

Critical Analysis of the Hong Kong International Convention on Ship Recycling

K. P. Jain, J. F. J. Pruy, J. J. Hopman

Abstract—In May 2009, the International Maritime Organization (IMO) adopted the *Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships* to address the growing concerns about the environmental, occupational health and safety risks related to ship recycling. The aim of the Hong Kong Convention is to provide a legally binding instrument which ensures that the process of ship recycling does not pose risks to human health, safety and to the environment. In this paper, critical analysis of the Hong Kong Convention has been carried out in order to study the effectiveness of the Convention to meet its objectives. The Convention has been studied in detail including its background, main features, major stakeholders, strengths and weaknesses. The Convention, though having several deficiencies, is a major breakthrough in not only recognizing but also dealing with the ill-practices associated with ship recycling.

Keywords—Hong Kong Convention, IMO, Ship breaking, Ship recycling.

I. INTRODUCTION

PRESENTLY, in the middle of 2013, the world is still reeling under an economic crisis. The ship recycling industry is closely related to shipping market cycles and during recessionary times, when freight rates are low and ship owners are short on cash, old and obsolete vessels sold to scrap dealers in the demolition market provides a source of cash to ship owners [1]. Although in general the average life span of a ship, considering economic, technical and regulatory limitations, is about 30 years; an economic crisis can shorten this considerably. A good example is the Batillus-class supertanker built in France at the end of the 1970s. Four such ships were built of which three were scrapped within 10 years put in service due to a long period of reduced oil demands that started in 1973 and lasted longer than expected [2]. The current world fleet of ships above 500 gross tonnage (GT) is about 56,000 in number [3]. This means, on average around 1,800 ships of over 500 GT need to be recycled each year [3]. Though, during an economic crisis, a far higher number can be expected. Thus, in the current market scenario much work can be expected to come for the ship recycling industry.

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Ship recycling industry has long been known for unacceptable conditions of the workers working in the yards without protective equipment, formal training and safety measures. The industry has also been known for causing pollution and irreversible damage to the local marine environment. To address such concerns relating to ship recycling, conventions such as Basel Convention, International Maritime Organization (IMO) guidelines on ship recycling, Industry code of practice on ship recycling, International Labour Organization (ILO) guidelines etc. exists but have been found to be inadequate due to practical issues. Thus, IMO adopted the *Hong Kong International Convention for Safe and Environmentally Sound Recycling of Ships* in May 2009 to address the safety, health and environmental issues related to ship recycling with a legally binding instrument [4].

Ship Recycling, according to the Hong Kong Convention means “the activity of complete or partial dismantling of a ship at a ship recycling facility in order to recover components and materials for reprocessing and reuse, whilst taking care of hazardous and other materials, and includes associated operations such as storage and treatment of components and materials on site, but not their further processing or disposal in separate facilities” [4]. The Hong Kong Convention recognizes that “recycling of ships contributes to sustainable development and, as such, is the best option for ships that have reached the end of their operating life” [4]. It is thus not justified to get rid of the practice of recycling the ships and is imperative to develop ship recycling yards around the world that can handle the required number of ships to be recycled.

The Hong Kong Convention has been both criticized and praised. Environmental groups, in general, view it as a weak and inadequate response to the problem of such a great stature and one of the groups has even called it as “legal shipwreck” [5]. On the contrary, the Hong Kong Convention has been praised by few authors for fundamental advances such as holistic approach to regulation that spans across every aspect of the entire life-cycle of a ship [6], [7]. The Convention has also been applauded for setting up procedures such as certificates, surveys and inventories as this will fill existing gaps in knowledge about the quality and quantity of the hazardous materials installed during the life time of the ship [8].

The Hong Kong Convention has certainly developed international awareness to improve the standards of ship recycling. However, it is imperative for existing as well as upcoming ship recycling yards to understand the underlying

principles of the Convention in order to comply with the requirements of the Convention. Moreover, the Convention also defines certain duties for parties such as flag state, port state, recycling state, and ship owners which must also be well understood by the concerned parties. This paper thus reviews the Hong Kong Convention explaining its background and structure highlighting its strengths and weaknesses and reviews the duties of major stakeholders as defined by the Convention.

II. BACKGROUND

Ship breaking, ship dismantling, ship recycling, ship scrapping, ship disposal, ship demolition etc. are different terms which all point to the activity of breaking an end of life ship into bits and pieces to recycle and reuse the materials derived from the ships for various purposes. Ship recycling, as the name suggests, at least theoretically should be a green activity supporting sustainable development as it reduces the need to use natural resources for steel making by recycling and reusing tons of unused, discarded steel in the form of an end of life ship. But, actual working practices in the ship recycling operation cripples the underlying principle of sustainability.

Ship recycling can result in reusing up to 98% of a ship by weight, which in terms of recycling is well ahead of other industries such as automobile and aviation [9]. Re-using and re-cycling materials and equipment to such a large extent by means of ship recycling must be considered an important activity that supports sustainable development [3] and is believed to be the most eco-friendly way of disposing of ships at the end of their economic lives [10].

On the contrary, ship recycling is seen as posing threats to environment, human health and safety due to unacceptable working practices and environmental standards in a number of ship recycling yards around the globe. Workers working in such yards are exposed to hazardous substances such as asbestos, polychlorinated biphenyls (PCBs), lead, mercury etc. and their safety is often jeopardized as they work without proper protective equipment such as safety shoes, gloves, safety glasses, helmets etc. [11, pg. 2]. Recycling yards having no containment equipment and facilities to deal with large spill and hazardous waste are a threat to marine environment and ecology of the area where the ships are dismantled. Hazardous substances generated during ship recycling if discharged into the atmosphere including sea, land and air causes pollution and irreparable damage to the environment [12].

Increasing awareness towards the environmental impact of ship breaking activity and mounting pressure from various sources including environmental non-governmental organizations (ENGOS) such as Greenpeace and Ship Platform became an eye-opener for concerned agencies, regulators and administrators [3]. Thus they started to explore and develop common global measures to have a safe and environmentally friendly ship recycling industry. Initial

attempt to address the problem was to employ the Basel Convention [3] adopted in 1989 which subsequently came into force in 1992 [13]. The main objective of the Basel Convention is to “control the trans-boundary movement of hazardous wastes and their disposal”.

End-of-life ships contain hazardous materials such as asbestos, PCBs and waste oils. These substances, if not handled properly, can have serious consequences for the environment and human health. These ships bound for dismantling rarely fly the flag of the state in which they are to be recycled. Thus, the activity of ship recycling concerns the Basel Convention as this activity can represent a trans-boundary movement of hazardous waste [14]. However, the Basel Convention was not specifically designed to regulate end-of-life ships. Given the global nature of the shipping industry and the practices associated with sending end-of-life ships for recycling, there have been practical difficulties in applying the provisions of the Basel Convention to ship recycling [6]. As a result, in 2004 the IMO was invited by the conference of the parties to the Basel Convention to continue work aimed at the establishment of mandatory requirements to ensure the environmentally sound management of ship dismantling [14].

The issue of ship recycling was first brought to the attention of the IMO Marine Environmental Protection Committee (MEPC) in March 2000 during its 44th session [15]. Following this session, a correspondence group was formed to collect the information about existing ship recycling practices and to give advice on the role of IMO on the issue of ship recycling [16]. Two years later in March 2002 during MEPC 47 it was agreed that IMO has an important role to play in ship recycling, including developing measures for the preparation of a ship before recycling commences. Also, a coordinating role in recycling matters in relation to the ILO and the Basel Convention was foreseen. Thus, the MEPC agreed that IMO should develop recommendatory guidelines using the *Industry Code of Practice for ship recycling* as a basis to be adopted by an assembly resolution [17]. In July 2003, during MEPC 49, IMO approved draft Guidelines on Ship Recycling for submission to the 23rd assembly for adoption [18]. These guidelines were adopted in Dec 2003 as *IMO Guidelines on Ship Recycling* by the 23rd assembly of IMO by resolution A.962(23) [15]. These guidelines were subsequently amended by resolution A.980(24) in Dec 2005 [15].

Subsequently, in 2005 MEPC 53 agreed that the prime concern of IMO should be to develop a new legal instrument to provide globally applicable ship recycling regulations for ships and ship recycling facilities [19]. Thus, in Dec 2005 assembly 24 adopted resolution A.981(24) [15]. This resolution directed MEPC to develop a “new legally binding instrument on ship recycling” that would provide regulations for “the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational efficiency of ships; the operation of ship recycling facilities in a safe and environmentally sound manner; and the

establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements” [15].

Following the instructions of assembly 24, MEPC 54 convened a working group on ship recycling which developed the draft text which had been submitted by Norway. Thereafter numerous meetings were arranged over the period of three and a half years for further development of the draft text of the Convention [3]. Finally, in May 2009 the International Conference on the Safe and Environmentally Sound Recycling of Ships took place at Hong Kong where the *Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009* (known as the “Hong Kong Convention”) along with six resolutions was adopted [20].

III. STRUCTURE OVERVIEW

The text adopted by the Hong Kong Convention is classified into three main parts - articles, regulations and appendices. It has 21 articles which form the main legal mechanism. It has 25 regulations which are part of the annex and are divided into four chapters i.e. general provisions (Regulation 1-3), requirements for ships (Regulation 4-14), requirements for ship recycling facilities (Regulation 15-23), and reporting requirements (Regulation 24-25) [4]. These regulations form the essential requirements and technical details of the Convention.

In addition to 21 articles and 25 regulations, the Hong Kong Convention has 7 appendices which are also a part of the annex. These appendices contain a list of hazardous materials, forms and certificates related to the Convention, among other things. The appendices have no significant role in setting standards but they provide a common information base and a consistent format for documentation that will assist in proper implementation of the Convention’s procedures [21].

The Hong Kong Convention has a two-tier design with the main governance and procedural rules defined in the main text of the Convention under the heading article while the Convention is further supported by detailed requirements and more specific regulations defined in the annex. Annex is an integral part of the Convention which is not legally independent [8] and its requirements has the same potency as those of the articles to the Convention [21]. This two-tier design allows for enhanced flexibility to keep up with best technical and scientific practices, because the annex to the Hong Kong Convention can be modified more easily than the main body of the treaty [8].

Beside articles, the annex-regulations and the annex-appendices certain guidelines have also been developed and adopted. These guidelines aim to support party states in the early implementation of the technical standards of the Convention. These include the Guidelines for the Development of the Ship Recycling Plan (Annex 2), Guidelines for the Development of the Inventory of

Hazardous Materials (Annex 3), Guidelines for Safe and Environmentally Sound Ship Recycling (Annex 4) and Guidelines for the Authorization of Ship Recycling Facilities (Annex 5). Two other guidelines have also been developed and adopted to assist party states in the implementation of the Convention after it enters into force which includes Guidelines for the Survey and Certification of Ships under the Hong Kong Convention and Guidelines for the Inspection of Ships under the Hong Kong Convention.

These guidelines are specifically designed for proper implementation of the requirements of the Convention and its regulations unlike other existing non-mandatory guidelines related to ship recycling developed by ILO, IMO and the Basel Convention. Since these guidelines are authorized by the Hong Kong Convention they have more influence on the key issues of standards on ships and at ship recycling facilities [21]. For example, preparation of the ship recycling plan and the ship recycling facility plan will extensively depend on these guidelines [21].

IV. APPLICATION AND APPROACH

A. Two-Fold Application

The objective of the Hong Kong Convention, as indicated by its preamble, is to “effectively address the environmental, occupational health and safety risks related to ship recycling” [4]. The Convention adopts the approach of dual application covering both the ship and the ship recycling facility, which is a comprehensive approach to deal with the problems relating to human health, safety and environmental protection associated with the process of ship recycling.

As far as ships are concerned, the definition given in the Convention explicitly includes submersibles, floating crafts, floating platforms, among other offshore and storage vessels including vessel being towed or stripped of equipment. At the same time, the Convention exempts ships less than 500 GT, ships operating throughout their life only in waters of the state whose flag they are entitled to fly (inland waterway vessels), the warships, naval auxiliaries and other ships not used for commercial purposes from the scope of its application. However, having given the exemption to above categories of ships, the Hong Kong Convention obliges party states to ensure, by adopting appropriate measures, to treat such ships in accordance with the Convention’s provisions as far as practically and reasonably possible (Article 3(2)).

As far as ship recycling facility is concerned, the Convention defines it as an area that is a site, yard or facility used for the recycling of ships while ship recycling includes the activity of both complete and partial dismantling of a ship. The definition of ship recycling includes associated operations such as storage and treatment of components and materials on site but excludes their further processing or disposal in separate facilities (Article 2(10)).

The Hong Kong Convention certainly takes a comprehensive approach in its applicability to ships during their life cycle, ship recycling facilities and associated

operations but its exemptions to certain categories of ships and downstream material disposal facilities undermine the Convention's intentions.

B. Life-Cycle Approach

The Hong Kong Convention sets out the regulations concerning the design, construction, operation and maintenance of ships to control the installation and usage of hazardous materials on ships. In addition, it also requires both new and existing ships to maintain a ship specific "Inventory of Hazardous Materials" throughout the operational lifetime of the ship.

During the ship recycling process, ship generated hazardous materials such as heavy metals, asbestos, hydrocarbons and ozone depleting substances form the primary source of risks to work safety and the environment [7]. The parties to the Convention are "mindful of the need to promote the substitution of hazardous materials in the construction and maintenance of ships by less hazardous or non-hazardous materials" [4].

This approach adopted by the Convention is an effective way to minimize the risks originated from the ship generated hazardous materials during the ship recycling process as this approach concerns the ship to eliminate or restrict hazardous materials from its inception to end. This "cradle to grave" approach [6], [7] pins down the problem of hazardous materials at its very source at the design stage and in future, by virtue of changes in ship designs, may completely eliminate the generation of hazardous materials during recycling process [6].

C. Approach for Setting Technical Standards

The approach followed by the Hong Kong Convention to set technical standards relating to ship recycling is an indirect approach because the Convention itself does not introduce compulsory environmentally sound methods of ship recycling [22]. Though the Convention aims to set minimum standards, it does not specifically define the method to be followed for ship recycling. The Convention has left this to party states to decide which method of ship recycling is safe and environmentally sound. It could be pier breaking, slip way, dry dock, beaching or any other method which complies with the requirements of the Convention.

This can be further substantiated by reference to the general requirements for ship recycling facilities as defined in the Regulation 17 of the Convention which says "Ship Recycling Facilities authorized by a Party shall establish management systems, procedures and techniques which do not pose health risks to the workers concerned or to the population in the vicinity of the Ship Recycling Facility and which will prevent, reduce, minimize and to the extent practicable eliminate adverse effects on the environment caused by Ship Recycling, taking into account guidelines developed by the Organization" [4].

Basically, Regulation 17 states that ship recycling facility should not pose health risks to the workers and the

environment should not be affected by these facilities but it does not define how and in what way (procedures and techniques) this can be achieved. "The provision does not prescribe specific standards, such as technical requirements for the treatment of hazardous wastes, or generally prohibit dangerous practices, e.g. 'beaching' without containment" [8]. However, the Convention says that it can be achieved by taking into account the guidelines developed by the IMO. Since these guidelines are non-mandatory [3] and ship recycling facilities are authorized by the recycling states, it is open to the interpretation of party states how a ship recycling facility should be operated so that it meets the requirements of the Convention.

On the other hand, Bhattacharjee [6] argues that the Hong Kong Convention "paves the path for standardization of the ship breaking process across jurisdictions" as it lays down a uniform set of technical standards for ship recycling facilities and procedures as an integral part of the Convention itself, contained in annex-regulations as opposed to the Basel Convention which has a separate set of technical guidelines, distinct from the main body of the Convention. As discussed, this argument can be negated by the fact that the Hong Kong Convention does not prescribe specific methods.

As far as setting standards for the ships is concerned, it does provide uniform standards in terms of their design, construction, maintenance and operation as stipulated by Regulation 4 which prohibits the installation and use of hazardous materials specified in Appendix 1 of the Convention and Regulation 5 which makes it mandatory for all ships under the purview of the Convention to have an Inventory of Hazardous Materials on board for the entire operational life of the ship.

V. MAJOR STAKEHOLDERS

The two main players, as identified by the Hong Kong Convention are the flag state and the recycling state. The flag state is the government of the country whose flag the ship is entitled to fly and the recycling state is the government of the country where the ship recycling facility is located [11, pg. 151]. Additionally, the ship recycling facility, the ship owner and the port state control are other stakeholders having obligations under the Convention.

A. Flag State

The primary duties of flag states under the Hong Kong Convention include verification of the Inventory of Hazardous Materials (IHM), surveys and certification of the ships entitled to fly its flag. Flag states are required to ensure that part 1 of the IHM reflecting hazardous materials listed in appendices 1 and 2 of the Convention is prepared during construction stage for new ships (within 5 years of the entry into force of the Convention or before the recycling for existing ships) and is updated and maintained during entire operational lifetime of the ship. Moreover, prior to recycling a ship, part 2 for operationally generated waste and part 3 for stores must be added to part 1 of the IHM (Regulation 5). This ensures that a

comprehensive list of hazardous materials is present on ship at the time of entry to the ship recycling yard. The purpose of the IHM is to enable ship recycling facility to determine safe and environmentally sound ship recycling process.

Surveys must be conducted by the flag state to ensure that IHM is in accordance with the requirements of the Convention (Regulation 10). Upon successful completion of the surveys the International Certificate on Inventory of Hazardous Materials (ICIHM) must be issued to the ship (Regulation 11(1)). A final survey is to be carried out by the flag state to issue the International Ready for Recycling Certificate (IRRC) (Regulation 11(11)). This final survey verifies three aspects. Firstly, the IHM is in accordance with the requirements of the Convention. Secondly, the ship recycling plan (SRP) developed by the ship recycling facility contains information related to IHM, and thirdly, the ship recycling facility is duly authorized to carry out ship recycling (Regulation 10(1)(4)).

B. Recycling State

A recycling state is the country which is party to the Convention under whose jurisdiction the ship recycling facility operates. The obligation of the recycling state is to establish a mechanism to ensure that the ship recycling facility is authorized for ship recycling and is designed, constructed and operated in a safe and environmentally sound manner in accordance with the regulations of the Convention. This authorization is to be carried out by the Competent Authority, designated by the recycling state, by virtue of site inspection and verification of documents required by the Convention (Regulation 16).

The Competent Authority authorizing the ship recycling facility is also required to approve the ship specific ship recycling plan. This approval can be done either explicitly or tacitly, as declared by the recycling state while providing its consent to be obligated by the Convention (Regulation 9(4)).

Moreover, to detect violations to the Convention, a party having sufficient evidence that a ship recycling facility is operating, has operated or is about to operate violating the provisions of the Convention can request an investigation of this ship recycling facility operating under the jurisdiction of another party (Article 9(4)).

C. Ship Recycling Facility

According to the Hong Kong Convention, a ship recycling facility authorized by the party to the Convention can only accept ships that comply with the Convention or meet the requirements of the Convention (Regulation 17(2)(1)). It can only accept ships which it is authorized to recycle (Regulation 17(2)(2)). The facility is also required to make available the documentation of its authorization to the ship owner contemplating recycling a ship at that facility (Regulation 17(2)(3)).

The facility is required to make ship specific ship recycling plan once it has received the appropriate information regarding the ship to be recycled by the ship owner and it is obliged to notify the Competent Authority authorized by the

recycling state of its intentions to recycle a ship (Regulation 9).

In addition, the facility is also required to make a ship recycling facility plan (SRFP) which is to be adopted by the board or the governing body of the facility. This plan has to include various policies, emergency plans, monitoring and reporting systems as stipulated under Regulation 18 of the Convention. Broadly speaking, these systems and plans govern the safe and environmentally sound ship recycling.

Furthermore, it is the responsibility of the ship recycling facility to take preventive measures against adverse effects to human health and the environment caused by unsafe conditions, accidents, spills, emissions, etc. (Regulation 19), to ensure safe and environmentally sound management of hazardous materials (Regulation 20), to develop and maintain an emergency preparedness and response plan in order to deal with emergency situations (Regulation 21), and to ensure workers' safety by providing equipment for personal protection, initial and refresher training for all workers conducted by competent officials (Regulation 22).

Finally, ship recycling facility is required to report to the Competent Authority any incidents, accidents, occupational diseases and chronic effects causing risks to workers' safety, human health and the environment (Regulation 23).

D. Port State Control

A state which is party to the Convention is obliged to prohibit or restrict the installation or use of hazardous materials on ships while in its ports, shipyards, ship repair yards, and offshore terminals (Regulation 4(2)). Ships are also subjected to inspection to confirm validity of the certificates such as ICIHM and IRRC whilst at any port or offshore terminal of another party (Article 8(1)). Moreover, to detect violations to the Convention, a party having sufficient evidence that a ship is operating, has operated or is about to operate violating the provisions of the Convention can request an investigation of this ship when it enters the ports or offshore terminals of another party (Article 9(2)).

More importantly, parties to the Convention can apply the requirements of this Convention to ensure that no more favorable treatment is given to the ships flying the flag of non-parties (Article 3(4)). This means that the Convention greatly enhances the authority of port state control especially over non-party ships to support the global applicability of IMO Conventions to all ships plying in international trade [11, pg. 161-162].

E. Ship Owner

The Convention requires a ship owner to initiate the process of ship recycling by informing "administration" i.e. flag state about his need to get the ship recycled. This allows the flag state to prepare for survey and certification of the ship to be recycled as per the requirements of the Convention (Article 24(1)). At the same time the ship owner is also required to give all available information regarding the ship (including a completed IHM) to the ship recycling facility for the

development of ship specific ship recycling plan (Regulation 8(4), 9(1)).

Moreover, ship owners are required to ensure that the amount of cargo residue, fuel oil and waste on board is minimized prior to entering the ship recycling facility (Regulation 8(2)) and tankers arrive in such a condition that its cargo tanks and pump rooms are in a condition that is ready for certification as safe-for-entry and safe-for-hot work (Regulation 8(3)).

Ship owners intending to recycle a ship can request the ship recycling facility, which is being considered by the owner, to show the documentation relating to its authorization so that the ship owner can select the most appropriate yard (Regulation 17(2)(3)). Ship owners are also entitled to get an acknowledgement and subsequent notification by the Competent Authority of the recycling state about the decision to approve or deny the ship recycling plan (Regulation 9 (4)).

VI. DEFICIENCIES OF THE CONVENTION

A. Lack of Incentives for Recycling Facilities

The success of the ship recycling Convention depends on the signature of the major recycling states such as India, Pakistan, Bangladesh, China and Turkey because one of the condition of entry into force takes into account the recycling capacity of the states. Out of these states, only Turkey has signed the Convention as subject to ratification [23] and China has the legal framework and willingness to meet the Convention's requirements while Indian sub-continent countries are still far from complying with required standards [22]. The poor condition of most of the recycling facilities on the Indian subcontinent and the requirement of large capital investments to improve the standards of such facilities makes it doubtful as to how many facilities would be deemed to be authorized [11, pg. 182]. In the absence of proper incentives and support mechanisms provided by the Convention to upgrade these facilities, it is unlikely that subcontinent states would be enthusiastic to sign the Convention.

Moreover, the fact that non-party ship recycling facilities can accept party ships (of course by re-flagging of the ship to a non-party state) substantiates the lacunae of the Convention. This will further discourage recycling states to sign the Convention. Such a condition would result in reduced authorized ship recycling facility; if at all the Convention comes into force.

B. Indirect Approach for Standards Setting

The Convention does not follow a direct approach while setting standards for ship recycling methods. It does not introduce specific compulsory methods that are safe and environmentally sound. Also, it does not prohibit certain recycling methods which are known to cause hindrance to safe and environmentally sound ship recycling. It is widely known that "beaching" has been condemned by environmental groups for being notorious in posing obstacles to safe and

environmentally sound ship recycling. Some "fatal characteristics" of intertidal beaching operations include:

- the impossibility of containing pollutants such as toxic paints, heavy metals and oils due to a shifting and soft wet tidal sand surface and thereby polluting sea water;
- the impossibility of rapidly bringing fire-fighting equipment and ambulances along-side the ship in case of an emergency;
- the impossibility of rapidly bringing cranes to lift heavy cut sections of a ship to prevent these sections from falling directly onto the workers or into the marine environment;
- and absolute incompatibility of conducting hazardous waste management operations in the ecologically delicate and vital coastal zone [24].

To protect workers and the coastal environment a ban on dismantling activities on beaches would certainly be preferable [8] but the Convention addresses the reduction of the risks to human health and safety and to the environment through a number of requirements. These include requirements on worker safety and training, requirements for the protection of human health and the environment, requirements for emergency preparedness and response, and systems for monitoring, reporting and record-keeping [3]. This is of course an indirect approach to resolve the issue.

C. Exemptions

Ship recycling, according to the definition given in the Convention, does not include further processing and disposal of components and materials recovered from the ship in separate facilities (Article 2(10)). This certainly means that final fate of the hazardous materials recovered from the ship during the process of ship recycling is not addressed by the Convention [11, pg. 187]. This approach thus undermines the broader objective and effectiveness of safe and environmentally sound ship recycling.

The Convention is not applicable to war ships, naval vessels and government owned non-commercial ships (Article 3(2)). In addition, ships under 500 gross tonnage and ships engaged solely in domestic voyages are exempted from the purview of the Convention (Article 3(3)). Such exemptions would not allow complete eradication of ill practices of ship recycling industry.

Moreover, environmental impact of recycling an end of life ship rarely depends on its usage during its life time. In fact, warships and naval vessels contain huge amount of hazardous materials such as asbestos and PCBs and thus need to be subjected to stricter regulations [6].

However, it can be argued that it would be impracticable to apply the same regulations to a giant tanker and a small fishing boat at the same time and the exemption to warships and non-commercial government vessels is a common practice due to concerns related to sovereignty and security issues [8].

On the whole, the Hong Kong Convention with such exemptions has not utilized the opportunity to develop a

powerful regulatory framework which certainly limits its global applicability, efficiency and success.

D. Over Dependence on Procedures

The Convention is heavily dependent on procedures such as creating inventories, getting certificates, surveys and inspections etc. Such procedures include ship recycling facility plan, ship recycling plan, documentation of authorization of ship recycling, IRRC, ICIHM, and IHM. This means that the Hong Kong Convention aims to deal the critical problems associated with the ship recycling by such written procedures and documentation rather than by substantive prohibitions and specific methods [8]. Success of such a system largely depends on effective administration and control mechanism. The control of ship recycling facilities, according to the Convention, is subjected to the authorization by the recycling state. Under the absence of third-party control by another party state, recycle states may generously grant authorization to sub-standard recycling facilities operating under their jurisdiction mainly due to economic reasons [7].

E. Unfair Advantage to Ship Owners

The overview of the Convention makes it clear that the responsibility of a ship owner who decides to recycle the ship is only limited to getting a couple of certificates (ICIHM and IRRC) from the administration. The Convention, however, does not allocate any final responsibility of clean-up to the ship owner [6]. On the other hand, the Convention will result in substantial expenses for recycling facilities to make their yards comply with the required standards. This seems an unfair imbalance between the obligations of the ship owners and the ship recycling facilities.

The Convention does not lay any responsibility on ship owners and flag state for certifying the tanker ship as safe-for-entry and safe-for-hot work. Ship owner is only required to prepare the ship to a condition which is "ready for certification" (Regulation 8(3)). The Convention does not define who will be held responsible for the condition arising out of an explosion occurring after the tanker is entered into the recycling facility [11, pg. 188].

F. Possibility of Re-flagging of Party Ships

Another major lacuna in the Convention is that party flag ships after re-flagging to a non-party flag can be sent to a ship recycling facility in a non-party recycling state. This indicates to recycling states that they may be able to get ships for recycling even after not signing the Convention and this short coming may prove fatal for the success of the Convention.

G. Practical Difficulties

There are certain practical difficulties which might be faced after the Convention enters into force. As per the notification requirements stipulated in the Convention, the Competent Authority of the recycling state is notified by the ship recycling facility of his intentions of receiving a ship for recycling. There is no notification from the flag state administration issuing IRRC for recycling a ship to the

recycling state in which this ship is going to get recycled. Under such a notification regime, ship recycling facility might not inform the Competent Authority about the ship arrival until last minute. This leaves the recycling state with very little time to take an appropriate action to impede such an "illegal" entry of an end of life ship.

The fact that the Convention requires ship recycling facilities to seek information from the ship owner to prepare a ship recycling plan may result in these facilities facing certain practical difficulties. It can subsequently turn out that the information provided by the ship owner was inadequate and IHM given was not complete [11, pg. 188] which consequently would result in unmanageable hazardous materials lying at ship recycling facilities.

VII. STRENGTHS OF THE CONVENTION

A. Life-Cycle Approach

The most compelling feature of the Convention is the life cycle approach adopted by it. It deals with the hazardous materials associated with the ship from cradle to grave and aims to prohibit and restrict their use by regulating design, construction, operation and maintenance of ships with respect to hazardous materials. Maintenance of IHM during the entire life time of the ship is another major step taken in the direction of achieving safe and environmentally sound ship recycling.

B. Comprehensive Applicability

Moreover, dual applicability of the Convention to both ships and ship recycling facilities makes it sufficiently broad and comprehensive which would certainly be decisive in dealing the issue of ship recycling. It is the first legally binding instrument on ship recycling which provides uniform standards for the regulation of ships with respect to hazardous materials and also regulates ship recycling facilities in terms of operating and managing them for safe and environmentally sound ship recycling.

C. Opportunity for Parties to the Convention

The Convention offers a great opportunity for recycling states and flag states to revive their legislative process at the national level to protect their own environment and workers' health and safety affected due to improper recycling of end-of-life ships [7].

D. Innovative Steps

Although the Convention is designed to resolve the issue of ship recycling by employing complex procedures of plans, survey, certification and inspection; steps such as IHM, SRP taking in consideration ship's information and SRFP incorporating requirements of safe-for-entry, safe-for-hot work, and workers' safety are innovative steps taken in the right direction.

E. Provision of Knowledge Transfer

Parties are required to provide technical assistance, if

requested by any other party. This can be on any of the elements governed by the Convention such as training personnel, making relevant technology, joint research and development programs, equipment and facilities available, and promotion of the effective implementation of the Convention and the relevant guidelines (Article 13(1)). They are also required to co-operate proactively to transfer systems or technology for ensuring safe and environmentally sound ship recycling (Article 13(2)). These provisions are concrete steps towards knowledge sharing and thus enabling under developed recycling facilities to develop towards safe and environmentally sound ship recycling.

F. Acceptance of Non-Party Ships

Party facilities can accept non-party ships if ships meet the requirements of the Convention (Regulation 17(2)(1)(2)). This is an incentive for facilities as this regulation ensures that party facilities are not stranded to deal only with the ships flying the flag of a state which is party to the Convention.

G. Robust Control and Enforcement Mechanism

The control and enforcement mechanism of the Convention comprises of flag state control, port state control and recycling state control. This approach exerts "triple effect" to create a robust enforcement mechanism for the Convention [7]. The port state's right to carry out inspections to verify compliance with the Hong Kong Convention and in case of violations, the right to warn, detain, dismiss or exclude the ship from the party's ports is a potentially powerful instrument [8]. A ship that does not carry proper documentation such as ICIHM may face difficulties with port state authorities. This would compel ship owners to keep the documentation of their ships in line with the Convention.

Similarly, a recycling state is empowered to suspend or withdraw the authorization of the recycling facility if it refuses to get inspected by the Competent Authority (Regulation 16(5)) and if incidents or actions taken at the ship recycling facility have effect that the conditions of authorizations are not fulfilled anymore, the Competent Authority may decide to suspend or withdraw the authorization (Regulation 16(6)). The Competent Authority may also ask to take corrective action. Such incidents and actions, though, must be reported by the ship recycling facilities to the Competent Authorities.

VIII. CONCLUSION

The adoption of the Hong Kong Convention certainly is a way forward to deal with health, safety and environmental concerns associated with ship recycling. It would bridge the gap between the existing legal instruments and the ship recycling practices. The comprehensive applicability of the Convention to both ships and ship recycling facilities, the life cycle approach and the legally binding criteria specifically designed for ship recycling industry are major features of the Convention. Such features make the Convention powerful and distinct from other legal regimes and guidelines concerning ship recycling. However, it is hard to anticipate the fate of the

Convention without it coming into force but it is definitely a significant step taken in the direction of achieving safe and environmentally sound ship recycling.

Unfortunately, the Hong Kong Convention still has several deficiencies and limitations. Exemptions to certain class of ships, little incentive for recycling states to join the Convention and its over dependence on procedures such as surveys and certification are some of the major flaws that weakens its effectiveness.

In conclusion, the *Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships* is a framework under the auspices of the IMO that recognizes the problems associated with ship recycling as a matter of international concern. Though with certain flaws, it is a commendable attempt towards safe and environmentally sound ship recycling.

ACKNOWLEDGMENT

This work is part of the research project on Green Ship Recycling performed by the consortium led by Delft University of Technology, The Netherlands and Tianjin University, China.

REFERENCES

- [1] M. Stopford, *Maritime Economics*. London: Routledge, 2009, ch. 5, at p. 178.
- [2] News to use, "The world's biggest ships- Batillus-class supertankers," Jan 2012 at [online] <http://www.newstouse.org/biggest-ships-batillus/>. Accessed 29 Aug 2012.
- [3] N. Mikelis, "Hong Kong Convention: The origins of a convention," presentation at *World Maritime University*, Malmö, Sweden, 2012.
- [4] IMO, "Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009," in *International Conference on the Safe and Environmentally Sound Recycling of Ships*, Hong Kong, 2009.
- [5] NGO platform on ship breaking, "Legal Shipwreck: IMO Convention Legalizes Toxic Ship Dumping," at [online] http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2011/11/briefing-paper-on-IMO-conventio-may-2009.pdf. Accessed 20 July 2013.
- [6] S. Bhattacharjee, "From Basel to Hong Kong: International Environmental Regulation of Ship-Recycling Takes One Step Forward and Two Steps Back," *Trade Law and Development*, vol. 1, no. 2, pp. 193-230, 2009.
- [7] Y. Fang, M. Q. Mejia Jr., "Reinforcing the Legal Framework for the Environmentally Friendly Recycling of Ships: A Brief Look at the Hong Kong Convention," in *International Proceedings of Economics Development and Research*, vol. 48, no. 20, pp. 91-95, 2012.
- [8] N. Matz-Lück, "Safe and Sound Scrapping of 'Rusty Buckets'?" The 2009 Hong Kong Ship Recycling Convention," in *Review of European Community & International Environmental Law*, vol. 19, no.1, pp. 95-103, 2010.
- [9] Lloyd's Register, "Ship recycling: Practice and regulation today," 2011, at [online] http://www.lr.org/Images/ShipRecycling_040711_tcm155-223320.pdf. Accessed 23 July 2013.
- [10] BIMCO, "Ship Recycling BIMCO's position," *Viewpoint*, at [online] https://www.bimco.org/About/Viewpoint/11_Ship_Recycling.aspx. Accessed 23 July 2013.
- [11] T. G. Puthucherril, *From shipbreaking to sustainable ship recycling: evolution of a legal regime*, Leiden: Brill, vol. 5, 2010.
- [12] D. Dodds, "Breaking Up is Hard to Do: Environmental Effects of Shipwrecking and Possible Solutions Under India's Environmental Regime," *Pacific McGeorge Global Bus. & Dev. Law J.*, vol. 20, pp. 207-236, 2007.

- [13] UNEP, *Basel Convention on the control of transboundary movements of hazardous wastes and their disposal*, UNEP/SBC/2011/4, Geneva: Publishing Service, United Nations, 2011.
- [14] Basel Convention, "Ship Dismantling," at [online]<http://www.basel.int/Implementation/TechnicalAssistance/ShipDismantling/Overview/tabid/2762/Default.aspx>. Accessed 22 July 2013.
- [15] IMO, "The development of the Hong Kong Convention," *Recycling of ships*, at [online] <http://www.imo.org/OurWork/Environment/ShipRecycling/Pages/Default.aspx>. Accessed 22 July 2013.
- [16] IMO, "Marine Environmental Protection Committee - 44th session: 6-13 March 2000," in *MEPC Meeting Summaries*, at [online] http://www.imo.org/blast/mainframe.asp?topic_id=109&doc_id=358. Accessed 21 July 2013.
- [17] IMO, "Marine Environment Protection Committee (MEPC), 47th session: 4-8 March 2002," in *MEPC Meeting Summaries*, at [online] http://www.imo.org/blast/mainframe.asp?topic_id=109&doc_id=1753. Accessed 21 July 2013.
- [18] IMO, "Marine Environment Protection Committee (MEPC), 49th session: 14-18 July 2003," in *MEPC Meeting Summaries*, at [online] http://www.imo.org/blast/mainframe.asp?topic_id=109&doc_id=2798. Accessed 21 July 2013.
- [19] IMO, "Marine Environment Protection Committee (MEPC), 53rd session: 18-22 July 2005," in *MEPC Meeting Summaries*, at [online] http://www.imo.org/blast/mainframe.asp?topic_id=109&doc_id=4469. Accessed 21 July 2013.
- [20] IMO, "Final act of the international conference on the safe and environmentally sound recycling of ships," in *International Conference on the Safe and Environmentally Sound Recycling of Ships*, Hong Kong, 2009.
- [21] M. Sarraf et. al, *Ship breaking and recycling industry in Bangladesh and Pakistan*. Washington, D.C.: World Bank, Dec. 2010.
- [22] Y.-C.Chang, N. Wang, and O. S. Durak, "Ship recycling and marine pollution," *Marine pollution bulletin*, vol. 60, no. 9, pp. 1390-1396, 2010.
- [23] IMO, *Status of multilateral Conventions and instruments in respect of which the International Maritime Organization or its Secretary-General performs depositary or other functions*. IMO, June 2013, at p. 505.
- [24] J. Puckett, "Speech given by the NGO Platform on Shipbreaking on the beaching method," in *International Conference on the Safe and Environmentally Sound Recycling of Ships*. Hong Kong: Basel Action Network, 2009, at [online] http://ban.org/library/090513_the_beaching_method_speech.html. Accessed 22 July 2013.