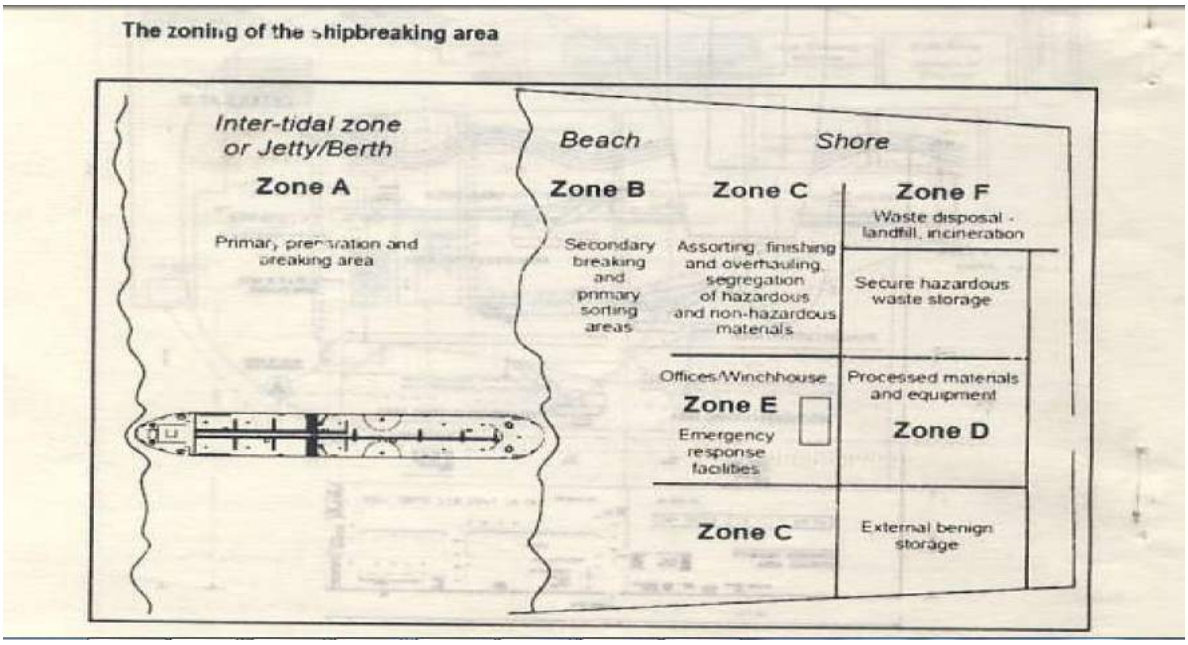


Figure 3: Zoning of the yard, a requirement as part of SRFP (Source: SBRR, 2011)

An example is provided in Figure 4 below where the main installations and the structure of SRF are detailed. This example demonstrates one type of achievable workplace improvement. It is not to be understood as a model facility, as standardization does not consider the operational preferences of each yard management.

Additionally, local environmental conditions, and production constraints (e.g. storage and handling of equipment or steel plates or steel profiles etc.) cannot be considered in model yards. Therefore, each layout modification requires adaptive processes.
The workplace quality and diversity have great impacts on OHS because it affects the work system inside the yard – activities and equipment involved. Therefore, the risks faced by each category of workers change.

In addition, the ILO emphasizes, “Training is an essential element in maintaining a healthy and safe workplace and has been an integral component of OSH management for many years.” (ILO, 2008)

Each workplace being different, it is important to make sure that generic trainings are followed by on-site training system able to link the training with the reality of workstations. Some managers in yards explain that they require, prior to work, toolbox meetings from their supervisors in order to describe the work to perform and identify related hazards.

To ensure that the on-site related risks are properly assessed and managed, trained personnel should be available at each point of the hierarchy and aware of the various risks related to the facility and its operations.

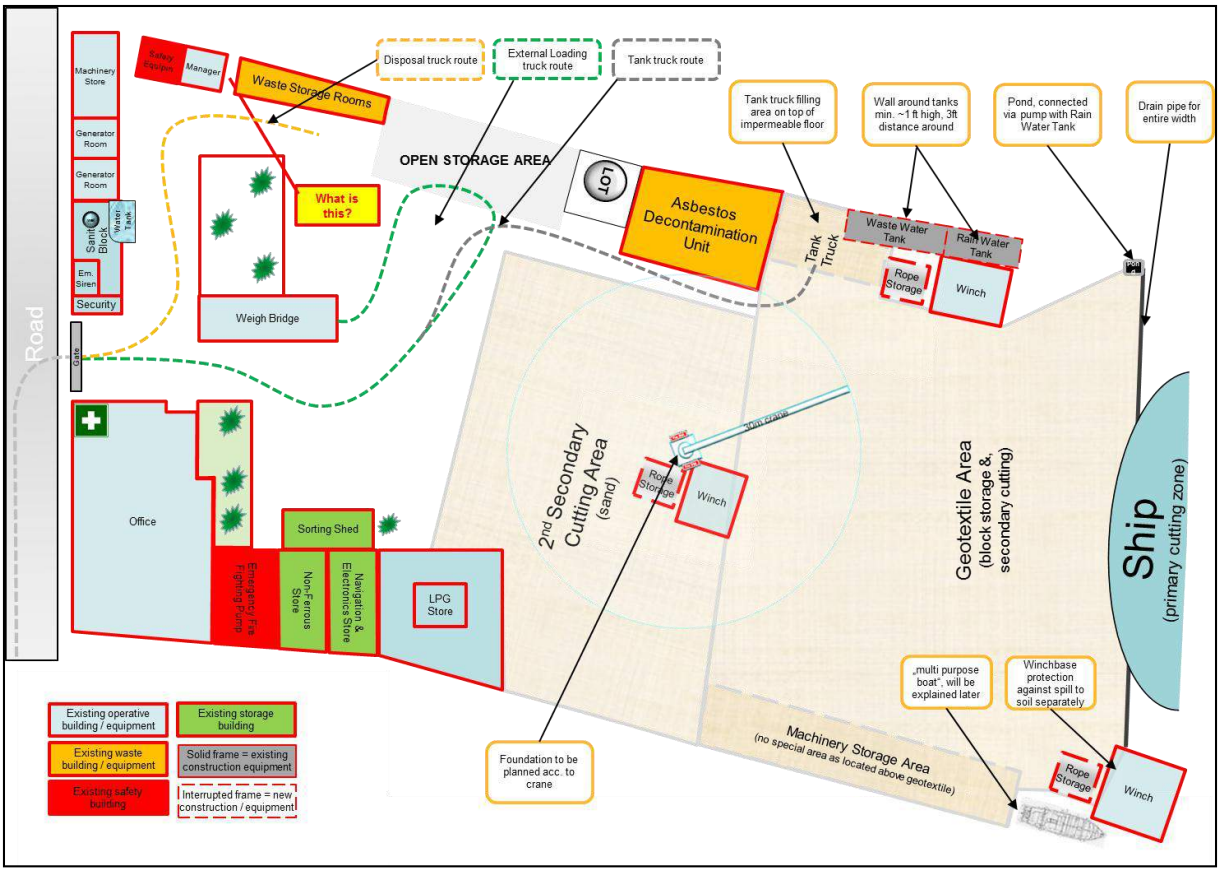


Figure 4: Example layout of SRF in another recycling country

Therefore, the implementation of the general principles of OHS as described by the ILO: "identification and characterization of hazards; assessment of exposure; characterization of risk; and implementation of risk management measures" (ILO, 2008), must in all cases consider the workplace and the specific vulnerability of workers.

2.2 Workers context

In the preparation of this document, the consortium undertook an independent survey of workers. Based on a random sampling method, this survey focused on the target group: the workers.

The majority of survey respondents (56%) works in Cutter section (cutters and helpers), while 22% work in Wire section, 11% in loading section and the remaining 11% in other sections.

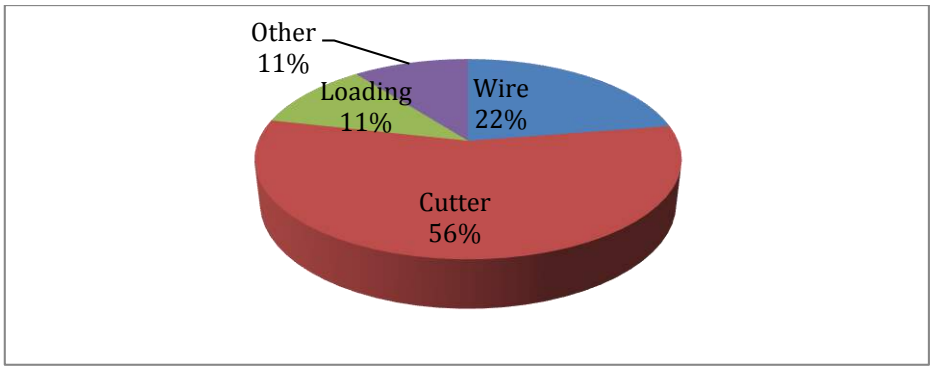


Figure 5: Distribution of the respondents based on section

A total of 200 workers were surveyed (more than the double of the same category recorded during SAFEREC project). Contrary to SAFEREC, yard supervisors and management were not included in the survey but were approach through qualitative interviews during the yard visits.

2.2.1 Age, education, and origin of workers,

The survey showed that the majority of workers in the ship breaking industry are:

- below 35 years old (76%)
- illiterate (36.5%)
- migrant workers (84.5%)

Age (Year)	No. of Workers	Percentage
Below 18	10	5.0
18-25	77	38.5
26-35	65	32.5
36-45	32	16.0
46-55	12	6.0
56-65	4	2.0
Total	200	100.0

Table 2 Age of the Respondents - Source: Compiled from the 2015 survey

While yard management stated that there were no underage workers, it seem that workers below 18 years old are still active in yards (most probably provided by unscrupulous contractors). This result is consistent with 2005 SAFEREC report chapter 2.7.

Level of Education	**No. of Workers**	**Percentage**
No Education	73	36.5
Primary	56	28.0
Secondary	67	33.5
Higher Secondary	4	2.0
Total	200	100.0

Table 3 Level of Education of the workers - Source: Compiled from the 2015 survey

Also the workers are mostly temporarily employed migrant workers. Almost 83% of workers are from the North-Western part of the country which is claimed as the least developed area of the country.

Division	District	No. of Workers	Percentage
Rangpur (13%)	Rangpur	8	4
	Gaibandha	12	6
	Nilpamari	6	3
Rajshahi (31.5%)	Bagra	32	16
	Sirajgonj	13	6.5
	Jaipurhat	12	6
	Naogaon	6	3
Mymensingh (20%)	Jamalpur	40	20
Chittagong (15.5%)	Chittagong	31	15.5

Table 4 - Distribution of the workers by origin - Source: Compiled from 2015 Survey

Migration of workers from these regions results in potential language problems, which is an issue to consider when developing the training content.

It seems that a majority of workers has never been exposed to ship recycling or related industrial settings because 28% of them had no previous job and 35% worked in the agricultural sector prior to joining the completely different ship recycling industry.

Additionally, a low level of experience of just 0 to 5 years applies to nearly half of the workers (46.5%). The lack of experience reduces the ability to recognize hazards and manage risks of work situations.

2.2.2 Permanent and temporary workers - practice of “Contractors”

In our visits to breaking yards, the consortium found two types of workers, namely permanent workers and temporary workers. Permanent workers are mostly the administrative personnel, supervisors, assistant supervisors and the security guards. Permanent workers are primarly from the local area (Chittagong and surroundings) but temporary workers are almost all migrant workers from different parts of the country.

The majority of the workforce is hired through “contractors” on a temporary or daily basis. More educated staff like managers and supervisors are considered as permanent staffs that are responsible for the operation of the SRF and coordination of all activities.

Due to hiring workers on a short-term or daily basis, a key concern is their knowledge of SRF-specific operations along with other aspects such as their registration, working capacities and training as well as social security coverage. Their training needs are described under the scope of new workers in this report.

The practice of subcontractors generates main uncertainties on the control of the workforce in term of training and capacity as well as age. To overcome this issue, a proper registration system of should be implemented to ensure that workers accessing ship-breaking yards are complying with National requirements in terms of age and training.

Yards Visited	Permanent			Temporary	
	Administrative	Security	Total	Estimate daily workers present at the time of the visit	Accommodation size available for workers on site
Yard1	15	40	55	200	1500
Yard 2	10-15	30	40-45	300	600
Yard 3	28	35	63	300	No
Yard 4	30	40	70	200-300	No

Table 5 - Workers distribution in visited Yards by position - Source: Compiled from 2015 Survey

The number of temporary workers and their period of employment depend on the yard's workload. Some ship breaking yards provide accommodation for temporary workers; some others do not.

The use of a cascade of contractors and temporary workers does not help to stabilize the availability and retention of a skilled workforce.

The fulfilment of roles and responsibilities of leading staff of SRFs depends on the performance of the contractors, which result in the risk of losing control of coordination of activities and ability to assess the training and capacities of the workforce.

It seems that sub-contractors do not always provide workers holding appropriate basic training by the recognized training institute.

Several options on the role and responsibilities of subcontractors and relations between contractors and SRF should be considered to strengthen the effective implementation of training and ensure continuous use of trained workers.

The urgent need to change the practice of / with Contractors is one of the results gained during the survey (September-October 2015). Indeed, the study found that only 10% of the workers surveyed had received trainings before accessing ship-breaking yards.

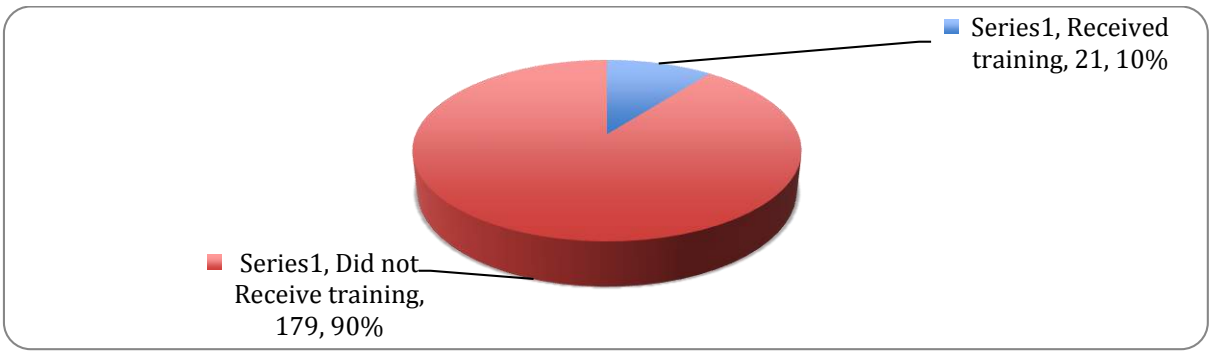


Figure 6 - Respondents Received Training / Source: Compiled from 2015 survey

This low rate may not be surprizing. Since its inception, following the 2011 SBRR, the BSBA training institute trained 3038 skilled workers and 1322 unskilled workers (data provided by BSBA training institute in October 2015). Despite this effort in such short period of time, the workers trained still represents a small portion of the estimate number of 20.000 workers engaged in ship breaking yards (SAFEREC project in April 2005 estimated the number of workers in active yards at 16,336). SAFEREC report notes that the majority of workers are

employed “on a daily basis. Therefore, employment figures fluctuate with the level of activity.” (SAFEREC, 2005)

However, the total percentage of workers trained should have been close to 25%. Two elements explain this discrepancy: first, the survey covered mostly unskilled workers; second, the inherent instability of workforce and low rate of retention. The instability of workforce has been recalled during several interviews and meetings.

In short, the issue of subcontracting should constitute a priority because the multiplication of contractors may hinder the effective supervision and monitoring of trained or untrained staff accessing breaking yards. In addition, the development of on-site training by each yard could support work done by BSBA Training Institute as well as familiarize the workers with the specific workplace.

2.3 Other aspects affecting training efficiency

2.3.1 Overall organization of SRF

The role of the SRF is to recycle a ship in a safe and environmentally sound manner. The typical process is shown in Figure 7:

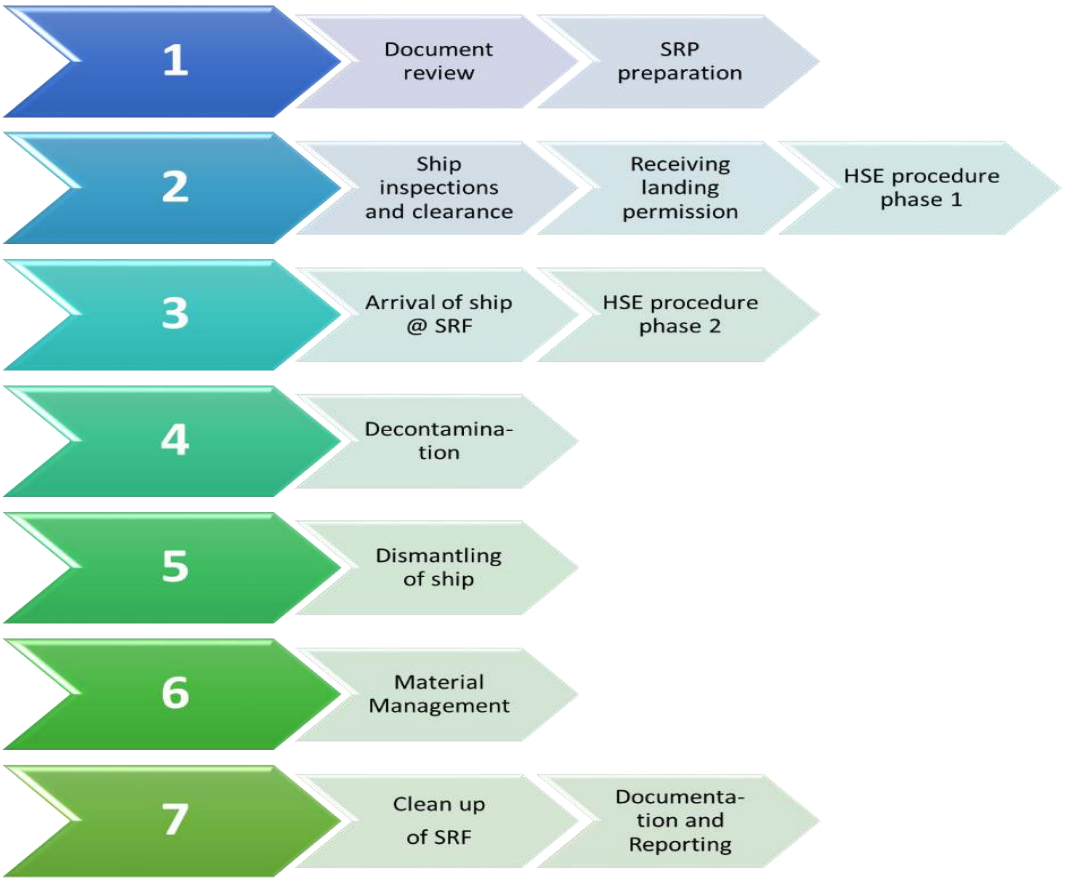


Figure 7: Flow diagram of ship recycling

To execute this ideal process in an adequate and controlled manner, it requires clear and well-implemented operational processes supported by well-trained and qualified staff from all ranks. The Health, Safety and Environment (HSE) aspects of the dismantling process have to be included at an early stage (as shown in the diagram) and adequate training provided to the staff. This is necessary to ensure the safe and environmentally sound recycling. Such approach requires management and staff to be conversant in identifying risks and counter-measures. In addition, the ILO considers that properly implemented OHS policy avoids economic lose and production disruption.

2.3.2 Knowledge and Awareness gaps at upper levels

As recalled by ILO and IMO, promotion of OHS and environmental policies require the commitment of management and authorities.

It has been observed during the field mission in Bangladesh that the recurrent theme accompanied meetings and visits in Bangladesh was the necessity to change the “mindset”. The consortium investigation made clear that the importance of mindset concerned:

- mindset of workers to avoid unsafe work practices;
- mindset of mid-management and yard supervisors to integrate risk assessment practices into daily operations; and,
- mindset of the top management to understand the benefits of change.

Obviously, the need for a three-tiered approach to training emerged:

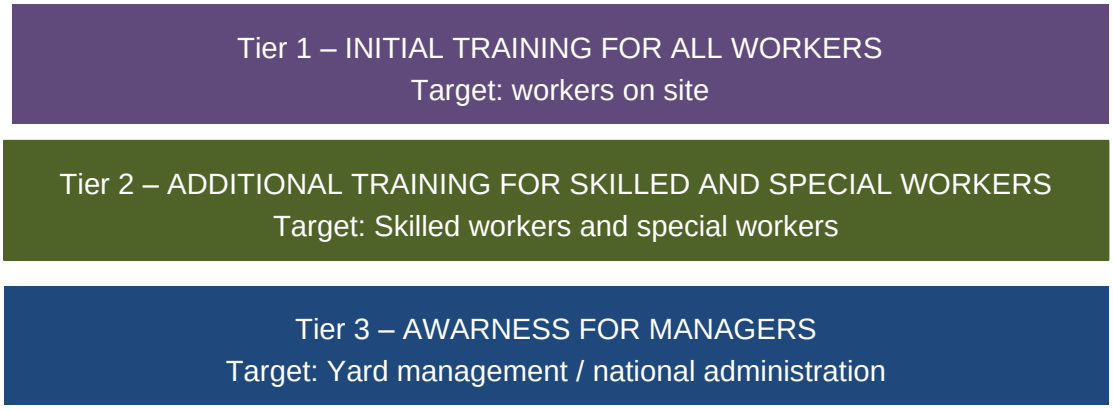


Figure 8 - three-tier training systems

Not uncommon, this approach adheres to the OHS literature on the topic and the requirements developed by the ILO in its numerous publications and guidelines to promote OHS.

Lacking visibility, the sector lacks awareness and knowledge about the risks related to its activities. Therefore, it is paramount to raise the knowledge in the industry in order for the facilities to be able to “identify and demonstrate [their] knowledge and understanding of applicable worker safety and occupational health processes, procedures, laws, regulations and guidance.” (2012 Guidelines for Safe and Environmentally Sound Ship Recycling, Resolution MEPC.210(63))

2.3.3 The need for risk assessment and reporting system

A risk assessment of the OHS situation should guide training development and support the identification of focus areas. Risk assessment requires organized and systematic data collection, which is missing at present. For example, detailed and accurate data on accidents, incidents and near misses are difficult or impossible to find. While an indicative list of reported accidents can be used for identification of root causes, a comprehensive reporting of incidents and accidents would enhance risk assessment. Without a systematisation of accident reports and analysis, it will remain difficult to precisely identify the areas of focus.

However, according to a statement made during a meeting at the BSBA office, “80% of accidents keep occurring due to lack of investigation and exchange amongst ship recyclers”.

This statement raises alarms about the sector's safety culture and understanding of the benefits of data collection.

2.3.4 Hinterland of SRFs

As the hinterland infrastructure is strongly needed for safe and environmentally sound recycling of ships in Bangladesh, potential interactions and related training needs should be considered during the development of training contents.

2.3.5 Regulations in use

The Ministry of Industries (MoI) and Department of Environment (DE) both work in ship breaking. While MoI has developed and is now upgrading its regulatory regime, DE seems to focus mainly on the Basel Convention.

2.3.6 Conclusion on working system

The working environment and the workplace have a great influence on the OHS of workers.

In this respect, the ILO recalls the importance of enhancing the workplace. Workplace improvement requires hardware and software modifications, both of which depend on management. Therefore, the development of an awareness raising programme and the enhancement of knowledge of management personnel in ship breaking yards in Bangladesh should be considered in the next phase of the project.

The social context of workers does not facilitate the retention of a trained workforce. Yard owners only employ directly a small proportion of permanent staff in whom they can invest with training. However, most of the workforce is employed on a daily basis through contractors.

The workers abilities and understanding are paramount in order to enhance OHS standards in the sector. Their literacy and education levels need to be considered while developing training content. In this respect, a dedicated chapter proposes the best identified solutions to address these issues.

3 Existing training system

3.1 Present training available in Bangladesh

Two training programmes are currently available in Bangladesh, the first was developed by the ILO SAFEREC project and the second was supported by the BSBA. In addition to these two broad training programmes on OHS, a "Train the trainer programme on hazardous waste management and oil pollution control" has been developed.

In the following section, the BSBA training and Train the trainer programme on hazardous waste management and oil pollution control" are briefly discussed.

The ILO SAFEREC training will be reviewed in section 3.2 related to ILO.

3.1.1 BSBA: Training for unskilled and skilled workers

The BSBA Institute, set up by BSBA in the BSBA hospital, is located in Shitakunda (near breaking yards) and operates with the help of local expertise.

A generic training program for 2 categories of workers, "Skilled" and "Unskilled", blends theoretical and On Job training. Presently, no specific modules or content have been formalized. Being a self-developed programme, each individual trainer adapts his own methodology and content in delivering lectures.

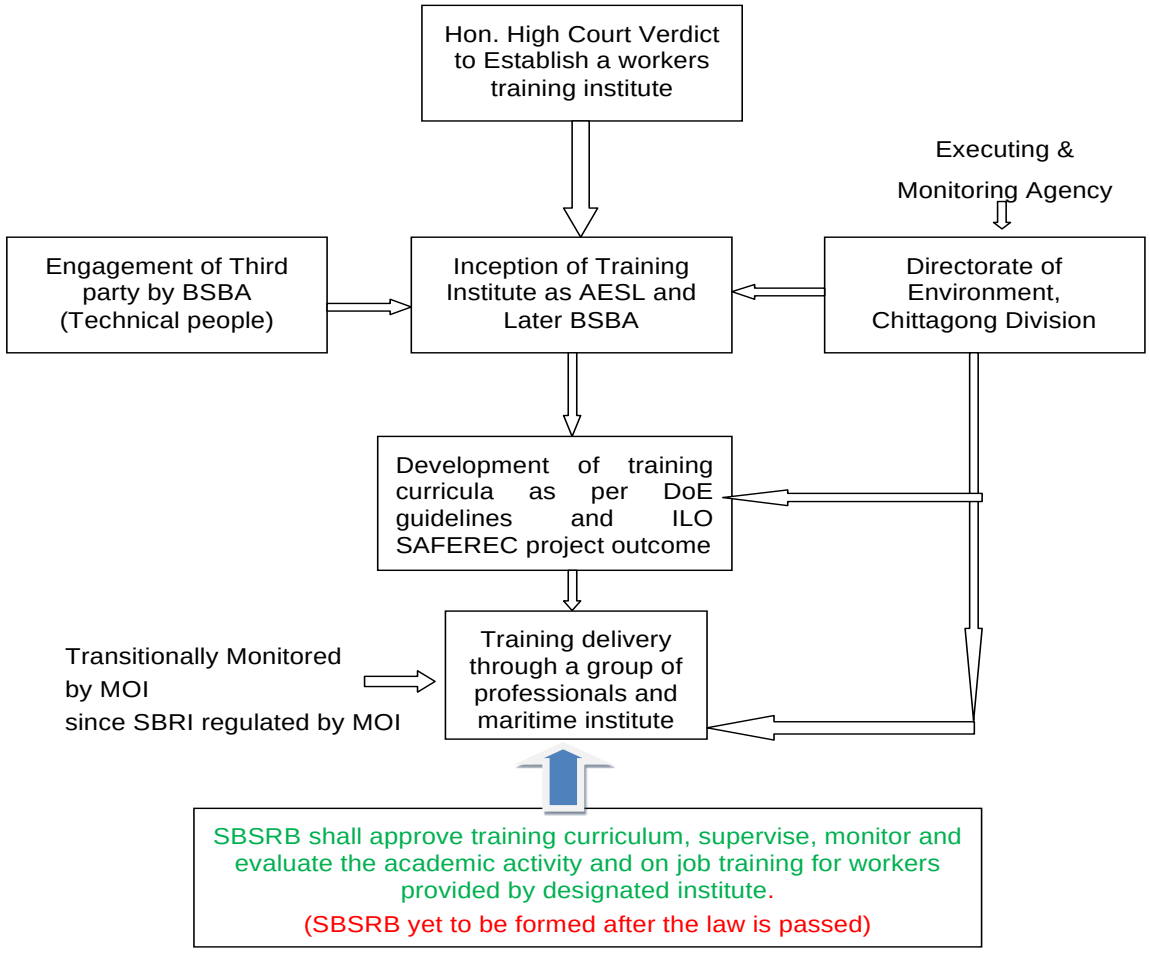


Figure 9: Flow diagram of BSBA institute

3.1.2 Success of BSBA Training institute

- First time ever formal inception of training for SBRI workers
- Enhancement of hazard awareness among workers
- Propagation of enthusiasm in the recycling industry
- Total workers trained so far Skilled: 3038 and Unskilled: 1322
- Searching for continuous development in the training process
- Major casualty/Accident rate remarkably reduced
- BSBA stakeholders motivated towards safety and accident prevention
- Massive change in the recycling facilities

3.1.3 Deficiencies of Training

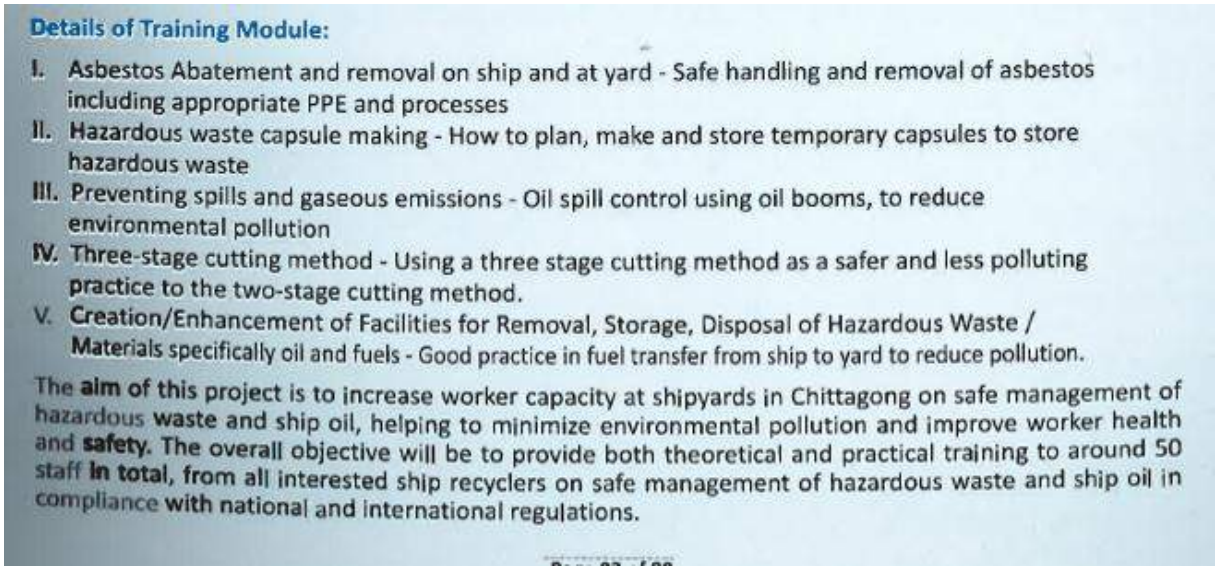
- Existing training is generic
- Curriculum not developed as per Training Needs Assessment
- Training dependent on trainers' skills and availability
- Training methodology not constructed as per target groups
- Complex interfacing and subcontractors engagement made the training less effective
- Lack of financial sustainability to develop effective training modules and logistics
- Only a small proportion of unskilled workers have been trained
- Retention of migrant/daily workers after training

Additional details on the BSBA training system is available in task 1 report.

3.1.4 BSBA: Train the trainer programme on hazardous waste management

Additionally a "Train the trainer programme on hazardous waste management and oil pollution control" is available from BSBA. The use and number of trained trainers or trainees is not clear to the authors, even though the objective mentioned in the document is 50 trainees (future trainers).

The programme itself covers manifold requirements as per HKC, such as the following:



Details of Training Module:

I. Asbestos Abatement and removal on ship and at yard - Safe handling and removal of asbestos including appropriate PPE and processes
II. Hazardous waste capsule making - How to plan, make and store temporary capsules to store hazardous waste
III. Preventing spills and gaseous emissions - Oil spill control using oil booms, to reduce environmental pollution
IV. Three-stage cutting method - Using a three stage cutting method as a safer and less polluting practice to the two-stage cutting method.
V. Creation/Enhancement of Facilities for Removal, Storage, Disposal of Hazardous Waste / Materials specifically oil and fuels - Good practice in fuel transfer from ship to yard to reduce pollution.

The aim of this project is to increase worker capacity at shipyards in Chittagong on safe management of hazardous waste and ship oil, helping to minimize environmental pollution and improve worker health and safety. The overall objective will be to provide both theoretical and practical training to around 50 staff in total, from all interested ship recyclers on safe management of hazardous waste and ship oil in compliance with national and international regulations.

Figure 10: Excerpt of BSBA program

The content of the training programme excerpt in Figure 10 shows a mix of content. Its broad approach is laudable. However, the complexity of the issues covered requires additional developments, particularly on asbestos management.

For example, the important topic of asbestos identification is covered in one page while this step constitutes one of the most critical parts of asbestos decontamination because it determines safe removal from the ship. Usual training for identification and analysis need at least a 3-day course.

Another example of weakness on asbestos removal is the lack of consideration for the instalment of negative pressure areas on-board ships (including air filter and locks) to safely remove asbestos from large areas and equipment.

Additionally, the technical difficulties to manage safe removal of asbestos need to determine entry-level criteria for trainers and trainees. This aspect is presently invisible in the manual.

In short, the manual remains useful for a general awareness and to provide an overview on different aspects but does not provide enough details for efficient training.

Additionally the disposal of waste, especially hazardous waste, should be avoided within the SRFs, as the area of SRFs is intended for a completely different use. Waste disposal facilities should not to be organized individually but for a wider area / group of users.

3.1.5 Other training related to OHS available in Bangladesh and locally

A number of Ministries are involved with different skill-training programmes (e.g. MoS, DE, MEWOE, MoI, etc.). These national authorities are concerned with industrial and OHS related training and study (including shipbuilding and ship breaking industries). During our data collection, we noticed that numerous institutions around the country are able to provide education and training related to OHS and environment protection. So, a certain level of expertise is available in the country.

In addition, some Chittagong institutions are already providing very formalized (and most probably transferable) training material and equipment. In this respect, the Bangladesh Marine Academy provides education and training meeting international requirements and possesses equipment and facilities to provide in-depth training as fire-fighting technique. Moreover, local vocational training institutions polytechnic and/or Bangladesh-Korea Technical Training Center are also able to provide education and training to workers.

Another important support could be found in the industrial sector. In this respect, the consortium visit to Western Marine Shipyard in Chittagong demonstrated that efficient training and OHS policy are implemented in shipbuilding sector. This industry and its practice possess similarities with ship recycling. The practice and experience gained in shipbuilding could support the enhancement of OHS in shipbreaking sector.

3.1.6 Conclusions on Bangladeshi Training

Despite the availability of some training material to support OHS and environment protection in Bangladesh ship breaking sector, consistency and details need to be enhanced. Indeed, the current training programmes are not completely meeting expected standards (e.g. IMO and ILO).

Being self-developed, BSBA training on OHS depends on each trainer, their content and teaching methods. The BSBA train-the-trainer programme on waste management should be expanded and detailed.

During consortium's investigations, it has been observed that various training programmes and training resources are available in Bangladesh. In this respect, some institutions reputable institutions located in Chittagong may provide valuable support to enhance the OHS and environment protection of the ship-breaking sector. Their adequate integration would benefit the recycling industry, particularly the experience gained from shipping and the shipbuilding sector.

3.2 Training manual of ILO - SAFEREC

This training constitutes a remarkable starting point since it specifically focuses on ship recycling and uses the local language. Pictures and diagrams are also utilised in order to supplement the learning. Relevant to ship recycling workers, the training covers important areas.

However, the topics discussed in these training modules lack detail, and hence fail to address the issues in depth. Moreover, there is not enough importance given to environmental protection, which is one of the key concerns in Bangladesh. In this respect, the BSBA train-the-trainer programme complements it to certain extent.

Utilisation of pictures and diagrams supports SAFEREC training. However, more interactive training materials should be included to enhance attention and interaction with the expected audience. Considering the literacy level in Bangladesh, training can be improved by the use of videos and demonstrations instead of relying on a textbook and its pictures.

Although there are illustrations in the training manual, their number remains insufficient. Moreover, some illustrations contain mistakes in terms of occupational health and safety. For example, in the illustrations shown as “good examples” workers are wearing personal protective equipment; however, in some of the pictures this PPE is not the correct type for the described job task. To be more specific, in one of the illustrations a worker is conducting gas cutting while using a paper dust mask rather than a respiratory mask with an appropriate particle filter, which protects against all types of particles including dust, fumes, fog, spray, and asbestos.

The main weaknesses associated with the SAFEREC manual can be summarized as follows:

- Generic content, insufficient in terms of scope and detail
- The categories of workers considered are restricted
- Some misleading or erroneous material (pictures and/or text)
- Risk assessment process is not systematic or comprehensive
- The manual focuses on work inside the yard. Inside-ship work activities are omitted.
- The manual emphasizes storage and handling hazardous material but often omit the extraction phases.
- The use of PPE lacks detail, particularly when considering extraction and management of hazardous materials.
- From 2009 (date of publication) to now, various publications and regulations have been developed at National Level (2011) and International level (2012 – guidelines to support HKC).
- Lack of in-depth emergency response how-to (drills / exercises and response teams are not specified / support services - hospital/fire department, etc.).
- The interactions with waste management upstream services as well as with subcontractors are not included.
- Responsibilities and tasks of supervisors and managers have been ignored.
- Insufficient pedagogical support is provided – manual and posters.
- Additional elements are needed: video/slides/experience sharing/group work/field trip/practice/live testing/scenarios and role play/simulation/exercises, etc.
- A comprehensive Train-the-trainer course with pedagogic support for the trainer and backup material should supplement the manual.

3.2.1 Conclusion on training manual of ILO

Despite the merits of having been the first instrument to address OHS in ship breaking yards in Bangladesh and to be the initial source of the BSBA training course, the ILO training manual would need to be updated taking into account the gap analysis and indications above as well as the latest requirements of the HKC Guidelines.

The SAFEREC manual remains a starting point to expand in scope and content. A complete analysis of the shortcomings of the manual is available in the gap analysis in task 4.

3.3 Guidelines of Basel Convention

The 2003 Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships under Basel Convention[4] (BC-Guidelines) considers that Environmental management programme should include responsibility, means and a timeframe for achieving the objectives and targets, as well as operational control and procedures for effective and continuous training and awareness raising of the workers.
The guidelines recall that, "awareness and skills are essential from both an environmental aspect, as well as from that of occupational health and safety. Training of workers should be given appropriate emphasis including operational/technical/ environmental procedures and use of personal protective equipment. Only sufficiently trained personnel may have access to the various areas in the ship dismantling yard. […]." (BC, 2003) This clear instruction must be included in training curriculums and training contents[5].

Despite some OHS requirements, BC guidelines focus more on Environmental Management Systems and do not provide a complete identification of categories of workers (only foremen and workers are mentioned).
In addition, the related OHS training remains limited, the following aspects for training can be found in the BC Guidelines:

- Training and awareness raising
- Response to injuries
- PPE

Other risks and training needs have not been expressly mentioned, even though they were covered under a different scope (e.g. response to spills, page 64). However, the general approach of the BC-guidelines should be taken into account "This is especially important for workers involved in the breaking activities. They need to understand why certain measures have to be taken in order to protect the environment and human health. Once they have become aware of the necessity of certain measures, those measures will be easier to implement. Note that training and awareness raising are continuous processes that must be included in the management system of the facility" for any further training development

The BC Guidelines support an integration of training, responsibilities and supervision into applied management systems and cooperation. The interrelations between management and ship plus SRF are briefly provided by the BC as illustrated below.

[4] "Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships", published in 2003 by Secretariat of the Basel Convention

[5] Page 87: „Personnel carrying out tasks that may have an impact upon the environment, must have sufficient education, training and/ or experience and must be aware of their roles and responsibilities in conforming to the environmental policy and requirements of the environmental management system (including emergency preparedness and response)." and "Monitoring and measurements are carried out in order to record actual environmental performance and conformance with the objectives and targets laid out in the environmental policy as well as compliance with relevant environmental regulations. The ship-dismantling facility must keep records of the monitoring results, any change in the procedures resulting from corrective or preventative action, training, and results from environmental audits and reviews. Audits of the EMS should be carried out on a regular basis.

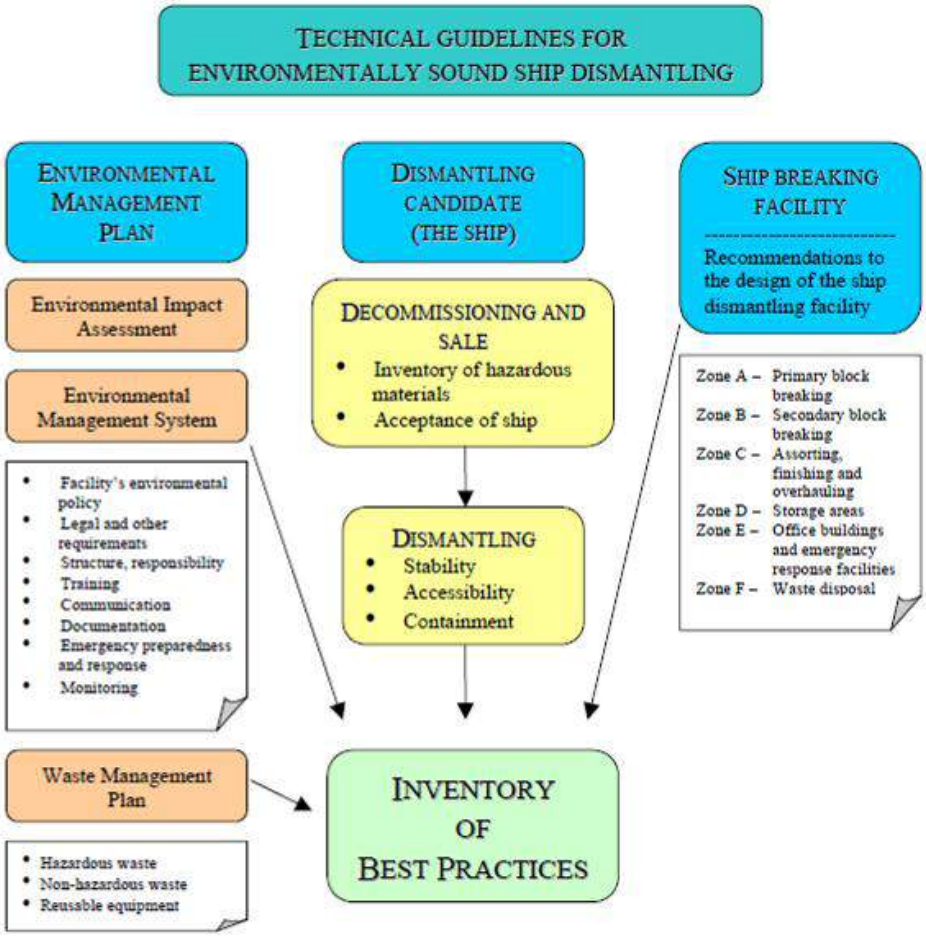


Figure 11: Overview of elements to consider for ESM of a ship dismantling facility (BC, 2003)

In short, the implementation of such an overview requires not only addressing the qualification of workers but also streamlining the yard processes and developing a high level of awareness at the supervisory and management levels.

3.3.1 Training and other materials of the Basel Convention

Further to the above reviewed Guidelines some documents including training materials of the BC have been analysed. The following documents have been reviewed:

- Guidance for Ship Recycling Facility Operators; Guidance for compliant ship recycling facilities in consideration of the requirements of the Basel and Hong Kong Conventions", Roy Watkinson for Basel Convention, July 2013
- Guidance for Competent Authorities of Ship Recycling Facilities; Guidance for compliant ship recycling facilities in consideration of the requirements of the Basel and Hong Kong Conventions"; Roy Watkinson for Basel Convention, August 2013

These documents compare HKC requirements with some general guidance on environmentally sound management (ESM), infrastructure, equipment, downstream waste management, as well as a brief section on management and training / supervision of staff, including improvement planning and an overview of the Ship Recycling Facility Plan. The document does not provide detailed training materials or an overview of job-specific training requirements.

Other training material[6] for Competent Authority in the BC framework provides an overview and some background information on regulations and management of SRFs. Some content could support the training of managers, which are less involved in the practical work of SRFs.

Additionally BC has published other training material[7], which provides a general overview on work practices, hazards, hazardous materials and other safety and environmentally relevant aspects of ship recycling. The level of detail is neither sufficient for training of specific experts, supervisors, or managers nor for providing a proper overview on general safety and health relevant for the different types of workers in SRFs. It is a good overview on HSE aspects, but not suitable due to lack of detail for training of workers or other personnel for very specific tasks such as fire-fighting and removal of waste in SRFs.

3.3.2 Conclusion on Guidelines of Basel Convention

Due to the date of publication and further developments by various stakeholders, the BC Guidelines and other materials provide some general guidance but not a complete training curriculum or collection of training content that can be directly utilized. Some content may be considered during the development of training, but the BC documents meet the required training as identified during this task in only a very basic manner.

For ensuring safe and environmentally sound practices, the interactions between the management and work carried out inside the ship recycling facilities remain to be address through specific training. Inclusion of specific roles and responsibilities is a subject for the next phase of the project.

4 Expected level to reach – HKC Standard

The HONG KONG INTERNATIONAL CONVENTION FOR THE SAFE AND ENVIRONMENTALLY SOUND RECYCLING OF SHIPS, 2009 (SR/CONF/45) contains a set of requirements, which SRF have to comply with.

Further details concerning the safe and environmentally sound ship recycling can be found in the 2012 GUIDELINES FOR SAFE AND ENVIRONMENTALLY SOUND SHIP RECYCLING (Resolution MEPC.210(63), successively Facility Guidelines).

These two documents provide the basis for the summary in the following chapter. To avoid any misunderstanding, it is important to note that the requirements described in the Hong Kong convention will be mandatory to its parties after the convention enters into force while the guidelines MEPC.210(63) are intended to be voluntary.

Being subject to each government decision to implement or not, the guidelines remain important documents to take into account, as recalled in numerous provisions of the Convention, because the guidelines aim to provide interpretations for a uniform implementation. In addition, the guidelines present details of what should be the elements to consider in order to promote safe and environmentally sound ship recycling.

4.1 Key elements

The SRFP should identify and demonstrate the Ship Recycling Facility's knowledge and understanding of applicable worker safety and occupational health processes, procedures, laws, regulations and guidance. Further, the SRFP should demonstrate that the safety and health programme supports the activities necessary for environmental compliance and for recycling and disposal at the Ship Recycling Facility.

[6] "Environmentally Sound Ship Dismantling Training Module for Competent Authorities Facilitating compliance with the Basel and Hong Kong Conventions"; Basel Convention, October 2012

[7] "Environmentally sound ship dismantling; Management of hazardous materials and wastes", training presentation"

“The SRFP should identify one or more key personnel who possess the level of training and experience necessary to effectively ensure that safe conditions are maintained during operations at the Ship Recycling Facility, […] include a hierarchy of safety and health management staff, including an overall manager, supervisory staff and general workers. ““ (see section 3.3.2, of Facility Guidelines, Resolution MEPC.210(63))

“The SRFP should include the procedures to be implemented to conduct a job-hazard assessment to determine the proper approach to maximizing worker safety. […] It is recommended that the assessments should be conducted by a team of personnel including the Competent person, a representative of management and workers with the appropriate level of expertise. “ (see section 3.3.3, of Facility Guidelines, Resolution MEPC.210(63))

4.1.1 The convention regulations related on OHS training

The most important requirements are located in the Chapter 3 of the HKC Annex.

As a general principle, the ship recycling facility shall establish a management system able to avoid health risks to workers and population as well as to minimize adverse effects on the environment (**Regulation 17**).

In **Regulation 18**, it is recalled that Ship Recycling Plan have to consider workers’ safety and health as well as environment protection. In addition, the Plan shall include “a programme for providing appropriate information and training of workers for the safe and environmentally sound operation of the Ship Recycling Facility; an emergency preparedness and response plan […]; a system for reporting discharges, emissions, incidents and accidents causing damage, or with the potential of causing damage, to workers’ safety, human health and the environment; and a system for reporting occupational diseases, accidents, injuries and other adverse effects on workers’ safety and human health,

” (Regulation 18.4 and 18.5)

As recalled in **Regulation 19** chapter Procedures and measures shall be in place to:

- prevent explosions, fires, and other unsafe conditions […];
- prevent harm from dangerous atmospheres and other unsafe conditions […];
- prevent other accidents, occupational diseases and injuries or other adverse effects on human health and the environment; and
- prevent spills or emissions throughout Ship Recycling which may cause harm to human health and/or the environment,

Regulation 20 – Safe and environmentally sound management of Hazardous Materials

> “1 Ship Recycling Facilities authorized by a Party shall ensure safe and environmentally sound removal of any Hazardous Material contained in a ship certified in accordance with regulation 11 or 12. The person(s) in charge of the recycling operations and the workers shall be familiar with the requirements of this Convention relevant to their tasks and, in particular, actively use the Inventory of Hazardous Materials and the Ship Recycling Plan, prior to and during the removal of Hazardous Materials.
>
> 2 Ship Recycling Facilities authorized by a Party shall ensure that all Hazardous Materials detailed in the Inventory are identified, labelled, packaged and removed to the maximum extent possible prior to cutting by properly trained and equiped workers, taking into account the guidelines developed by the Organization, in particular: […]”

Regulation 21 – Emergency preparedness and response, requires the facility to develop a plan and to consider the personnel.

The plan shall "[…] provide for relevant information and training to all workers of the Ship Recycling Facility, at all levels and according to their competence, including regular exercises in emergency prevention, preparedness and response procedures." (Regulation 21.5)

Regulation 22 – Worker safety and training

"1 Ship Recycling Facilities authorized by a Party shall provide for worker safety by measures including:

.1 ensuring the availability, maintenance and use of personal protective equipment and clothing needed for all Ship Recycling operations;

.2 ensuring that training programmes are provided to enable workers to safely undertake all Ship Recycling operations they are tasked to do; and

.3 ensuring that all workers at the Ship Recycling Facility have been provided with appropriate training and familiarization prior to performing any Ship Recycling operation. […]"

Regulation 23 – Reporting on incidents, accidents, occupational diseases and chronic effects

"1 Ship Recycling Facilities authorized by a Party shall report to the Competent Authority(ies) any incident, accident, occupational diseases, or chronic effects causing, or with the potential of causing, risks to workers safety, human health and the environment. […]"

4.1.2 The guidelines requirements

The chapter "*3.1.2 Training programme*" in the 2012 IMO Guidelines recalls:
"Regulation 22 of the Convention specifies that the Ship Recycling Facility shall ensure that training programmes are provided. The SRFP should provide detailed information on the general workforce and job functions and on training procedures to ensure the appropriate level of worker safety and environmental protection. The training programmes should cover all workers and members of the Ship Recycling Facility, including contractor personnel and employees (regulation 22.3.1), and should identify the type and frequency of training. […]
The training programme should enable workers to safely undertake all operations that they are tasked to do and ensure that all workers at the Ship Recycling Facility have been provided with the appropriate training prior to performing any ship recycling operation.

The programme should include appropriate training for tasks and operations performed by the employees including, but not limited to, the following:

1. awareness and communication of information about Hazardous Materials;
2. job hazard awareness, including handling and management of Hazardous Materials;
3. personal protective equipment;
4. fire protection and prevention;
5. emergency response and evacuation;
6. safety and health training;
7. environmental awareness; and
8. first-aid awareness."

3.1.3- Worker Management
"The SRFP should include specific information on worker responsibilities, including qualifications, training and monitoring responsibilities."

3.1.4 Records management

"The SRFP should outline the policies and procedures for retaining […] records of training and exercises/drills, worker accidents, […] and a description of any national requirements for records management and retention. If national requirements do not specify a time period, it is recommended that records should be kept for five years."

3.3.2 Key safety and health personnel

The SRFP should identify one or more key personnel who possess the level of training and experience necessary to effectively ensure that safe conditions are maintained during operations at the Ship Recycling Facility, […] include a hierarchy of safety and health management staff, including an overall manager, supervisory staff and general workers.

3.3.4.3 Welding, cutting, grinding and heating

The SRFP should include procedures for ventilation, personnel monitoring for heavy-metals exposure, protection of personnel, training, respiratory protection, torch cutting, permits and inspections (including hot-work certification).

3.3.5 Emergency preparedness and response plan (EPRP)

It is to be ensured that the necessary equipment […] and details of training arrangements that are commensurate with the possible emergency situations likely to occur at the Ship Recycling Facility – and emergency procedures are in place, and that drills are being held on a regular basis;

Further it is to be ensured that the provision of relevant information and training to all workers at the Ship Recycling Facility, at all levels and according to their competence, including regular exercises in emergency prevention, preparedness and response procedures; and include procedures for recording of an emergency incident and investigation and corrective actions following an emergency incident.

3.3.6 Fire and explosion prevention, detection and response

The SRFP should describe procedures for providing suitable training, instruction and information to all supervisors and workers (including details of the frequency of such training) about the hazards of fires, appropriate precautions to be taken and use of fire-extinguishing equipment, so that adequately trained personnel are readily available during all working periods. Records of training and drills/exercises should be maintained, including such information as type of training/drill, role of person trained, equipment used, duration, location, date and time.

3.4.3.1 Asbestos and materials containing asbestos (also PCB)

> The Ship Recycling Facility should identify the location and quantity of asbestos and materials containing asbestos by actively utilizing the IHM. Identification, marking and labelling should be conducted by the Ship Recycling Facility before asbestos and materials containing asbestos are removed. […]

3.4.4.1 Spill prevention, control and countermeasures

> The purpose of developing and implementing a programme for spill prevention, control and countermeasures is to minimize the risk of spills and leaks that could adversely impact the environment. The SRFP should include a programme that defines the Ship Recycling Facility's procedures for spill prevention, response and countermeasures. The programme should define proactive approaches to spill prevention and procedures to be implemented in the event of spills. […]
>
> As part of the procedures for spill prevention, response and countermeasures, the SRFP should identify the designated in-house and subcontracted personnel who will be responsible for managing the programme and for responding to spills or similar emergencies, as well as the local authorities (such as the fire department) that may have jurisdiction at the Ship Recycling Facility. […]The programme for spill prevention, control and countermeasures can be used as a tool by the Ship Recycling Facility to communicate practices on preventing and responding to spills and leaks, as a resource during emergency response and as a repository for information on

storage, inspection and testing. It is important to maintain records on maintenance, inspections and employee training. […]"

4.1.3 Summary of training requirements imposed by HKC and Guideline

A combination of the separately provided training requirements in HKC and the Facility Guidelines with the different types of workers, task-associated risk assessments and overall organization of the SRF is required to establish and develop an effective training curriculum.

5 Training methods recommendations

Effective training requires the careful selection of instructional methods based on a number of determining factors.

Foremost among those factors is the profile of the training audience. The socioeconomic status of ship recycling workers places them in a vulnerable position when it comes to training for hazardous work. Barriers to learning such as low literacy and unfamiliarity with formal education create obstacles to the attainment of training outcomes.

Therefore, it is essential that the selected training methods incorporate strengths and eliminate barriers to make training accessible and understandable to all. The educational approaches and proposals support the involvement of learner input at all stages, and support training methods providing opportunities for active participation in experience sharing, problem-solving and hands-on learning.

Training development based on these principles can result in changes that lead to a safer and healthier workplace.

5.1 Selection of adequate methods

Considering the relevant educational theories and their application to real training situations as expressed in the literature, combined with the strengths and weaknesses of current approaches used to train ship recycling workers in India and Turkey, and factors for selecting training methods applied to the Bangladeshi context, the following recommendations are made:

- Use of a variety of training techniques
- Videos and slides should supplement the teaching approach
- Each method must be adapted to learning objectives

5.1.1 Training Materials:

Taking into consideration the low literacy rate and educational attainment of the participants as well as potential language barriers, a high premium must be placed on designing or selecting low-literacy training materials.

> **Such materials are primarily visual and include slides, pictures, photos, posters, flip charts, cartoons and videos.**

Visual materials should be familiar to workers, reflecting their cultural context as well as the workplace context. A good example can be taken from the Turkish experience regarding the use of videos as well as photos taken at the ship recycling facility, including accident photos.

Visual aids should not be used alone, but as a complement or trigger for actual teaching methods (e.g. small group discussion and analysis).

If possible, training materials should be developed in consultation with, or at least pre-tested on the intended training audience to ensure appropriateness and understandability.

5.1.2 Training Methods:

Table 6 provides a comprehensive summary of recommended instructional methodologies along with the learning outcomes they fulfil, their respective advantages and limitations and some suggestions for their use. The following general principles are further recommended:

Training should be presented through a combination of channels and methods in order to:

- Appeal to different learning styles of adult learners
- Take into account different linguistic and literacy levels
- Re-inforce learning
- Prevent boredom and demotivation

Deliverable Final includes 1+2+3

Training methods should not be used randomly but purposefully to fulfil specific training objectives.

Training Method	Advantages	Limitations	Outcomes	Comments/Suggestions
Lecture: Formal presentation by expert/ trainer	• Time efficient way to impart new information or build on existing knowledge base • Ideal for presenting factual topics • Group size is not an issue • Easy to organize and control • Possible to use with low literacy learners • Good lecturer can arouse interest in topic	• Does not typically engage learners in active participation • Input can be too abstract if not related to learners real life experience • Retention of information is low • Difficult to assess degree of comprehension/learning • Can alienate non-majority language speakers • Learners with less formal education experience may lose focus or become discouraged	Knowledge	• Limit lecture time to 20 minutes • Supplement lecture with visual aids as much as possible to support non-majority language speakers and visual learners • Relay stories and real life experiences and examples to relate to learners and enliven the lecture • Interrupt the lecture periodically to create opportunities for learner involvement – pose questions, ask learners to provide examples or apply the information presented • Follow the lecture with an activity to re-inforce knowledge
Videos	• Shown to increase training quality (Van Mele, 2011) • Help remove learning barriers of low literacy and less educated workers • Can present a lot of information in a relatively short time • Effective for raising awareness • Can be entertaining as well as educational, preventing boredom • Easy to use • Appeals to visual learners	• Do not typically engage the learner in active participation • Videos that do not reflect the local culture or are too generic can hinder learning • Can alienate non-majority language speakers if video is only available in majority language • Difficult to assess degree of comprehension/learning	Knowledge Skills Behaviour	• To be most effective, videos should reflect the local culture and the participants themselves • Videos should be in the local language • Videos should be short – between 5 and 10 minutes to optimize information processing • Videos should not be used alone, as is, but as a trigger for dialogue • Follow the video with an activity to re-inforce knowledge
Small-group activity: small groups of learners work on a task/ problem solving activity (responding to a	• Promotes active engagement with the topic • engages learners in dialogue with each other • learners to use and share their knowledge and experience • less confident learners feel more	• Can be time consuming • Difficult to control • Stronger learners can dominate discussion • Discussion is limited by learners' experience • Trainer must be trained in and	Knowledge Attitude Social Action	• Task and materials should be carefully selected and prepared • Task and objectives should be presented verbally using clear and simple language • Use visual aids to trigger dialogue/problem solving

Deliverable Final includes 1+2+3

Training Method	Advantages	Limitations	Outcomes	Comments/Suggestions
question, problem or trigger) and then report back to the larger group	comfortable getting involved • Triggers critical thinking • Reinforces/consolidates learning • Weaker learners can be mentored by peers	comfortable facilitating participatory training activities		• Limit groups to 4 – 6 participants • Set a time limit for the task • Trainer should move from group to group to ensure the task is understood and discussions are progressing • Encourage active involvement of all learners • Trainer should summarize learning outcomes at the end of the task
Brainstorming: Group members offer ideas or solutions on a particular topic (eg/ identifying hazards in a particular situation), which are recorded by the trainer for further discussion, ranking, prioritizing	• Can help trainer identify groups' existing knowledge on a topic • Can enliven the session and generate discussion • Can be used to introduce a topic or reinforce/ consolidate learning • Provides a trigger for further dialogue/ reflection • Engages learners in active participation and group ownership of ideas	• Limited by learners' knowledge/experience about the topic • Stronger learners may dominate • Organizing ideas after brainstorming may be time-consuming • Recording aspect may alienate low literacy learners and non-majority language speakers	Knowledge Attitude	• Make it clear that any and all ideas will be accepted • Set a time limit • Give everyone a chance to contribute • Review ideas orally to include low-literacy learners • Engage learners in identifying common themes, sorting and prioritizing ideas after the brainstorming to trigger critical thinking
Hazard mapping: Small groups of participants identify hazards in the workplace by creating a schematic drawing of the workplace (or a specific area of the workplace) and identifying	• Involves workers in dialogue with each other and the trainer • Promotes a high level of participation among trainees • Draws on experience, skills and knowledge of participants • Can identify existing knowledge/ gaps in knowledge • Involves participants in problem solving • Promotes awareness of health and	• Can be time consuming • Requires trainees to be familiar with the work site	Knowledge Attitude Individual Behaviour Social Action	• Give clear instructions • Use colours or symbols to indicate specific hazards such as fire hazards, chemical hazards, and physical hazards (limit need for writing) • If possible, group participants by similar jobs or work areas • Have small groups report their findings to the larger group • Debrief, summarize and highlight key points

Deliverable Final includes 1+2+3

Training Method	Advantages	Limitations	Outcomes	Comments/Suggestions
various types of hazards by plotting them on the drawing	safety issues			• Use as trigger to discuss how the identified hazards can be eliminated/ use of PPE
Body mapping: similar to hazard mapping – participants use an outline of the human body to indicate where they experience pain in their bodies	• Promotes awareness of health effects of exposure to hazards • Involves workers in dialogue • Can identify existing knowledge/gaps in knowledge • Draws on experience, skills and knowledge of participants • Can be used as a trigger for problem-solving discussion	• Can be time consuming • Information initially limited to workers own knowledge and experience	Knowledge Attitude Individual behaviour Social action	• Give clear and simple instructions • If possible, group participants by similar jobs or work areas • Have small groups report their findings to the larger group • Allow time for debriefing and discussion of lessons learned • Use as trigger to discuss how identified health effects can be mitigated
Case study: Small group activity where participants are presented with a scenario or incident and asked to analyse it and identify possible solutions	• Can be used to introduce a topic, as a trigger for dialogue, or to reinforce or assess learning • Develops critical thinking, problem solving and decision making skills • Opportunity for participants to use own experience • Allows participants to apply new knowledge • Can be used with low literacy learners	• Can be time consuming to find or develop case studies • Case studies may be too general to focus on a particular issue • Can be difficult to control • Trainer must be skilled in facilitating case studies	Knowledge Attitude Individual behaviour Social Action	• Find or develop case studies that participants can identify with (eg/ actual workplace incidents or near misses) • Present the case clearly using simple language • Consolidate, summarize and discuss alternative solutions after the initial small group session
Role play: Two or more participants act out a situation relating to a problem or situation in the workplace	• Effective trigger for dialogue • Can be a way to broach sensitive issues and see topics from other view- points (worker-management relations) • Develops critical thinking and problem-solving skills • Can be used with low literacy leaners if not scripted • Can help participants improved skills	• Can exclude low literacy learners if role play is scripted • Participants may feel self - conscious, reluctant to participate • Learning opportunity can be lost if focus is too much on acting/entertainment • Target knowledge can be over-simplified	Attitudes Individual behaviour Social Action	• Develop a well-structured role-play based on a real or potential workplace issue • Present the situation clearly and concisely • Use visual aids as a trigger • Allow time for follow-up discussion to summarize the outcomes and review lessons learnt

Deliverable Final includes 1+2+3

Training Method	Advantages	Limitations	Outcomes	Comments/Suggestions
	and attitudes in real workplace situations			
Storytelling: Trainers or more experienced workers tell personal stories of workplace critical incidents or near misses	• Learners relate to and remember stories more than pure information • opportunity for participants to share their real-life experiences • Peers often hold more authority with learners than trainers do • Stories have potential to influence behaviour and attitudes • Engages learners in critical thinking and reflection	• Telling a good story can be challenging • Learners may not get the intended lesson	Attitudes Individual behaviour Social Action	• Stories should be well-prepared in advance of the training session • Stories should be related to specific learning objectives • Allow time for questions and follow-up discussion
Hands-on Demonstration and Practice: Trainer or peer-trainer demonstrates a particular task or process. This is followed by practice or return demonstration by participants	• Involves active participation of learners in learning-by-doing • Behaviour can be influenced by watching the behaviour of others (behaviour modelling) • Immediate feedback can be given and used to engage learners in dialogue • Appeals to visual learners • Can be used effectively with low literacy or non-majority language speakers	• Not practical with large groups • May require availability of dedicated resources and equipment	Skills Individual behaviour	• Demonstrate correct, rather than incorrect procedure • Make sure all participants can see the demonstration clearly • Go through each step of a procedure • Give immediate feedback on participants' demonstrations
Simulation/ Exercise: Participants apply knowledge gained to a "real-life" situation	• Can be used for simple or complex tasks eg/ use and maintenance of PPE or putting an emergency response plan into action • Engages learners in active participation • Involves participants in critical thinking, problem-solving and decision making • Builds self-confidence	• Time consuming • Complex simulations require a lot of preparation • May require availability of resources, equipment and space. • Difficult to manage with large groups	Skills Individual behaviour	• Take time to prepare the situation carefully • Explain the situation clearly and simply • Involve all participants in the simulation (dividing participants into smaller groups may be required) • Allow time for debriefing, follow-up questions and discussions of lessons learnt.
Peer-mentoring:	• Adults are more likely to learn from	• May be difficult to identify	Skills	• Identify a time-period for mentoring

Training Method	Advantages	Limitations	Outcomes	Comments/Suggestions
More experienced workers act as mentors to newer workers in a "buddy system"	behaviour modelling if the models are similar to themselves • Can lead to behaviour changes through behaviour modelling • Especially useful for low-literacy or non-majority language speakers • Builds confidence • Consolidates knowledge learned in training sessions • Can be used to identify further training needs	suitable mentors • Time consuming for mentors • Modelled behaviours must be seen by the learner as having a positive impact, or they will be avoided (Cullen & Fein, 2005) • If mentors are not respected, learning may be hindered	Attitude Individual behaviour	• Establish

Table 6 Training methods

5.1.3 Other considerations

Most workers have limited experience with formal education and sitting through long lectures can inhibit rather than promote learning. Lectures should be limited to 20 minutes and should be interactive (Refer to Table 6).

Most workers have had limited or no previous training. Trainers are advised to begin with simpler, low risk training activities such as brainstorming, and build up to more complex tasks like case studies once trainees have acquired some experience and confidence.

Demonstrations and opportunities for hands-on practice are important for all learners, but particularly for low literacy, less educated workers who learn best through doing. Training should provide ample opportunity for these types of activities.

Opportunities for structured informal learning activities such as mentorship and/or job shadowing should be strongly encouraged and facilitated. Such one-to-one learning opportunities are invaluable for new or less experienced workers as they promote confidence, collaboration and leadership, while reinforcing acquired skills and knowledge.

5.2 Conclusion on training methods

A blend of teaching techniques and tools is recommended to meet the context of the work system and constraints. Methods that engage the participants are favoured as well as visual tools to overcome literacy difficulties.

6 Proposed approach for curriculum

In order to meet training needs in ship-breaking sector, the present chapter presents the outcome of the gap analysis on which the curricula has been developed (the complete gap analysis (task 4) is available on demand to IMO-NORAD project management).

6.1 Outcome of gap analysis

The approach followed in the gap analysis can be divided into three stages:

- First stage - Collection of data about international practice. Previous research projects outputs were evaluated and listed for future utilization in SENSREC project. A data collection form was created to gather previous research project outputs and international practice data from consortium members. Task 4 (gap analysis) received the material and established a database to assess the usefulness of the information.
- Second stage – Comparison between international and national ship recycling practices. The data collection about Bangladesh practice was recovered from National Partners and a comparative study was conducted to identify gaps between international and national practice.
- Third stage – Assessment of training content with regards to international norms and best practices. Current training content of Bangladesh ship recycling was investigated and compared with international requirements. Training contents in Bangladesh were assessed against the requirements of international norms and available industry best practices. A gap analysis exercise was conducted to identify the areas where further development is required. The requirements of IMO Hong Kong Convention and ILO Guidance on ship recycling are listed and comparison results show that current training in Bangladesh is below the requirements of IMO and ILO. The findings of the gap analysis were presented in a comprehensive report.

After the analysis of the training gaps, consortium suggests the following points should be addressed in the future training curriculum.

Pertinent aspects of national and international OSH legislation

Workers and employers should be made aware of the relevant laws, regulations, requirements, and codes of practice, instructions and advice related to the ship breaking and any other related law.

Safety and health training

The topic of ‘occupational safety and health’ is covered within the current training but content should be improved. (e.g. managing health and safety, safety culture, medical health surveillance and welfare support, long term occupational illnesses etc.).

Awareness and communication of information about Hazardous Materials

Both workers and managers should be trained in order to create the necessary awareness. Regarding IHM, information in it and what it represents for preparing a proper ship-recycling plan. Awareness should be raised on how to properly record and report the handling and processing of Hazmat involved in ship recycling practices

Job hazard awareness, including handling and management of Hazardous Materials

Both job hazard awareness and effective uses of preventive measures are partly covered in the current training; however there are still important issues that should be addressed. Common and specific occupational hazards should be covered and addressed properly in the trainings.

Assessments, reviews and exposure measurements, and workers wellbeing

Training on these issues should be considered to collect data and measure the risks in order to take necessary actions and informed decisions. Other issues that should

be given more detailed training are hygiene practices, working in confined spaces, development of standard operating procedures and conducting deviation investigation after accidents to identify root causes of accidents.

Personal Protective Equipment

During yard visits, it was observed that most of the workers were not always wearing adequate PPE for their job tasks. It shows a lack of awareness on the importance of wearing proper PPE. Specific attention should be given to selection of PPE for each task (i.e. fit for purpose).

Fire protection and prevention

This issue can be improved by providing more ship recycling related examples and potential causes of fire and explosion in ship recycling processes. Awareness can be raised on the areas of ship as well as ship recycling tasks, which have a higher probability for fire and explosion.

Emergency response and evacuation

A detailed emergency response and evacuation training should be given to the workers and other staff. It seems partly covered on current trainings, but more comprehensive approach should be adopted which can also be supported by case studies to ensure effective behaviour during emergency.

First-aid awareness

During yard visits, it was observed that some yards covered first-aid awareness with but more practical demonstrations can be provided for the scenarios related to ship recycling

Environmental awareness

Unfortunately, there is no evidence that this issue is covered within the current training. It was observed globally that environment around recycling yards suffers from the activity.

Vocational Education

Vocational education and training (on the job training) prior to initial assignment of workers to ship recycling tasks, should be provided to workers and training records should be kept. We also believe this will help professionalization of the job.

All these elements have been organized and incorporated into eight modules:

1. **Ship Recycling Administration and Regulative Framework**
2. **Job Hazard Awareness-Hazard and Risk (practical)**
3. **Awareness and Communication of Information about Hazardous Materials**
4. **Inventory of Hazardous Materials (IHM)**
5. **Personal Protective and Safety Equipment**
6. **Worker Wellbeing & Health**
7. **Environmental Awareness**
8. **Vocational Education and Training**

6.2 Development of curricula

Established on gap analysis outcomes, the training curricula present numerous components and characteristics.

First of all, the intention of the consortium has been to provide detailed curricula able to supplement, update and expand existing training material.

Moreover, in order to support day-to-day activities, the training curricula reflect the various categories of workers as well as the needs of hierarchical structure.

Recognizing the needs of three categories of persons to train, three curricula have been produced:

- Curriculum 1: Initial training for all workers
- Curriculum 2: Additional training for skilled and special workers
- Curriculum 3: Awareness for managers

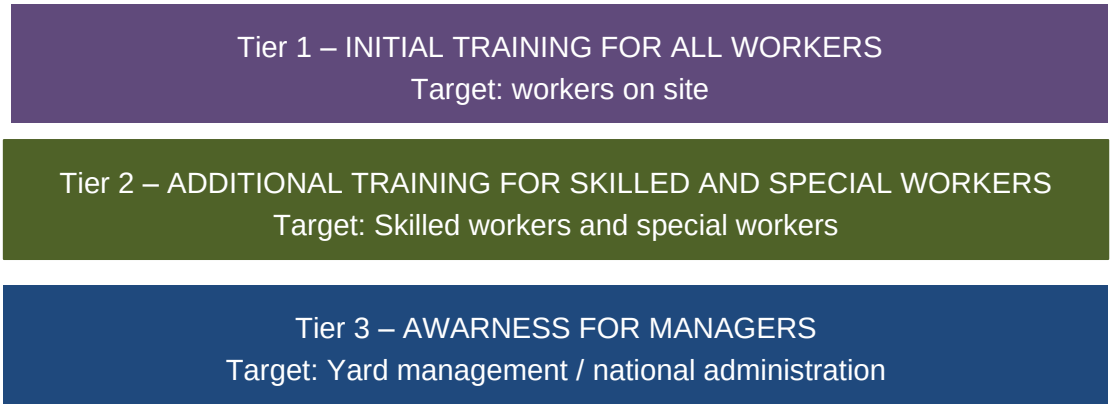


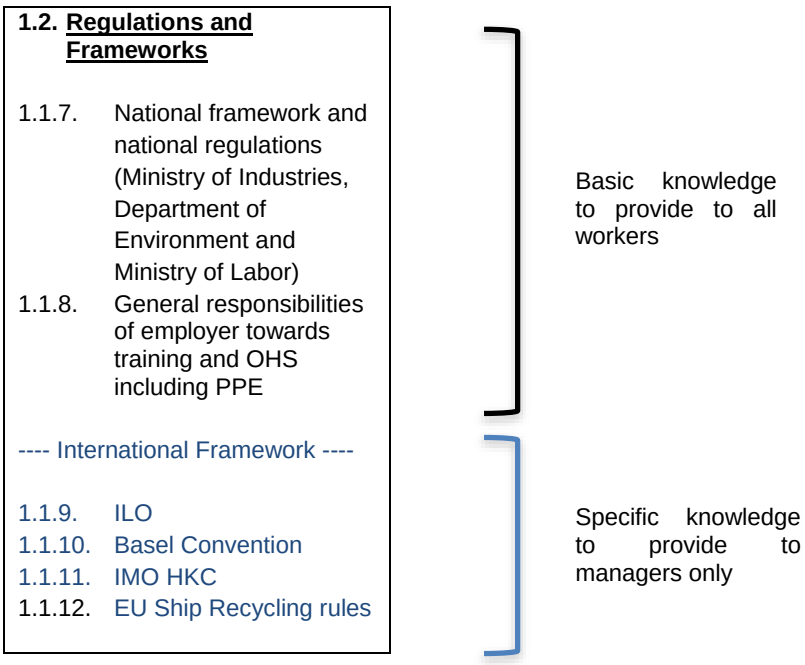
Figure 12 Three-tier training systems

As previously stated, this three-tier approach does not only meet the ILO vision of OHS implementation but also meets the needs of ship recycling industry in Bangladesh.

- Firstly, the three curricula are inherently related one another. The curriculum "initial training for all workers" establishes the foundation on which additional elements are added to meet the needs of skilled and special workers and managers. This foundation aims to provide the ground information on which other trainings are elaborated.
- Second, the 8-modules curricula have been itemized and largely meticulously detailed, on purpose. By providing numerous details, the curricula aim to form the backbone on which the training content have to be elaborated. So, it constitutes an outline to facilitate the next phase of development.
- Third, the outline intends to organize the trainer's manual and to provide a holistic approach of the knowledge to acquire for the trainer and to distribute to workers. The manual aims to become a reference guide providing a harmonized understanding.
- Fourth, from this manual the training material will be developed according to the methods identified in previous chapter (Chapter 5).

Each curriculum will elaborate on the 8 modules. Therefore, it seems practicable to have training blocks where all trainees receive similar background information (initial training for workers) and then additional content for other categories (i.e. managers and skilled and special workers).
While workers may not need to complete some parts of the training (for example the details of the international Conventions related to ship breaking), managers would benefit from such knowledge. Vice versa, managers may not need to integrate all technical aspects of activities that workers and skilled workers need to be trained on.

Example to clarify this approach with module 1:



It is important to recall that the regulation requires training for workers and not managers. Therefore, the length of the training has been adapted accordingly.

Managers will benefit from awareness and not extensive training. However, it is recommended that managers directly involved in ship breaking activities complete the skilled workers training in order to be exposed to knowledge workers may know. Moreover, the recruitment of managers having extensive HSE experience and technical knowledge of industrial safety is highly recommended (e.g. manager from shipping or shipbuilding industry).

Length of curricula

At present, the length of training for workers has been identified by the Decision of the Honourable High Court:

“A system of comprehensive training must be introduced to impart training to those who shall be employed for ship breaking activities. An Institute will be set up for the training purposes by BSBA at their cost for training such persons. The training period shall be at least 3 months duration. First 20 days shall be allocated for theoretical training, while the rest of the period shall be involved in practical vocational courses. No workers shall be allowed to be employed in the ship breaking yards without certificate showing completion of the course (Honourable High Court Verdict on 6/4/11, regarding workers training)”

The Ministry of Industries must confirm our understanding/interpretation

First, our interpretation is that the period of 3 months includes days off.

Second, the training must be divided in 2 parts: 20 days for theory and the remaining period for vocational training (2 month and 10 days).

Understanding that the overall period of 3 month includes days off, it is understood that the training should made of:

- Theoretical training of 20 days (or 3 weeks). So, it is understood that the theoretical training should last 15 complete days (deduction of weekends).
- Practical vocational training of 2 month and 10 days. Deducting the weekends it should make 70 days – 23 days (deduction for weekends) = 47 complete days onsite training.

In short, 15 days of theoretical training MUST be supplemented by a practical apprenticeship (vocational practice) of 47 days. The overall training should cover a 3-month period as required by High Court Decision. A certificate of training will sanction the completion of both trainings.

Our present proposal embraces the theoretical period. In order to satisfy the High Court Decision and to make it useful for workers, we propose that the theoretical training should blend classroom and onsite activities (15 days within a 20-days period). The need to perform on-site activities has been highlighted by workers during the survey of workers.

Classroom activities for all workers (theory part 1):

The completion of the classroom training requires a total 8 to 10 complete days according to categories of workers. In addition, the classroom training MUST be supplemented by onsite activities.

Onsite activities for all workers (theory part 2):

The on-site activities require both emergency training (e.g. fire fighting, oil spill response, rescue, first aid, etc.) and handling of hazardous material.

Vocational practice (2 month and 10 days)

The onsite training falls under the responsibility of the employer and must be performed under adequate supervision and guidance.

The “certificate of attendance” (for training without exams or in case they have not passed the exam) or a “certificate of successful participation” (for training with exams which they have passed) should be provided at the end of theoretical training (part 1 and 2) and vocational practice.

6.2.1 Trainer’s Qualification and Expertise

All trainers should have specific knowledge and demonstrate their experience (trainer certificates, licenses or other evidence on the topics of concern according to the national or international requirements, as far as applicable). It is expected that each trainer undertake the full training at least once or during a train-the-trainer session.

Potential trainers and training institutes in Bangladesh should support the development of the courses (e.g. Bangladesh Marine Academy).

6.2.2 Designation of Participants

The participants are designated for specific training based on the work they carry out and the associated risk assessment. However, to make sure the curriculum meet the need of the specific groups, it is expected to adapt the training to the audience.

6.3 Internal organization to support HSE department

The training of workers and staff employed or hired by SRFs has to be controlled by a responsible person or team, commonly known as HSE department.

Such a team should have access to SRFs´ hierarchy and should hold sufficient power to deny access to untrained or uncontrolled workers. In this respect, the creation of a central registration of ship breaking workers linked with an ID system would be helpful.

The establishment of such HSE department integrated in the yard management would efficiently support the implementation of OHS and environmental protection policies.

Therefore, the organizational structure should follow the generic system presented below:

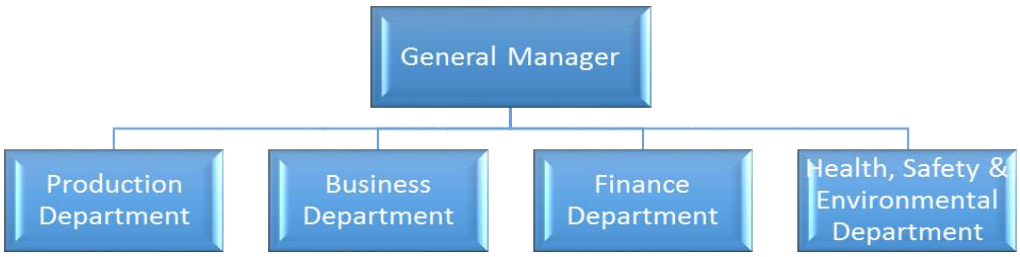


Figure 13: Organizational Structure of SRFs

It seems most practicable to empower the HSE department for activities related to training, verification and inspection of activities and workers on-site.

In case of use of contractors, it is assumed that contractors will be able to demonstrate the qualifications of their workers to the HSE department officers. Again, workers registered and holding proper ship breaker ID cards would be immediately identified if a centralized database is created.

6.3.1.1 Records of education and training

The maintenance of training records and drills is vital to demonstrate the ability of the yard and training institutions to comply with the requirements. In this respect, BSBA institute already maintains records of the workers that participated in trainings.

The training, including participants, is documented in a file maintained by the designated Department and contains the following:

1. Type of training
2. Time and place of training
3. Trainer
4. Name and role of trainee
5. Validity of training / date of next training required
6. Issued training certificates or record of attendance to training
7. Driver, Crane operator and winch operator in house training and valid licenses copy

Inserted in their ship breaker ID-cards and linked to a centralized database, the training information would be easily verified.

6.3.2 Dedicated training to be considered in next phases of the project

It is expected that the next phases of the project will consider training for additional categories of persons engaged in ship recycling business and eventually develop higher-level training leading to University degree.

7 Conclusion of the document

The ship breaking industry plays a vital role in Bangladesh economy by providing major resources in steel production. However, the sector needs to enhance its OHS and environmental awareness to remain competitive and comply with tightening regulatory frameworks.

The present work of the consortium led by WMU presents the training needs in Bangladesh. It has been developed incorporating national regulations as well as international requirements and practices.

The outcome of the gap analysis shows a need to develop three curricula articulated around eight modules in order to meet national needs. The content development will elaborate on the eight modules of the curriculum.

In order to enhance training efficiency, a selection of teaching methods has been identified and presented in this document.

8 Some references

[1] „Occupational Safety and Health Manual (for the ship recycling workers in Bangladesh)", Safe and Environmentally Friendly Ship Recycling Project (BGD/03/005), Ministry of Labour and Employment, published by ILO in 2009

[2] "Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships", published in 2003 by Secretariat of the Basel Convention

[3] "Train the trainer programme on hazardous waste management and oil pollution control", part of Sustainable Ship Recycling Initiative (SSRI) funded by Embassy of Netherlands in Bangladesh and Bangladesh Ship Breakers Association (BSBA), prepared by Creative Consultants / Mr. Jani Dharmesh

[4] "Guidance for Ship Recycling Facility Operators; Guidance for compliant ship recycling facilities in consideration of the requirements of the Basel and Hong Kong Conventions", Roy Watkinson, July 2013

[5] "Environmentally Sound Ship Dismantling Training Module for Competent Authorities Facilitating compliance with the Basel and Hong Kong Conventions"; October 2012

[6] "Environmentally sound ship dismantling; Management of hazardous materials and wastes", training presentation" BC

[7] "Guidance for Competent Authorities of Ship Recycling Facilities; Guidance for compliant ship recycling facilities in consideration of the requirements of the Basel and Hong Kong Conventions"; Roy Watkinson for Basel Convention, August 2013

[8] "Fundamental principles of occupational health and safety." International Labor Organization prepared by Mr. Alli, B.O., 2008

9 Indexes

9.1 Index of tables

9.2 Index of figures

Annex: Background document to support the extension of the content development

Visit to Bangladesh and need for comprehensive approach

The consortium visit to Bangladesh in October 2015 provided the opportunity to collect data on site and to observe local realities. As a blend of practitioners and academics, the consortium integrates national and international partners. With diversity in its background but significant accumulated experience in the field, this richness strengthens the team's capacity to apprehend the complexity of the situation.

Vital for the next phases of the project, this visit supported the identification of training needs and capacity to meet them by making sure that the local strengths and limitations were properly integrated.

Thus, supplemented by the country's context and international approach, the assessment of training needs elaborates on existing material and available literature. The objectives of the project are also to identify and propose solutions to reduce gaps and to support an effective implementation to meet the needs in the local setting.

During the visit, the consortium met several stakeholders and visited various locations. This opening to the country and its key players facilitated the identification of local needs, challenges and possibilities for better integration of the local complexity in the curriculum and training development.

A recurrent theme accompanied meetings and visits in Bangladesh; the necessity to change the mindset. The consortium investigation made clear that the mindset to address was three-fold:

- mindset of workers to avoid unsafe work practices;
- mindset of mid-management and yard supervisors to integrate risk assessment practices into daily operations; and,
- mindset of the top management to understand the benefits of change.

Obviously, the need for a three-tiered approach to training emerged:

Tier 1 – INITIAL TRAINING FOR ALL WORKERS
Target: workers on site

Tier 2 – ADDITIONAL TRAINING FOR SKILLED AND SPECIAL WORKERS
Target: Skilled workers and special workers

Tier 3 – AWARNESS FOR MANAGERS
Target: Yard management / national administration

Not uncommon, this approach adheres to the OHS literature on the topic and the requirements developed by the ILO in its numerous publications and guidelines to promote OHS.

Indeed, safety of workers cannot be isolated from the workplace, the working conditions or its organization. In addition, the perception and investment of management in the identification and control of risks related to the activities are vital for efficient OHS policies as recalled by the ILO[8].

This three-tiered approach also meets the basic elements of an effective policy as presented by the IMO Guidelines OHS (MSC-MEPC.2/Circ.3).

As per this latter document, an effective policy requires:

- Executive management commitment and leadership
- Employee participation
- Hazard anticipation, identification, evaluation and control
- Training appropriate for duty and responsibilities
- Record keeping
- Contract on third party personnel
- Fatality, injury and incident investigation
- Systematic programme evaluation and continuous improvement

Because the scope of the project targets workers' OHS, the present work package will update and develop a curriculum to respond in accordance with demonstrated needs.

However, in its final report, the Consortium will present proposals to integrate management aspects of OHS in order to enhance policy effectiveness in Bangladeshi ship breaking yards. In this respect, the framework proposed by the IMO Guidelines on OHS will constitute an important guide. Devoted time during the content development phase could support the determination of a curriculum considering tiers 1 and 2 - coordination and management as well as to identify and engage local partners able to back this approach.

Emphasis on local partners' capacities

The consortium structure encompasses three high profile institutions in Bangladesh.

- The Bangladesh Marine Academy (BMA) located in Chittagong is the national training institution for maritime education and training. Complying with STCW, BMA possesses strong experience and adequate facilities to teach OHS related topics as well as emergency response. The national leader for the consortium, BMA has many years of experience in the field of ship recycling and has participated in BSBA training development and teaching.
- The Bangladesh University of Engineering and Technology located in Dhaka is the most prestigious engineering institution of the country. The department of Naval Architecture and Marine Engineering is developing a module on ship recycling for its students and possesses expertise in Inventory of Hazardous Material.
- The University of Chittagong possesses several faculty with expertise related to ship breaking in fields as diverse as social sciences and chemistry.

In addition, the consortium partners identified institutions that could support the development of a strong and long-lasting training system:

[8] "Because occupational hazards arise at the workplace, it is the responsibility of employers to ensure that the working environment is safe and healthy. This means that they must prevent, and protect workers from, occupational risks. But employers' responsibility goes further, entailing knowledge of occupational hazards and a commitment to ensure that management processes *promote safety and health at work*. For example, an awareness of safety and health implications should guide decisions on the choice of technology and on how work is organized. " (ILO, 2008)

- Bangladesh-Korea Technical Training Center provides vocational training for young workers in the fields of engineering and mechanics. It also integrates in its teaching a module on OHS.
- Moreover, industrial partners may function as references and benchmarks to acquire a strong OHS system for ship recycling. In this respect, the Western Marine Shipyard boasts an efficient and recognized OHS policy.

In short, the consortium deems it vital to promote local partnership and to support national alliances. In this context, the use of shipping and ship building expertise available in the country would support the enhancement of the ship breaking sector. Indeed, ship breaking shares with the shipping and shipbuilding industry similar occupations as well as risk types and safety strategies.

Therefore, the accompaniment, by an international expert team, to integrate shipping training systems (BMA), Naval Architecture and Marine Engineering education (BUET) and ship building experience would constitute a tremendous opportunity to develop a quality training system based on the integration of national partners' expertise and experience as well as to reinforce national and international partnerships.

In order to successfully construct the integrative approach, time is vital. It is required that the development of training content should allow sufficient time to develop synergies and to empower local partners.

Present training content and its gaps

At present, two sets of training material are proposed in Bangladesh (complementary, the second often refers to the first one):

- The first reference document to address OHS in ship breaking yards, the SAFEREC manual was developed under the ILO and completed in 2009. This manual presents the basic elements of OHS.
- The second training system has been developed under the Bangladesh Ship Breakers Association in order to comply with national regulations.

The gap analysis undertaken in task 4 presents the details of the missing elements of both training systems.

Despite the merits of having been the first instrument to address OHS in ship breaking yards in Bangladesh, the main weaknesses associated with the SAFEREC manual are the following:

- Generic work, insufficient in terms of scope and detail.
- The categories of workers considered are restricted.
- Risk assessment process before work is not systematic or comprehensive
- The manual focuses on yard work. Inside-ship work activities are omitted.
- The manual emphasizes storage and handling of hazardous material but often omits the extraction phases.
- The use of PPE lack detail, particularly when considering extraction and management of hazardous materials.
- From 2009 (date of publication) to now, various publications and regulations have been developed at National Level (2011) and International level (2012 – guidelines to support HKC).
- Strong emergency response how-to (drills / exercises and response teams aren't specified) is lacking as well as the connection with supporting shore facilities (hospital/fire department, etc.).
- The relationships with hinterland services and subcontractors are disregarded.

- Responsibilities and tasks of supervisors and managers have been ignored.
- Insufficient pedagogical support is provided – manual and posters. Additional elements are needed: video/slides/experience sharing/group work/field trip/practice/live testing/scenarios and role play/simulation/exercises, etc.
- A comprehensive Train-the-trainer course with pedagogic support for the trainer and backup material is important to supplement the manual.

Supported by the SAFEREC manual, the BSBA aimed to be comprehensive but training suffers from several drawbacks:

- Self-developed by a team of local experts – most of them former BMA graduates supported by several departments (Explosive department, fire department, health department, etc.), the training relies on trainers' quality and availability.
- It remains incomplete, lacks formality and incorporation of latest IMO requirements for ship recycling facilities. Each trainer owns their part of the training.
- No dedicated material has been developed.
- No complete curriculum has been produced.
- Several gaps in its content are visible (see gap analysis task 4).
- No pedagogic support exists.

In short, significant work is required to complement the existing SAFEREC manual and develop a wide-ranging training material. The new training material should complement and expand the existing manual but should not be restricted to a manual. The content should also meet local realities (i.e. workers abilities to absorb new knowledge) as well as being comprehensive and up-to-date with latest developments in the industry (i.e. consider the HKC). In addition, and to ease its integration in training courses, adequate pedagogical support material should be developed (e.g. videos, audio, slides, animation, exercises, etc.). The EU shipDIGEST project team (University of Strathclyde and GSR Services - members of the present consortium) took 12 months to develop non-exhaustive training videos for Turkish recycling yards.

It is also expected that a pilot course or train-the-trainers course should be organized.

In order to reach its targets, expanded training content (adequate in terms of quality) must be developed using various media to enhance and facilitate the distribution of knowledge (video, audio/slides, exercises, scenario, story telling, etc.).

In addition, working conditions and regulatory framework changes require a high quality training system, coping with time and requiring minor regular reviews and updates.

To develop such quality material, time is a key parameter. Therefore, it is estimated that 12 months would be a minimum to prepare such a high quality and comprehensive training material.

APPENDIX 2 - CURRICULA

Curriculum 1 for Bangladesh SRF – Initial training for all workers

Curriculum 2 for Bangladesh SRF – Additional training for skilled and special workers

Curriculum 3 for Bangladesh SRF – Awareness for managers

PS: Curricula constitute deliverable 2

Curriculum for Bangladesh SRF Workers

(Initial training for all workers)

Introduction:

The aim of this curriculum is to guide the development of training content in order to enhance awareness and knowledge of managers, regulators and safety agencies relevant to Bangladesh ship breaking activities.

The intention of the training is to provide an understanding of the diverse dimensions of Occupational Health and Safety as well as environment awareness in the context of ship breaking industry of Bangladesh.

In order to fulfill this intention, eight modules compose the present curriculum and form the architecture of the knowledge to acquire.

Each module addresses a specific aspect of the training needs. Each module integrates a table made of several entries as required in educational institutions.

Name of the topic in module in chapters and subchapters	Objectives of the chapter/ subchapter	Expected duration which can be adjusted / presently recorded to guide content developers	General approach for the topic	What should the participant learnt	Expected method to deliver the content	Method to verify knowledge acquisition
Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
1.1. Regulations and Frameworks 1.1.1. Training Requirement under national legislation 1.1.2. Local Legislations	**Understanding basic knowledge about national legislative framework.**	30 minutes	Student-centered instruction (Adult learning/Adult education)	Interactive presentation with visual aids	Recognize basic legislative national framework related to SRF and training requirements	Peer evaluation

Figure 14 - Example of curriculum table principle and enteries

Target audience

The audience of this curriculum is all workers in ship breaking yards.
It is designed to meet all workers and particularly support level (unskilled workers).
The workers have been divided in two categories to develop job-specific training.

Category a – directly exposed to yard main hazards

1. Cutter helper
2. Fitter helper
3. Wire rope handlers
4. HAZMAT and waste handlers / Oil cleaners
5. Cylinder handlers
6. Loaders
7. Plate handlers
8. Unskilled workers

Category b – other workers

1. Security guards
2. Peon (record-keeping in yard)
3. Cleaners (house-keeping in yard and ship)
4. Cook
5. Office staff
6. Other

IT IS IMPORTANT TO UNDERSTAND THAT THIS PRESENT CURRICULUM FORMS THE **FOUNDATION OF TRAINING FOR ALL WORKERS (unskilled and skilled ones)**

For skilled workers, on top of the following curriculum additional elements have to be added to meet the needs of skilled and specialized workers.

Flexibility

The curriculum aims to be flexible and to leave the developer sufficient room to expand – but not reduce - each section or chapter according to their expectation and needs. The times allocated per chapter are indicatives.

In eight modules, the course involves:

- MODULE 1 Ship Recycling Administration and Regulative Framework
  - Understanding national frameworkand knowledge about national regulations
  - Knowledge about employers responsibilities
  - Knowledge about workers and employers relationship
  - Understanding the importance of OHS management
  - Knowledge about incidents, accidents and diseases

- MODULE 2 – Job Hazard Awareness – Hazard and Risk Module 4
  - Understanding hazards
  - Knowledge and understanding about various work related hazards
  - Understanding workplace hazards specific to ship breaking
  - Identification of hazards and understanding how to behave
  - Understanding the basic principles of Behavior Based Safety

- MODULE 3 - Environmental Awareness
  - Creating environmental Impact awareness
  - Applying waste management technique
  - Applying pollution prevention measures
  - Understanding and applying pollution response

- MODULE 4 – Inventory of Hazardous Materials (IHM)
  - Applicable only for skilled workers

- MODULE 5 - Personal Protective and Safety Equipment
  - Understanding PPE and legal requirements
  - Understanding the importance of using PPE
  - Analyzing PPE use, evaluating condition of PPE
  - Understanding the various categories of PPE and applying them
  - Selecting appropriate PPE type
  - Applying PPE correctly and general maintenance
  - Remembering PPE in emergency

- MODULE 6 –Worker Wellbeing and Health
    - Understanding OSH practices
    - Understanding importance of hygiene and health practices
    - Understanding medical, welfare support and psychological health

- MODULE 7 –Awareness and Handlingof Hazardous Materials
    - Creating general awareness on Hazardous materials especially those covered in IHM
    - AN ADDITIONAL SECTION IS AVAILABLE FOR HAZMAT TEAMS AT OPERATIONAL LEVEL

- MODULE 8 –Vocational Education and Training
    - Understanding that simultaneous activities occur in yard and may affect safety of workersEvaluating safety
    - Understanding equipment
    - Understanding and using tools
    - Understanding and applying hot work safety precautions
    - Understanding sorting and segregation techniques
    - Understanding and applying safety precaution
    - Understanding the importance of maintenance
    - Applying emergency response technique
    - Addition to MODULE 8 for specific categories of workers
        - Understanding and applying hot work safety for cutter and welder teams
        - Understanding safe Cylinder handling procedure
        - Applying safe operational practices for fitter team
        - Understanding safe handling of Loads
        - Understanding the Hazards associated with Rope handling
        - Applying appropriate knowledge on waste handling and their management – Hazmat teams

PART A: COURSE FRAMEWORK

Aims of the curriculum

The curriculum provides details of the training to participants to be familiarized with risks and safety and environment protection measures in the context of ship breaking in Bangladesh.

It is expected that the methods to teach the participants consider their knowledge and abilities.

Objectives

- Understanding Regulative Framework of Ship Recycling in particular to OHS training &Administration.
- Creating Job Hazard Awareness among workers-Hazard and Risk mitigation (practical)
- Creating awareness about Environmental impact & Protection measures
- Understanding the use of Personal Protective Equipment
- Knowledge about Worker Wellbeing & Health surveillance procedure
- Understanding management of Hazardous Materials
- Applying vocational knowledge in the use of tools & machineries and their maintenance in work activities and learning emergency preparedness& response

Entry standards

The modulesare intended to provide basic knowledge for ALL WORKERS. For skilled workers and specialized workers (particularly those dealing with Hazardous Material), additional training is required.

Course certificate

An attendance certificate will be issued after successful completion of full-length training. The full training means theoretical training + vocational practice.

Course intake limitations

Maximum trainees per session----- 30
Type of trainees------- all workers

Proposal of Course length and structure

National authorities MUST establish the overall length – the overall durationand breakdown proposed in the tables are informative and result from a trade off between partners.
At present, the Honorable High Court provides the length of the training for workers in ship breaking.

"A system of comprehensive training must be introduced to impart training to those who shall be employed for ship breaking activities. An Institute will be set up for the training purposes by BSBA at their cost for training such persons. The training period shall be at least 3 months duration. First 20 days shall be allocated for theoretical training, while the rest of the period shall be involved in practical vocational courses. No workers shall be allowed to be employed in the ship breaking yards without certificate showing completion of the course (Hon'ble High Court Verdict on 6/4/11, regarding workers training)"

Our understanding:
First, the mentioned period of 3 months includes days off.
Second, the training must be divided in 2 parts: 20 days for theory and the remaining period for vocational training (2 month and 10 days).
Considering that the period includes days off, it is understood that the training should made of:

- Theoretical training of 20 days (or 3 weeks). So, it is understood that the theoretical training should last 15 complete days(deduction of weekends - this interpretation MUST be confirmed by the MoI).
- Practical vocational training of 2 month and 10 days. Deducting the weekends it should make 70 days – 23 days (deduction for weekends) = 47 days onsite training (this interpretation MUST be confirmed by the MoI)

In short, 15 days of theoretical training MUST be completed by a practical apprenticeship (vocational practice) of 47 days. The overall training should cover a 3-month period as required by High Court Decision.A certificate of training will sanction the completion of both trainings.

Theoretical training.
Total hours should be 15 days x 6h/day = 90 hours.

In order to satisfy the High Court Decision and to make it useful for workers, we propose thatthe theoretical training should blend classroom and onsite activities (15 days within a 20-days period).

Classroom activities for all workers (theory part 1):

The following curriculum has been designed as a minimum for all workers. It is made of a common knowledge and a specific training for each category of worker.

- Common training for all workers = 48 hours
- + 1 or 2 hours of theory for workers engaged in specific occupations (e.g. cutter team 2 hours and fitter team 1 hour)

The completion of the classroom training requires a total 8 complete days.

In addition and to comply with High Court Decision, the classroom training MUST be supplemented by onsite activities. A minimum of 7 days (or 42 hours) has to be completed onsite.

Onsite activities for all workers (theory part 2):

The on site training requires both emergency training (e.g. fire fighting, oil spill response, rescue, first aid, etc.) and handling of hazardous material (total of 7 days).

- ONE DAY on emergency escape, rescue and entry in enclosed spaces – the training should be delivered by practitioners (e.g. BMA)
- TWO days on fire fighting techniques – Local Fire Brigade or BMA instructors or any other approved experts could perform the training.
- TWO days on first aid - the training could be lead by the shipbreaking yard assistant doctor
- ONE DAY on chemical/oil spill management - the training should be delivered by practitioners (e.g. BMA)
- ON DAY handling of hazardous material -the training should be delivered by approved trainers

Vocational practice (2 month and 10 days)

The onsite training falls under the responsibility of the employer and must be performed under adequate supervision and guidance.

Staff requirements

Instructors shall be qualified in the task for which training is being conducted. Depending on the complexity of the exercises set, an assistant instructor with experience is desirable for certain practical exercises.

Teaching facilities and equipment

A classroom equipped with an overhead projector accepting video and audio as well a black/whiteboard orFlipchart should be provided for teaching the theory of the course and holding group discussions. For workshops, group discussions cross-disciplinary trainees willbe chosen as appropriate to laboratory, simulation and yard facilities.

It is expected that adequate material to demonstrate use should be available.

The onsite training MUST be effective in addition to the formal training. It is a requirement in order to provide a certificate of training and to register the worker has effectively been trained.

Teaching aids/methods (details in training needs)

To enhance the benefit of the training, it is paramount to adapt the training methodology to the audience. Therefore, a certain number of training methods have been identified to be best fit with the context of Bangladesh ship breaking industry. Details on each method are available in the training needs assessment (the following list is not limited):

- Formal presentation by expert/trainer in Interactive sessions
- Interactive presentation with visual aids (video, slides, whiteboard, drawings, etc.)
- Videos/animation to support discussion and experience sharing
- Small group activity on a task/problem solving activity
- Mind mapping, star bursting and brainstorming
- Hazard mapping / Body mapping – visualization of risks and consequences on body
- Case study analysis and group activity
- Role play / Simulation/exercise to mimic real life scenario
- Story telling/experience sharing – promote exchange among participant of good practices
- Hand-on demonstration and practice – on-site or in training institute
- Peer mentoring

Videos

Various videos must be prepared to develop visuals aids for transferring knowledge on safe, unsafe work activities in SRF.

Each video serves as a base for interaction between trainees and trainers.

Numerous videos have been developed to support training in Turkey. Their content and approach meet Turkish context but the topics and form selected may inspire the development of a set of video clips in Bangladesh. However, each video dedicated to Bangladeshi workers must be recorded in Bangladesh yards in real settings. Insertion of local practice is vital to enhance the validity of the material and respect local specificities. In addition, each worker must be able to assimilate himself to existing situation recorded.

Recording of activities and preparation of videosare expected during the development of the content.

References

Main references for the development of the course are the following

- National regulation, particularly the 2011 Ship Breaking and Recycling Rules as well as labor law and environmental regulations
- IMO documents, particularly the 2009 Hong Kong convention and its Guidelines for facility - MEPC 210(63)

- ILO documents on Occupational Safety and Health, particularly the 2004 Guidelines for Safety and health in shipbreaking and the 2009 Occupational Safety and Health Manual (for the ship recycling workers in Bangladesh), Safe and Environmentally Friendly Ship Recycling Project (BGD/03/005), Ministry of Labour and Employment
- BC documents on Environmentally sound management of wastes, and particularly the 2003 Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships
- BSBA train-the-trainer programme on hazardous waste management and oil pollution control

Types of learning

It is expected that developers of training content and trainers will consider the following types of learning and make an appropriate blending in order to enhance training efficiency.

- Concrete Experience(Sensing, feeling)
- Reflective Observation(Watching)
- Abstract Conceptualization(Thinking)
- Active experimentation(Doing)

Part B- Course outline

MODULE 1– Ship Recycling Administration and Regulative Framework

Details of the elements of the module 1

The table below presents the content of the module, delivery and assessment methods

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
1.3. Regulations and Frameworks 1.1.13. National frameworkand national regulations (Ministry of Industries, Department of Environment and Ministry of Labor) 1.1.14. General responsibilities of employer towards training and OHS including PPE	**Understanding National framework** **Knowledge about nationalregulations**	30mn	Student-centered instruction (Adult learning/Adult education	Interactive presentation with visual aids	Recognize basic legislative national framework related to SRF and training requirements Memorize key elements of regulations	Peer evaluation
1.2. OHS Relationship between employees and employers 1.2.1. Consultation with and Participation of Workers, role of safety Committee 1.2.2. Taking feedback from the employees	**Knowledge about workers and employers relationship**	60mn	Outcome based instruction	Interactive presentation with visual aids	Define relationship between employer and employee in terms of OSH activities	Peer evaluation
1.3. Occupational Health and Safetymanagement principles 1.3.1 OHS management principles 1.3.2 Importance for workers to comply with procedures and to	**Understanding the importance of OHS management policy in SRF**	60mn	Student-centered instruction (Adult learning/Adult education)	Interactive session With specific support (e.g. Management oversight and risk tree(MORT))	Recognize OHS Management policy and adopting with the system for safe activity. Explain feedback system	Asking hinge point questions

participate 1.3.3 Continuous improvement process(feedback from workers) 1.3.4. Importance of reporting and Investigation of incidents and accidents					for management review of OHS	
1.4. ReportIng, recording and notification of accidents, incidents and diseases	**Knowledge about accidental hazards and associated diseases.**	30mn	Outcome based instruction	- Interactive session - Video/Animations with follow up activity - Story telling	Recall the need to prevent, respond, record accidents and diseases in order to better manage OHS and related training	Peer evaluation

MODULE 2 – Job Hazard Awareness – Hazard and Risks

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
2.1.Hazard 2.1.1.What is a Hazard? 2.1.2.Training of Hazard Identification	**Understanding hazards**	60mn	Problem based instruction	- Formal presentation with visual aids - Hazard mapping - Animation	- Identify and explain hazards	Asking hinge point questions
2.2. Common Accidents and Protection measures 2.2.1. Penetration by sharp objects and protection measures 2.2.2. Impact of falling/flying objects and protection measures 2.2.3. Vehicles and collisions and protection measures 2.2.4. Burning, explosion, fire and protection measures 2.2.5. Slip and trip and Protection measures 2.2.6. Falling to a lower level and Protective measures 2.2.7. Suffocating and Protection measures 2.2.8. Working at Height and protection measures (including precautions, safety gear, safe access and egress) 2.2.9. General Introduction to Hazardous materials, substances and wastes (including biohazards) and Protection measures including warning signs and labels	**Knowledge and understanding about various work related hazards**	6 hours	Problem based instruction	- Formal presentation with visual aids - Video/Animations - Case study - Small group activity - Hazard mapping/body mapping with small group activities - Peer mentoring with small group activities as appropriate	- -Identify common accidents and protection measures - Recognize various work related hazards and translate into daily activities	Asking hinge point questions after activities
2.3. Main hazards in a ship breaking yard (and ways to prevent) 2.3.1. Confined Spaces 2.3.1.1.Safe-for-entry and Safe for Hot Work procedures and equipment 2.3.1.2.Safe-for-entry / safe for hot work criteria	**Understanding workplace hazards specific to ship breaking**	6 hours	Problem based instruction	- Formal presentation with visual aids - Video/Animations - Case study - Simulation - Small group activity	- Recall workplace hazards - Identify hazards and select preventive measures	Asking hinge point questions after activities

2.3.1.3.Competent person for determination 2.3.1.4.Inspection,testing, documentation and labeling procedures 2.3.2. Electricity 2.3.3. Working at Height 2.3.4. Noise 2.3.5. Vibration 2.3.6. Physical Hazards 2.3.7. Chemical Hazards 2.3.8. Ergonomic Hazards and posture hazards 2.3.9. Fire and explosion 2.3.9.1.Basic concepts 2.3.9.2.Sources of fire hazards 2.3.9.3.Fire prevention measures and organization 2.3.10.Heat/Cold 2.3.11.Wires and cables 2.3.12.Biohazards 2.3.13.Radiation 2.3.14.Moving parts including tools, machinery and equipment 2.3.15. Environmental Hazards 2.3.16.Other specific hazards				- Body mapping - Hazard mapping activities with small group activities - Peer mentoring with small group activities as appropriate		
2.4.After identification, how to behave when facing hazards 2.4.1.Behaviour Based Safety (BBS)	**Understanding how to behave after identification of hazards**	2 h	Out-come based instruction	- Formal presentation with visual aids - Role play - Video and animations - Peer mentoring - Small group activity - Case study	- Discuss the importance and techniques of BBS for the Enhancement of general attitude among the participants.	Peer evaluation

MODULE 3 - Environmental Awareness

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
3.1.Environmental Impacts of shiprecycling activities	**Creating environmental Impact awareness**	30 mn	Student-centered instruction (Adult learning/Adult education)	- Formal lecture with visuals - Video	- Develop environ mental awareness - Create awareness about pollution	Peer evaluation
3.2. Waste management 3.2.1. Extraction and Cleaning 3.2.2. Handling of wastes 3.2.3. Storage and record keeping 3.2.4 Oil Waste Management	**Applying waste management technique**	3 h 30mn	Out-come based learning	- Formal lecture with visuals - Video/Animation s - Hands on	- Employ proper extraction methods - Demonstrate proper handling - Use right storage and record keeping	Question and answers
3.3. Pollution Prevention 3.3.1. Preventive measures prior, during and after arrival of ship 3.3.2. Ground pollution prevention 3.3.3. Water Pollution Prevention 3.3.4. Air pollution 3.3.5. Housekeeping	**Applying pollution prevention measures**	2 h	Out-come based learning	- Formal lecture with visuals - Video/Animation s - Peer mentoring - Simulation	- Use pollution preventive measures - Demonstrate how pollution can be prevented at workplaces	Question and answers

MODULE 4 - Inventory of Hazardous Materials (IHM)

Being a technical documentation, knowledge of IHM details of the IHM is much appropriate for operational staff and managers. Therefore, it seems not required – besides few words in module 7.1 - for this initial training. Skilled and specialized workers will be provided with additional information.

MODULE 5 - Personal Protective and Safety Equipment

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
5.1.What is PPE, importance of PPE in workplace activity	**Understanding PPE and its importance**	30 mn	Out-come based instruction	- Formal lecture with visuals	- Recognize PPE - Identify why PPE is required legally	Peer evaluation
5.2.The use of personal protective equipment and safety equipment 5.2.1. How to select the appropriate PPE and role of team management 5.2.1. Effects on workers wellbeing and productivity **5.3.Consequences of not using PPE**	**Understanding the importance of using PPE**	2 h	Out-come based instruction	- Formal lecture with visuals - Brain storming, Video	- Explain the importance of using appropriate PPE - Recognize the consequences if PPE is not used	Peer evaluation
5.4. When to use PPE **5.5 Assessing the condition of PPE and maintenance of PPE**	**Analyzing PPE use, evaluating condition of PPE**	60 mn	Out-come based instruction	- Formal lecture with visuals - Brain storming - Hands on	- Appraise when to use PPE - Evaluate the condition of PPE - Value when to discard PPE	Asking hinge point questions
5.6. Personal Protective and Safety Equipment Types 5.6.1. Head protection 5.6.2. Eye and face protection 5.6.3. Hand and arm protection 5.6.4. Protective clothing 5.6.5. High-visibility clothing 5.6.6. Foot protection 6.7. Drowning protection 5.6.8. Personal fall protection 5.6.9. Hearing protection 5.6.10. Respiratory protective equipment 5.6.11. Work restraint systems	**Understanding the various categories of PPE and applying them**	3 hours	Out-come based instruction	- Brain storming - Hands on	- Choose proper PPE - Employ PPE on different parts for protection - Recall the importance of using the proper equipment to support hazardous activities (e.g. height)	Question and answers Demonstration

5.6.12. Work positioning systems 5.6.13. Rope access systems 5.6.14. Rescue systems 5.6.15. Fall arrest systems 5.6.16. Tower Scaffolds 5.6.17. Mobile Elevating Work Platforms (MEWP) 5.6.18. Podium Steps 5.6.19. Leaning Ladder 5.6.20. Stepladder 5.6.21. Trestle and Hop up 5.6.22. PPE for special teams (e.g. fire fighting)						
5.7.Identification and Description of which PPE are required to be worn and utilized during Ship Dismantling job tasks 5.7.1 How to use of PPE matrix related to activities	**Selecting appropriate PPE type**	60 mn	Out-come based instruction	- Brain storing - Case study - Peer mentoring - Hands on	- Demonstrate appropriate PPE as per work activities - Employ at workplaces - Select work related effective PPE	Question and answers
5.8.Demonstration and Explanation of the Importance of Wearing and/or Utilizing Personal Protective and Safety Equipment in the Correct Manner	**Applying PPE correctly**	60 mn	Out-come based instruction	- Hands on	- Demonstrate PPE is worn correctly	Reproduction by trainee (Random or all)
5.9.PPE's on Emergency Situations	**Remembering PPE in emergency**	30 mn	Out-come based instruction	- Formal lecture with visuals - Hands on	- Recall proper PPE during emergency	Question and answers with exercise

MODULE 6 - Worker Wellbeing & Health

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*

6.1.Occupational Health and Safety Practices	**Understanding OSH practices**	30 mn	Student-centered instruction (Adult learning/Adult education)	- Formal lecture with visuals	- Recognize what is OSH practices	Peer evaluation
6.2.Hygiene and health Practices 6.2.1. Drinking water and sanitation 6.2.2. Accommodation and housekeeping 6.2.3. The transpositionof hazardous substances to the home or family environment 6.2.4. HIV and other infectious diseases 6.2.5. Family planning	**Understanding importance of hygiene and health practices**	60 mn	Out-come based learning	- Formal lecture with visuals - Storytelling	- Recognize hygiene and health practices and translate in workplace activities	Peer evaluation
6.3. Medical Health surveillance & welfare support **6.4. Psychological health**	**Understanding medical, welfare support and psychological health**	30 mn	Student-centered instruction (Adult learning/Adult education)	- Formal lecture with visuals - Storey telling	- Identify medical and welfare support in workplace - Recognize why psychological health is important	Peer evaluation

MODULE 7 - Awareness and Handling of Hazardous Materials

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*

For all workers						
7.1.Hazardous Materials that can be found on board ships 7.1.1. Hazardous materials and their appearance, health effects 7.1.2. Extraction and cleaning Handling and transport, prevention of mixing, storage and disposal 7.1.3. Basic precautions in hazardous material management	**Knowledge about shipboard Hazardous materials presence and its proper handling**	3 hours	Student centered learning	Formal lectures with visuals Animation	Recall the listing of HAZMAT and general precautions on handling such materials	Peer evaluation
WARNING - FOR WORKERS DIRECTLY EXPOSED TO HAZARDOUS MATERIAL AND IN CHARGE OF THEIR MANAGEMENT (including, *inter alia*: DECONTAMINATION TEAM and HAZMAT and waste handlers / Oil cleaners) – THE COMPLETE CURRICULUM IS AVAILABLE						

MODULE 8 –Vocational Education And Training

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*

For all workers						
8.1. Risks related to simultaneous activities occurring during ship recycling processes	**Understanding that simultaneous activities occur in yards may affect safety of workers**	30 mn	Out-come based instruction	- Formal lecture with visuals - Video	- Recognize SRP and translate into activities, - Identify cutting sequences - Identify risks related to simultaneous activities	Asking hinge point questions
8.2. Safety Checks and tool box meeting prior work	**Evaluating safety**	30 mn	Problem based instruction	- Formal lecture with visuals - Brainstorming - Peer mentoring(Tool box meeting)	- Appraise safety by checking - Value tool box meeting	Peer evaluation
8.3. Equipment 8.3.2. Winches and wires 8.3.3. Cranes and lifting devices 8.3.4. Power Generators 8.3.5. Heavy equipment and other machinery	**Understanding equipment**	30 mn	Out-come and problem based instruction	- Formal lecture with visuals - Brain storming - Video - Group work - Case study	- Recognize all equipments and operation	Asking hinge point questions
8.4. Safety precautions at work and equipment	**Understanding and apply safety precautions**	60 mn	Problem solving instruction	- Formal lecture with visuals - Brain storming - Video - Simulation -	- Identify applicable safety precautions in the workplace	
8.5. Importance to report equipment damages / importance of maintenance for safe equipment	**Understanding the importance of maintenance**	30 mn	Out-come based instruction	- Formal lecture with visuals - Case study - Group work - Simulation -	- Identify the importance of maintenance - Translate into workplaces -	

8.6. Hand Tools and electrical Tools	**Understanding and using tools**	30mn	Out-come based instruction	- Hands on	- Identify all tools - Employ all tools properly	Asking hinge point questions
8.7. Hot Work principle and precautions for all workers	**Understanding and applying hot work safety precautions**	60 mn	Out-come based instruction	- Formal lecture with visuals - Video - Small group activity - Hands on - Hazard mapping - Simulations	- Identify hot work hazards - Demonstrate all safety related to safe hot work	Reproduction by trainees (Random)
8.8. Sorting and Segregation	**Understanding sorting and segregation techniques**	30 mn	Outcome based instruction	- Formal lecture with visuals - Simulation - Video - Demonstration - Small group activity	- Identify why sorting and segregation required - Recognize techniques to be applied	Peer evaluation
8.9. Safety & environmental training / practical training 8.9.1. Emergency response and evacuation, use of equipment 8.9.2. Fire protection and prevention 8.9.3. First-aid awareness 8.9.4. Environmental spills and clean up (equipment, procedures, responsibilities)	**Applying emergency response technique**	5 hours	Out-come based instruction	- - Formal lecture with visuals - Hands on - Simulation - Video - Group activity	- - Appraise emergency response technique - Demonstrate techniques during emergency	Reproduction by trainees
FOR CUTTER AND WELDER HELPERS						
8.20 Hot work for cutter and welder teams (including Welding, Cutting and Heating) / Flame-cutting 8.20.1. Risks related to hot work activities 8.20.2. The equipment 8.20.2.1. Oxy Fuel Cutting equipment 8.20.2.2. Cylinders and	**Understanding and applying hot work safety for cutter and welder teams**	2 hours	- Out-come based instruction	- Formal lectures - Audio Visual - Tools practices	- Identify hot work precautions - Demonstrate safety measures during hot work	Asking hinge point questions

Regulators 8.20.2.3. Cutting Torch 8.20.2.4. Oxygen and LPG Hoses 8.20.2.5. Flash Arrestor and Gas Lighter 8.20.2.6. Types of hot works and practices 8.20.3. Lighting Procedure 8.20.4. Cutting and falling objects, work practices and precautions 8.20.5. Additional Operational and Safety Considerations 8.20.6. Required PPE						
- FOR CYLINDER HANDLERS						
8.21. For cylinder handlers Team 8.21.1. Risks related to management of cylinders 8.21.2. Re-filling, handling and transportation 8.21.3. Storage 8.21.4. Additional Operational and Safety Considerations 8.21.5. Required PPE	**Understanding safe Cylinder handling procedure**	60 mn	Outcome based instruction	- Formal lectures - Video - Role play	- Recognize the dangers of explosion while handling and transporting cylinders	Peer evaluation
- FOR FITTER HELPERS						
8.22. For Fitter Team 8.22.1. Risks related to the activities of the team 8.22.2. Use of tools and equipment 8.22.3. Preparation of work 8.22.4. Additional Operational and Safety Considerations	**Applying safe operational practicesfor fitter team**	60 mn	Outcome based learning	- Formal lectures - Audio Visual - Tools practices	- Demonstrate the safe use of tools and practices	Psychometric test

8.22.5. Required PPE						
- FOR LOADERS AND PLATE HANDLERS						
8.23 For Loader Team 8.23.1. Risks related to the operation 8.23.2. Handling of Steel plates 8.23.3. Transportation of steel plates 8.23.4. Other issues, coordination of working side by side with cranes 8.23.5. Use of PPE	**Understanding safe handling of Loads**	60 mn	Outcome based learning	- Pictorial - Lectures - Video - Story telling	- Demonstrate safe handling of loading and transportation	Skill test
- FOR WIRE ROPE TEAM						
8.25. Wire rope team 8.25.1. Risks related to the activity 8.25.2. Management and handling of wires 8.25.3. Verification, maintenance and renewal of wires 8.25.4. Additional Operational and Safety Considerations 8.25.5. Required PPE	**Understanding the Hazards associated with Rope handling and winch operations**	60 mn	Outcome based learning	- Lectures - Animation - Video	- Demonstrate the safe handling of wire rope and their associated risk and maintenance	Peer review

For most workers categories 10 HOURS + 1 HOUR = 11 HOURS EXCEPT CUTTING AND WELDING TEAMS (8.20) THEY NEED 2 HOURS 10 HOURS + 2 HOURS = 12 HOURS

FINAL PROPOSAL FOR ALL WORKERS

MODULE	Time distribution
1	3
2	15
3	6
5	9
6	2
7	3
8	10hr +1hr for individual trades EXCEPT FOR 8.20 and 8.26 10hr +2hr for individual trades
TOTALS	**48hr +0hr for Hazmat (include in operational level) + 1 or 2hr for individual trades**

Total hours of training in classroom = 48 hours + 1 or 2 hours for special categories (8 full days).

IN SHORT, THE COURSE PROPOSAL FOR ALL WORKERSIS MADE OF CLASSROOM TRAINING (8 DAYS) + ONSITE TRAINING (7 DAYS OF DAYS EMERGENCY TRAINING).

To complete the High Court Decision, an additional 2 month and 10 days have to be conducted by yards on site.

SKILLED AND SPECIALIZED WORKERS MUST HAVE ADDITIONAL TRAINING.

Curriculum for Bangladesh SRF Workers

(Additional training for Skilled and special workers)

Target audience

The audience of this curriculum is skilled and specialized workers.
The initial training for all workers forms the foundation on with this training incorporates additional elements.
It is designed to meet skilled and specialized workers.

1. Foreman
2. Cutter / welder
3. Fitter / Workshop manager
4. Winch, crane and heavy equipment drivers/operators
5. Electricians
6. Decontamination workers
7. Emergency teams (Firefighting/Back up teams/First aid group, etc.)

IT IS IMPORTANT TO UNDERSTAND THAT THIS PRESENT CURRICULUM PRESENTS **THE ELEMENTS TO ADD IN COMPLEMENT TO THE INITIAL TRAINING FOR ALL WORKERS.**

Flexibility

The curriculum aims to be flexible and to leave the developer sufficient room to expand – but not reduce - each section or chapter according to their expectation and needs. The times allocated per chapters are indicatives.

In eight modules, the skilled and special workers course involves the following additions:

- MODULE 1 Ship Recycling Administration and Regulative Framework
  - Understanding the importance of OHS management policy in SRF and adequate supervision

- MODULE 2 – Job Hazard Awareness – Hazard and Risk Module 4
  - Understanding specific hazards related to entry and work in enclosed spaces
  - Understanding the concept of risk

- MODULE 3 - Environmental Awareness
  - NO CHANGE VIS-À-VIS INITIAL TRAINING FOR ALL WORKERS

- MODULE 4 – Inventory of Hazardous Materials (IHM) – ONLY FOR DECONTAMINATION WORKERS AND TEAM LEADERS
  - Understanding the use of IHM
  - Understanding interpretation of IHM to prepare SRF plan and organize SRFs activities

- MODULE 5 - Personal Protective and Safety Equipment
  - Identifying the proper PPE and verifying workers are wearing appropriate PPE

- MODULE 6 –Worker Wellbeing and Health
  - NO CHANGE VIS-À-VIS INITIAL TRAINING FOR ALL WORKERS

- MODULE 7 –Awareness and Handling of Hazardous Materials
  - Identifying HAZMAT found on board and evaluating associated hazards
  - Applying proper preventive and extraction procedures

- MODULE 8 –Vocational Education and Training
  - Applying emergency response technique (reinforced)
  - MODULE 8 FOR SPECIFIC CATEGORIES OF WORKERS (reinforced)

- Understanding and applying hot work safety for cutter and welder teams
- Applying safe operational practices for fitter team
- Understanding Heavy gears and equipment handling
- Remembering the general electrical safety
- Applying knowledge on emergency procedure

PART A: COURSE FRAMEWORK

Aims of the curriculum

The curriculum provides details of the training to participants to be familiarized with risks and safety and environment protection measures in the context of ship breaking in Bangladesh.

It is expected that the methods to teach the participants consider their knowledge and abilities.

Objectives

- Understanding Regulative Framework of Ship Recycling in particular to OHS training &Administration.
- Creating Job Hazard Awareness among workers-Hazard and Risk mitigation (practical)
- Creating awareness about Environmental impact & Protection measures
- Understanding Inventory of Hazardous Materials (IHM)
- Understanding the use of Personal Protective Equipment
- Knowledge about Worker Wellbeing & Health surveillance procedure
- Understanding management of Hazardous Materials
- Applying vocational knowledge in the use of tools & machineries and their maintenance in work activities and learning emergency preparedness& response

Entry standards

This module is primarily intended for all skilled workers (Fore man, Cutter / Fitter / Winch, crane and heavy equipment drivers/operators/Electricians/Emergency/contingency teams: i.e.Firefighting/Back up teams/First aid group, etc.) as well as special teams (e.g. HazMat handlers).

Course certificate

An attendance certificate will be issued after successful completion of full-length training. The full training means theoretical training + vocational practice

Course intake limitations

Maximum trainees per session----- 30
Type of trainees------- skilled and specialized teams (e.g. HAZMAT teams)

Proposal of Course length and structure

National authorities MUST establish the overall length – the overall duration and breakdown proposed in the tables are informative and result from a trade off between partners.
At present, the Honorable High Court provides the length of the training for workers in ship breaking.

"A system of comprehensive training must be introduced to impart training to those who shall be employed for ship breaking activities. An Institute will be set up for the training purposes by BSBA at their cost for training such persons. The training period shall be at least 3 months duration. First 20 days shall be allocated for theoretical training, while the rest of the period shall be involved in practical vocational courses. No workers shall be allowed to be employed in the ship breaking yards without certificate showing completion of the course (Hon'ble High Court Verdict on 6/4/11, regarding workers training)"

Our understanding :
First, the mentioned period of 3 months includes days off.
Second, the training must be divided in 2 parts: 20 days for theory and the remaining period for vocational training (2 month and 10 days).
Considering that the period includes days off, it is understood that the training should made of:

- Theoretical training of 20 days (or 3 weeks). So, it is understood that the theoretical training should last 15 complete days (deduction of weekends - this interpretation MUST be confirmed by the MoI).
- Practical vocational training of 2 month and 10 days. Deducting the weekends it should make 70 days – 23 days (deduction for weekends) = 47 days onsite training (this interpretation MUST be confirmed by the MoI)

In short, 15 days of theoretical training MUST be completed by a practical apprenticeship of 47 days. The overall training should cover a 3-month period as required by High Court Decision. A certificate of training will sanction the completion of both trainings.

Theoretical training.
Total hours should be 15 days x 6h/day = 90 hours.

In order to satisfy the High Court Decision and to make it useful for workers, we propose that the theoretical training should blend classroom and onsite activities (15 days within a 20-days period).

Classroom activities for skilled workers (theory part 1):

The curriculum for skilled and specialized workers is made of the curriculum for all worker + one day of additional elements contained in the following curriculum. It is made of a common knowledge and a specific training for each category of worker.

- Common training for all workers = 48 hours
- + 1 or 2 hours of theory for workers engaged in specific occupations (e.g. cutter team 2 hours and fitter team 1 hour)
- Additional knowledge (1 day) OR additional 2 days for HAZMAT teams

The completion of the classroom training requires a total 9 complete days (10 for HAZMAT teams).

In addition and to comply with High Court Decision, the classroom training MUST be supplemented by onsite activities. A minimum of 6 days (or 36 hours) has to be completed onsite.

Onsite activities for skilled workers (theory part 2):

The on site training requires both emergency training (e.g. fire fighting, oil spill response, rescue, first aid, etc.) and handling of hazardous material (total of 6 days).

- ONE DAY on emergency escape, rescue and entry in enclosed spaces – the training should be delivered by practitioners (e.g. BMA)
- TWO days on fire fighting techniques – Local Fire Brigade or BMA instructors or any other approved experts could perform the training.
- TWO days on first aid - the training could be lead by the shipbreaking yard assistant doctor
- ONE DAY on chemical/oil spill management - the training should be delivered by practitioners (e.g. BMA)

Special training for Hazmat team (5 days - one additional day in classroom)

- ONE DAY on emergency escape, rescue and entry in enclosed spaces – the training should be delivered by practitioners (e.g. BMA)
- FOUR DAYS for the HAZMAT teams on site with certified trainers

Vocational practice (2 month and 10 days)

- The onsite training falls under the responsibility of the employer and must be performed under adequate supervision and guidance.

Staff requirements

Instructors shall be qualified in the task for which training is being conducted. Depending on the complexity of the exercises set, an assistant instructor with experience is desirable for certain practical exercises.

Teaching facilities and equipment

A classroom equipped with an overhead projector accepting video and audio as well a black/whiteboard or Flipchart should be provided for teaching the theory of the course and holding

Group discussions. For workshops, group discussions cross-disciplinary trainees will be chosen as appropriate to laboratory, simulation and yard facilities.

The onsite training MUST be effective in addition to the formal training. It is a requirement in order to provide a certificate of training and to register the worker has effectively been trained.

Part B- Course outline ADDITIONAL ELEMENTS TO MODULES

MODULE 1– Ship Recycling Administration and Regulative Framework

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
1.3.Occupational Health and Safety management principles 1.3.5. Supervision of workers (PPE, Behavior, good practices, etc.) **ADDITION TO PREVIOUS CURRICULUM**	**Understanding the importance of OHS management policy in SRF and adequate supervision**	Additional time in module 30mn	Student-centered instruction (Adult learning/Adult education)	Interactive session With specific support (e.g. Management oversight and risk tree(MORT))	Recognize OHS Management policy and adopting with the system for safe activity. Explain feedback system for management review of OHS	Asking hinge point questions

MODULE 2 – Job Hazard Awareness – Hazard and Risks

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
2.5. Principles of risk and risk management 2.5.1.What is Risk? 2.5.2.Examples from ship recycling yards 2.5.3. Reporting and follow up procedures 2.5.4 Assess the risk 2.5.5. Identify and implement preventive measures	**Understanding the concept of risk**	1 hours	Out-come based instruction	Formal lecture with visual aids	Identify risk	Peer evaluation

MODULE 3 - Environmental Awareness

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
NO CHANGES **USE MODULE 3 FOR SUPPORT LEVEL (ALL WORKERS)**						

MODULE 4 - Inventory of Hazardous Materials (IHM) – MODULE ONLY FOR SKILLED WORKERS AND SPECIAL TEAMS

Topic	*Goals*	*Duration to adjust*		*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
For DECONTAMINATION WORKERS AND TEAM LEADERS – IT IS IMPORTANT THAT TEAM LEADERS ARE ABLE TO IDENTIFY AREAS CONTAINING HAZMAT BEFORE ENGAGING THEIR WORKERS INSIDE						
4.1.What is the use of an IHM? **4.1.1 IHM accurate data collection procedure** **4.1.2 Location of different HAZMAT on board and their expected quantities and types**	**Understanding the use of IHM**	1h	IHM IS ABOUT LOCATION AND QUANTITIES, THE PURPOSE IS FOR IDENTIFICATION AND PLANING. DETAILS OF HOW TO MANAGE HAZMAT ARE IN MODULE 7	- Formal lecture with visual - Video	- Describe IHM importance	Asking hinge point questions Demonstrations
4.2.Interpretation of IHM 4.2.1 for preparation of SRF and planning of inspections, marking, decontamination, waste management	**Understanding interpretation of IHM to prepare SRF plan and organize SRFs activities**	2h	Out-come based instruction	- Formal lecture with visual - Small group activity	- Translate IHM	Asking hinge point questions

MODULE 5 - Personal Protective and Safety Equipment

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
5.10 Assessment of PPE and verification 5.10.1 Assess the type and condition of PPE required for the work and if properly fitted 5.10.3 Control of workers and force the use of appropriate of PPE	**Identifying the proper PPE and verifying workers are wearing appropriate PPE**	30mn	Out-come based instruction	- Formal lecture with visuals - Brain storming, Video	- Explain the importance of using appropriate PPE - Recognize the consequences if PPE is not used	Peer evaluation

MODULE 6 - Worker Wellbeing & Health (FULL MODULE IS SUITABLE FOR SUPPORT LEVEL)

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
NO CHANGES **USE MODULE 6 FOR SUPPORT LEVEL (ALL WORKERS)**						

MODULE 7 - Awareness and handling of Hazardous Materials

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
For all workers						
NO CHANGES ON 7.1 **USE MODULE 7 FOR SUPPORT LEVEL (ALL WORKERS)**						
FOR WORKERS AND TEAM LEADERS DIRECTLY EXPOSED TO HAZARDOUS MATERIAL AND IN CHARGE OF THEIR MANAGEMENT **(including, *inter alia*: DECONTAMINATION TEAM and HAZMAT and waste handlers / Oil cleaners)**						
7.4. Management of hazardous material, what to be done if suspicious and unchecked materials are detected (inspections, sampling, laboratory standards, amending SRP) **7.4.1. Asbestos** 7.4.1.1. Description and Properties 7.4.1.2. Why is it dangerous 7.4.1.3. Where can Asbestos be found on board ship 7.4.1.4. Preparation for extraction and handling of Asbestos onboard and onshore 7.4.1.5 General precautions and equipment	**Identifying HAZMAT found on board and evaluating associated hazards** **Applying proper preventive and extraction procedures** **Identifying equipment and PPE**	Full dedicated day of 8 hours	Out-come based instruction	- Formal lecture with visual aids - Video/Animations - Hazard mapping)	- List HAZMAT - Select associated hazards - Employ proper extraction procedures - Understanding different aspect of HAZMAT	Peer evaluation Exercises
7.4.2. Polychlorinated Biphenyls (PCB) 7.4.2.1. Description and Properties 7.4.2.2. Why is it dangerous 7.4.2.3. Where can PCB be found on board ship 7.4.2.4. Extraction and handling of PCB 7.4.1.5 General precautions and equipment						

7.4.3. Ozone Depleting Substances (ODS) 7.4.3.1. Description and Properties 7.4.3.2. Why is it dangerous 7.4.3.3. Where can ODS be found on board ship 7.4.3.4. Extraction and handling of ODS 7.4.1.5 General precautions and equipment						
7.4.4. Tributyltin (TBT) 7.4.4.1. Description and Properties 7.4.4.2. Why is it dangerous 7.4.4.3. Where can TBT be found on board ship 7.4.4.4. Extraction and handling of TBT 7.4.1.5 General precautions and equipment						
7.4.5. Anti-fouling compounds and systems 7.4.6. Cadmium and cadmium compounds 7.4.7. Hexavalent chromium and hexavalent chromium compounds 7.4.8. Lead and lead compounds 7.4.9. Mercury and mercury compounds 7.4.10. Polybrominated biphenyls (PBBs) 7.4.11.Polybrominateddiphenyl ethers (PBDEs) 7.4.12. Polychlorinated naphthalenes (PCNs) 7.4.13. Certain short-chain chlorinated paraffins 7.4.14. Radioactive substances						

7.4.15. Handling of fuel, grease and lubricants						
7.4.16. Bilge ballast 7.4.17. Paints, Paint removal and disposal						
7.4.18. Other hazardous materials						
7.5. Equipment on board and ashore to management HAZMAT	**Identifying the equipment onboard and ashore**			- Formal lecture with visual aids - Video/Animations Hazard mapping)	Understanding the necessary equipment	Peer evaluation Exercises

MODULE 8 –Vocational Education And Training

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
FOR ALL WORKERS						
8.10. Maintenance of the Equipment 8.10.1. How to maintain 8.10.2. Importance of maintenance 8.10.3. Salvaging Equipment and Valuable Materials 8.10.4. Tools and Related Equipment	**Understanding the importance of maintenance**	1 hours	Out-come based instruction	- Formal lecture with visuals - Storey telling - Demonstration - Small group activity -	- Identify the importance of maintenance - Translate into workplaces -	Asking hinge point questions
FOR CUTTER AND WELDER						
8.20 Hot work for cutter and welder teams (including Welding, Cutting and Heating) / Flame-cutting 8.20.7. Supervision of helpers **ADDITION TO PREVIOUS CURRICULUM**	**Understanding and applying hot work safety for cutter and welder teams**	120 Minutes	- Out-come based instruction	Formal lectures Audio Visual Tools practices	- Identify hot work precautions - Demonstrate safety measures during hot work	Asking hinge point questions
FOR FITTER AND WORKSHOP MANAGER						
8.22. For Fitter Team 8.22.7. Supervision of helpers **ADDITION TO PREVIOUS CURRICULUM**	**Applying safe operational practices for fitter team**	60 minutes	Outcome based learning	Formal lectures Audio Visual Tools practices	Demonstrate the safe use of tools and practices	Psychometric test
FOR WINCH, CRANE AND HEAVY EQUIPMENT DRIVERS OPERATORS						
8.26 Winch, Crane and Heavy Equipment Drivers/Operators 8.26.1. Risks related to the activity 8.26.2. Management of equipment and wires	**Understanding Heavy gears and equipment handling**	60 minutes	Outcome based learning	Formal lecture Technical knowledge Videos	Demonstrate the safe use of heavy gears/winches	Skill test

8.26.3. Maintenance and renewal of equipment 8.26.4. Additional Operational and Safety Considerations 8.26.5. Required PPE **ADDITION TO PREVIOUS CURRICULUM**						
FOR ELECTRICIANS						
8.27. Electricians **ADDITION TO PREVIOUS CURRICULUM**	**Remembering the general electrical safety**	60 minutes	Outcome based learning	Formal lectures Video	State the general principle of electrical equipments and their safe handling use	Hinge point questionnaire
FOR ADDITIONAL TRAINING FOR EMERGENCY RESPONSE TEAMS						
8.28 Emergency Teams (Firefighting/Back up teams/First aid group, etc.) FOR EMERGENCY RESPONSE TEAM, IT IS EXPECTED THAT THIS ADDITIONAL TRAINING ONLY CONSTITUTES A REFRESHEMENT BECAUSE IT ITS EXPECTED THAT THE BASIC EMERGENCY TRAINING HAVE BEEN UNDERTAKEN IN SPECIALIZED INSTITUTIONS (E.G. FIRE DEPARTMENT, HOSPITAL, BMA, ETC.) **ADDITION TO PREVIOUS CURRICULUM**	**Applying knowledge on emergency procedure**	120 minutes	Outcome based learning	Lectures Demonstration Drills & Exercise Video	Demonstrate the ability to meet with emergency situation	Psychomotor test

THE CLASSROOM TRAINING FOR SKILLED and SPECIAL WORKERS IS MADE OF:

INITIAL TRAINING FOR ALL WORKERS CONTENT + ADDITIONAL CONTENT

MODULE	INITIAL TRAINING (ALL WORKERS)	ADDITIONAL CONTENT REQUIRED TIME
1	3	0.5
2	16	1
3	6	0
4	0	3
5	9	0.5
6	2	0
7	3	0 or 8 for HAZMAT teams
8	10+1 or 10+2 for certain trades	1
Total	**48**	**6h (for HAZMAT Teams 14h)**

Total hours in classroom for SKILLED AND SPECIAL workers = 48 hours (all workers) + 6 hours (additional knowledge) = 48 hours (9 days)

+ 1h or 2h for special categories

+ 8h for Hazmat team (1 full day)

THE COURSE PROPOSAL FOR ALL WORKERS IS MADE OF CLASSROOM TRAINING (9 DAYS) + ONSITE TRAINING (6 DAYS) - except for HAZMAT teams classroom 10 days + onsite training 5 days.

(Managers Awareness)

Target audience

The audience of this curriculum is Management staffs, ie managers, mid level management, regulators, safety agencies... This target group training is not mandatory.

It is designed to meet management level staffs as defined previously. However, some areas are specifically dedicated to “Regulators” and safety agencies having the responsibility to conduct special duties and activities.

1. Yard Top Management/representative
2. Yard Managers
3. Recommended for Regulators
4. Safety agencies

-- For managers directly inside ship breaking yard, the training for skilled workers is recommended --

5. Yard Supervisors
6. Shift in-charges
7. Ship in-charges

MODULE 1– Ship Recycling Administration and Regulative Framework

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
1.4. <u>Regulations and Frameworks</u> 1.1.15. National frameworkand national regulations (Ministry of Industries, Department of Environment and Ministry of Labor) 1.1.16. General responsibilities of employer towards training and OHS including PPE ---- International Framework ---- 1.1.17. ILO 1.1.18. Basel Convention 1.1.19. IMO HKC 1.1.20. EU Ship Recycling rules	**Understanding National and international framework** **Knowledge about national and international regulations**	60 mn	Student-centered instruction (Adult learning/Adult education)	Interactive presentation with visual aids	Recognize basic legislative national framework related to SRF and training requirements Memorize key elements of regulations	Peer evaluation
1.2. Relationship between employees and employers 1.2.1. Consultation with and Participation of Workers, role of safety Committee 1.2.2. Taking feedback from the employees	**Knowledge about workers and employers relationship**	30 mn	Outcome based instruction	Interactive presentation with visual aids	Define relationship between employer and employee in terms of OSH activities	Peer evaluation
1.3. Occupational Health and Safetymanagement principles 1.3.1 OHS management principles 1.3.2 Importance for workers to comply with procedures and to participate 1.3.3 Continuous improvement process(feedback from workers) 1.3.4. Importance of reporting and	**Understanding the importance of OHS management policy in SRF**	60mn	Student-centered instruction (Adult learning/Adult education)	Interactive session With specific support (e.g. Management oversight and risk tree(MORT))	Recognize OHS Management policy and adopting with the system for safe activity. Explain feedback system for management review of OHS	Asking hinge point questions

Investigation of incidents and accidents 1.3.5. Supervision of workers (PPE, Behavior, good practices, etc.)						
1.4. ReportIng, recording and notification of accidents, incidents and diseases **1.5. Accident investigation** 1.5.1.Reasons and benefits of carrying out Accident/Incident investigation 1.5. 2.Reporting and Investigation	**Knowledge about accidental hazards and associated diseases.** **Understanding the Importance of accident/incident evaluation and investigation**	30	Outcome based instruction	- Interactive session - Video/Animations Case study	Recognizing the importance of accident investigation and reporting system Recall the need to prevent, respond, record accidents and diseases in order to better manage OHS and related training	Peer evaluation
1.6.Facility operations 1.6.1.Permits, licenses and certification 1.6.2.Ship Recycling Plan (SRP) development 1.6.3.Vessel arrival management 1.6.4.Ship recycling methodology	**Understanding general administrative procedure of shipbreaking**	30 mn	Student-centered instruction (Adult learning/Adult education	Formal lectures Brain storming	Understanding the ship breaking administrative under national and international regulations	Debriefing
1.7.Training of Workers–requirements 1.7.1. Verification of training 1.7.2. Categories of trainings and drills 1.7.2. Outside and in-house training	**Understanding the importance of training for continuous improvement**	30 mn	Outcome based learning	Interactive lecture	Evaluation of training and record keeping	Debriefing

MODULE 2 – Job Hazard Awareness – Hazard and Risks

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
2.1.Hazard 2.1.1.What is a Hazard? 2.1.2.Training of Hazard Identification	**Understanding hazards**	30 mn	Problem based instruction	- Formal presentation with visual aids - Hazard mapping - Animation	- Identify and explain hazards	Asking hinge point questions
2.2. Common Accidents and Protection measures 2.2.1. Common accidents and protection measures 2.2.2. General Introduction to Hazardous materials, substances and wastes (including biohazards) and Protection measures	**Knowledge and understanding about various work related hazards**	30 mn	Problem based instruction	- Formal presentation with visual aids - Video/Animations - Case study - Hazard mapping/body mapping with small group activities	-Identify common accidents and protection measures - Recognize various work related hazards and translate into daily activities	Asking hinge point questions after activities
2.3. Main hazards in a ship breaking yard (and ways to prevent)	**Understanding workplace hazards specific to ship breaking**	30 mn	Problem based instruction	- Formal presentation with visual aids - Video/Animations - Case study - Simulation - Small group activity - Body mapping - Hazard mapping activities with small group activities - Peer mentoring with small group activities as appropriate	- Recall workplace hazards - Identify hazards and select preventive measures	Asking hinge point questions after activities

2.4.After identification, how to behave when facing hazards 2.4.1.Behaviour Based Safety (BBS)	**Understanding how to behave after identification of hazards**	30 mn	Out-come based instruction	- Formal presentation with visual aids - Role play - Video and animations - Peer mentoring - Small group activity - Case study	Discuss the importance and techniques of BBS for the Enhancement of general attitude among the participants.	Peer evaluation
2.5. Principles of risk and risk management 2.5.1.What is Risk? 2.5.2.Examples from ship recycling yards 2.5.3. Reporting and follow up procedures 2.5.4 Assess the risk 2.5.5. Identify and implement preventive measures	**Understanding the concept of risk**	30 mn	Out-come based instruction	Formal lecture with visual aids	Identify risk	Peer evaluation

MODULE 3 - Environmental Awareness

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
3.1. Pollution and Environmental Impacts 3.1.1. Environmental impacts 3.1.2 Legislation in place to protect the environment 3.1.3. The concept of Environmental Sound Management (ESM)	**Creating environmental Impact awareness** **Understanding legislation and ESM**	30 mn	Student-centered instruction (Adult learning/Adult education)	- Formal lecture with visuals - Video	- Develop environmental awareness - Create awareness about pollution	Peer evaluation
3.3. Pollution Prevention 3.3.1. Preventive measures prior, during and after arrival of ship 3.3.2 Ground pollution prevention 3.3.3. Water Pollution Prevention 3.3.4. Air Pollution 3.3.5. Housekeeping 3.3.6. Waste management (relates to 3.2)	**Applying pollution prevention measures**	30 mn	- Out-come based learning	- Formal lecture with visuals - Video/Animations - Peer mentoring - Simulation	- Use pollution preventive measures - Demonstrate how pollution can be prevented at workplaces	Question and answers
3.5. Pollution response 3.5.1. Emergency Equipment for Pollution 3.5.2. Procedures and organization in case of Emergency 3.5.3. Training and drills 3.5.4. Clean-up and precautions	**Understanding and applying pollution response**	30 mn	- Out-come based learning	- Formal lecture with visuals - Video/Animations - Hands on	- Identify emergency equipments - Recognize emergency actions - Demonstrate activities during emergency - Employ clean up materials and procedure	Exercise

MODULE 4 - Inventory of Hazardous Materials (IHM)

Topic	*Goals*	*Duration to adjust*		*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
4.1.What is the use of an IHM? **4.1.1 IHM accurate data collection procedure** **4.1.2 Location of different HAZMAT on board and their expected quantities and types**	**Understanding the use of IHM**	30	IHM IS ABOUT LOCATION AND QUANTITIES, THE PURPOSE IS FOR IDENTIFICATION AND PLANING. DETAILS OF HOW TO MANAGE HAZMAT ARE IN MODULE 7	- Formal lecture with visual - Video	- Describe IHM importance	Asking hinge point questions Demonstrations
4.2.Interpretation of IHM 4.2.1 for preparation of SRF and planning of inspections, marking, decontamination, waste management	**Understanding interpretation of IHM to prepare SRF plan and organize SRFs activities**	1h	Out-come based instruction	- Formal lecture with visual - Small group activity	- Translate IHM	Asking hinge point questions

MODULE 5 - Personal Protective and Safety Equipment

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
5.1.What is PPE?	**Understanding PPE**	30 mn	Out-come based instruction	- Formal lecture with visuals	- Recognize PPE - Identify why PPE is required legally	Peer evaluation
5.2.The use of personal protective equipment and safety equipment 5.2.1. How to select the appropriate PPE and role of team management 5.2.1. Effects on workers wellbeing and productivity **5.3.Consequences of not using PPE**	**Understanding the importance of using PPE**	30 mn	Out-come based instruction	- Formal lecture with visuals - Brain storming, Video	- Explain the importance of using appropriate PPE - Recognize the consequences if PPE is not used	Peer evaluation

MODULE 6 - Worker Wellbeing & Health

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
6.1.Occupational Health and Safety Practices	**Understanding OSH practices**	20 minutes	Student-centered instruction (Adult learning/Adult education)	- Formal lecture with visuals	- Recognize what is OSH practices	Peer evaluation
6.2.Hygiene and health Practices	**Understanding importance of hygiene and health practices**	20 minutes	Out-come based learning	- Formal lecture with visuals - Storytelling	- Recognize hygiene and health practices and translate in workplace activities	Peer evaluation
6.3. Medical Health surveillance & welfare support **6.4. Psychological health**	**Understanding medical, welfare support and psychological health**	20 minutes	Student-centered instruction (Adult learning/Adult education)	- Formal lecture with visuals - Storey telling	- Identify medical and welfare support in workplace - Recognize why psychological health is important	Peer evaluation

MODULE 7 - Awareness and handling of Hazardous Materials

This module deals with practical training and may be omitted because the IHM present the various HAZMAT on ships.

MODULE 8 –Vocational Education And Training

Topic	*Goals*	*Duration to adjust*	*Expected Instructional approach/strategy*	*Expected Delivery Method*	*Expected learning outcomes*	*Assessment methods*
8.1. Risks related to simultaneous activities occurring during ship recycling processes	**Understanding that simultaneous activities occur in yards may affect safety of workers**	60 mn	Out-come based instruction	- Formal lecture with visuals - Video	- Recognize SRP and translate into activities, - Identify cutting sequences - Identify risks related to simultaneous activities	Asking hinge point questions
8.7. Hot Work principle and precautions for all workers	**Understanding and applying hot work safety precautions**	30 mn	Out-come based instruction	- Formal lecture with visuals - Video - Small group activity - Hands on - Hazard mapping - Simulations	- Identify hot work hazards - Demonstrate all safety related to safe hot work	Reproduction by trainees (Random)
8.9. Safety & environmental training / practical training 8.9.1. Emergency response and evacuation, use of equipment 8.9.2. Fire protection and prevention 8.9.3. First-aid awareness 8.9.4. Environmental spills and clean up (equipment, procedures, responsibilities)	**Applying emergency response technique**	30 mn	Out-come based instruction	- Formal lecture with visuals - Hands on - Simulation - Video - Group activity	- Appraise emergency response technique - Demonstrate techniques during emergency	Reproduction by trainees
8.10. Maintenance of the Equipment 8.10.1. How to maintain 8.10.2. Importance of maintenance 8.10.3. Salvaging Equipment and Valuable Materials 8.10.4. Tools and Related Equipment	**Understanding the importance of maintenance**	30 mn	Out-come based instruction	- Formal lecture with visuals - Storey telling - Demonstration - Small group activity	- Identify the importance of maintenance - Translate into workplaces	Asking hinge point questions

FINAL PROPOSAL FOR MANAGERS AWARENESS

MODULE	TIME EXPECTED
1	4
2	2.5
3	1.5
4	1.5
5	1
6	1
7	0
8	2.5
Total	**14 h**

TOTAL AWARENESS FOR MANAGERS = 14 HOURS (2 FULL DAYS)