Non-entry into force of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009: An analysis from the perspective of India, Pakistan and Bangladesh

Shreya Mishra

Maharashtra National Law University, Nagpur, India

ABSTRACT

The importance of ship-breaking industry cannot be underestimated in the developing countries, where a majority of the world’s dead ships is exported for getting recycled. The five countries which recycle the maximum number of ships are India, Pakistan, Bangladesh, China, and Turkey. Only Turkey among these has ratified the IMO (International Maritime Organisation) Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, which has not yet entered into force. The Hong Kong Convention presents a comprehensive legal framework comprising of provisions for various stages involved in ship-breaking. The sooner it enters into force, the better it will be for the ship-recyclers and ship-owners. India, Pakistan, and Bangladesh together recycle over 90 per cent of the tonnage, but many obstacles hinder India, Pakistan, and Bangladesh from becoming parties to the Convention. This paper analyses why it is imperative for India, Pakistan, and Bangladesh to become parties to the Convention. Further, it discusses the various environmental and social hazards associated with ship-breaking at ship-breaking yards within the three countries, with particular emphasis on the debate surrounding the method of “beaching”. Lastly, the paper discusses various sustainable solutions that could possibly form part of a transitional phase, which might give these countries the desired timeline for adapting to globally acceptable standards and eventually paving the way for ratification of the Convention.

Introduction

Ship-breaking has been defined as “recycling core-based ocean going vessels for steel and other materials” (Frey 2015). The term “ship-breaking” is often used synonymously with “ship-recycling”, “ship-dismantling” etc. The terminology differs across various organisations and various Conventions, with the International Maritime Organisation (IMO) calling it “ship recycling”, International Labour Organisation (ILO) calling the process as “shipbreaking”, and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989 [hereinafter as “Basel Convention”] terming it as “ship dismantling” (Puthucherril 2010, 7). The Basel Convention defines “ship-recycling” as “the process of dismantling an obsolete vessel’s structure for recycling or disposal whether conducted at a beach, a pier, a dry dock or a dismantling slip” (The Global Programme for Sustainable Ship Recycling; Anonymous n.d.-b). The Hong Kong International Convention for the safe and environmentally sound recycling of ships, 2009, adopted under the aegis of the IMO, [hereinafter as “Hong Kong Convention” or “IMO Hong Kong Convention”] defines “ship recycling” under Art. 2 (10) in the following words:

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.

A ship can sail for 20–30 years, after which it is sent for recycling (Ifıtkıhar, Ali, and Nergıs 2015, 26). Almost 95 percent of such a ship can be recycled (Puthucherril 2010, 194; Sujauddin et al. 2015, 72–83). Ninety-seven to ninety-eight per cent (Mikelis 2012) of the tonnage recycled in the world is handled by five countries: India, Pakistan, Bangladesh, China, and Turkey. Ship-breaking is considered a very useful industry, especially in the three developing countries of the Indian Subcontinent, i.e., India, Pakistan, and Bangladesh. These countries are the most preferred ship-breaking destinations because of the cheap cost of labour, presence of geographical conditions conducive for ship-breaking like long coastlines, vast expanse of tidal mudflats, etc. They derive immense benefits for their steel industries as the recycled steel fulfils their requirements to a great extent (Hossain et al. 2016, 84;
Pasha et al. 2012). For instance, requirements of 80—90 per cent of the total steel consumption of Bangladesh are fulfilled by the ship-breaking industry (Hossain and Islam 2006). Furthermore, many workers get employment opportunities in the ship-breaking industry. At the same time, ship-breaking is considered the most dangerous occupation in the world, according to the ILO (Auken and Siecker 2017). This is mainly because of the practices at the beaches of India (Alang), Pakistan (Gadani), and Bangladesh (Chittagong), which have brought to light many occupational hazards associated with them, and detrimental impact on the environment. None of these countries are a party to the Hong Kong Convention. The Convention has not yet entered into force, and will not enter into force until “24 months after ratification by 15 States, representing 40 per cent of world merchant shipping by gross tonnage, combined maximum annual ship recycling volume not less than 3 per cent of their combined tonnage” (IMO; Anonymous n.d.-b). Among the major ship-breaking countries, only Turkey has ratified the Convention, as of 2017. The comprehensiveness of the Hong Kong Convention implies that it cannot be implemented in its full spirit unless the three countries from the Indian Subcontinent make an attempt, and set an example for other countries to follow through. Considering the dangerous nature of ship-breaking activities at the beaches of India, Pakistan, and Bangladesh, perhaps a responsibility for becoming parties to the Convention should be taken up by them. But this completion of this responsibility often gets hindered by certain factors.

This paper centrally explores the need for India, Pakistan, and Bangladesh to become parties to the Convention as soon as possible. Part II of the paper discusses the extent of various environmental and social hazards as outcomes of ship-breaking activities in these countries. Part III discusses the legal aspect of ship-breaking activities, mainly through the analysis of the inter-relationship between the existing international legislation and the national legislations of these three countries. Part IV discusses the various factors hindering the process of becoming parties to the Hong Kong Convention; it further discusses possible sustainable solutions that could be implemented and incorporated within their laws and policies, and explores if this could lead these countries to eventually become parties to the Hong Kong Convention. Part V summarises and concludes the paper.

Environmental and social hazards

The hazards linked to ship breaking have been categorized broadly into two categories: negative effects of dangerous substances and accidents on the spot (Hossain and Rahman 2011). Usually, ship-breaking is conducted in four sites worldwide (in order of regulations required for compliance): dry docks, piers, quay-side demolition/slipways, and beaches (Talas 2015). China and Turkey use one or more of the first three methods of ship-breaking, while India, Bangladesh, and Pakistan follow the beaching method (38). The major ship recycling yards in South Asia—such as Alang, Gadani, and Chittagong—carry out ship dismantling through this method because all these yards are located at places that have a big tidal range and vast mudflats (Rahman 2017). Beaching has been defined as “grounding the ships on the shore when the sea tide is increasing and material recycling is carried out at low tide” (Talas 2015, 33). The technical guidance of the European Commission (OJEU 2016) and Basel Convention guidelines (Basel Convention Series 2003) do not favour beaching as an environmentally sound method for dismantling the ships as many hazardous substances get discharged in the soil, sea, and air during the process (DownToEarth 2016). The Hong Kong Convention does not explicitly prohibit the beaching method. Due to this, the beaching method of ship-breaking has often been controversial. Ship-breaking on beaches is often less subject to control and inspection. For instance, although the Gujarat Maritime Board (GMB) in India is the main regulatory body for monitoring the ship-breaking yards in Alang, many ship-breaking operations remain unregulated; and environmental concerns relating to waste management and socio-economic concerns surrounding working conditions still persist (Shipbreaking Platform 2017). Similarly, despite the presence of a dedicated law, i.e., the Balochistan Environmental Protection Act, 2012, for environmental protection in Balochistan (Pakistan), very serious concerns regarding environment and health and safety of workers have emanated due to mismanagement at Gadani port (Shipbreaking Platform 2017, 8). Most guidelines on ship-breaking are aimed at recommending best practices, including disapproval of beaching as a method of ship-breaking (ILO 2004). In Bangladesh, similar concerns have arisen due to unregulated ship-breaking, despite the Supreme Court’s orders to regulate ship-breaking and bring in alignment with sound environmental principles (Shipbreaking Platform 2017, 4). In addition, the profits are not accrued by the workers and local fishers and farmers, who eventually end up bearing the environmental costs instead (Demaria 2010).

Materials gathered after dismantling a ship, such as gasket, insulation, valves, cables, rubber products, paint, etc. (Green 2018) are the source of many contaminants: Polychlorinated Biphenyls (PCBs), plastic fragments (Reddy et al. 2006), asbestos, polycyclic aromatic hydrocarbons (PAHs), short-chain chlorinated paraffins (SCCPs), toxic heavy metals, dichlorodiphenyltrichloroethanes (DDTs), and hexachlorobenzene (HCB) (Nøst et al. 2015). These contaminants negatively impact both human and marine life, producing extreme effects such as diseases or even deaths in the case of humans; and alteration of biological productivity in marine species (Patel et al.
Asbestos, in particular, has been notorious in the these ship-breaking yards (Heidegger 2013; Iftikhar, Ali, and Nergis 2015) for causing fatal diseases such as lung cancer and mesothelioma (a rare cancer that forms on the protective lining that surrounds the lungs, heart, and abdomen), especially in flame-cutters (Wu et al. 2015) (Wu et al. 2014). Effects of heavy metal pollution in sediments (Quddus et al. 2012) and high radiation risks from the presence of terrestrial radionuclides (Rahman et al. 2012) have been detected near the ship-breaking area of Bangladesh. Ship-breaking activities in India have also been held responsible for atmospheric emissions from toxic compounds, such as PCBs, PAHs (Dudhagara et al. 2016), and HCB (Nast et al. 2015, 11373), and for presence of pthalates, which are known to cause endocrine-disrupting effects on the marine life (Singh, Rao, and Asolekars 2017).

In the recent years, some efforts have been taken at these shipping yards to improve the existing conditions, but these initiatives are still at nascent stages. In India, although the judiciary has made “Certificates for Gas Free for Hot Work” mandatory for all ships being beached in India (Sethi 2008) and some yards in Alang have attempted to make better infrastructural arrangements—including improved storage facilities for hazardous wastes, and better accommodation and medical facilities for workers—concerns relating to these aspects have not diminished. In Alang, there is currently no proper disposal system for PCBs, and material containing asbestos is sold on the second-hand market in India (Shipbreaking Platform 2017, 6). At Alang (EPSCO 2017), Gadani (Iftikhar, Ali, and Nergis 2015, 27), and Chittagong (Courtic et al. 2011), the entire process of ship-breaking is done manually. Most of these workers are unskilled, temporary migrant workers, and are often illiterate and unaware of their rights relating to safety and labour protection. Many of them are indirectly involved in the ancillary jobs, such as re-rolling the scrap material (The Hindu 2017). The presence of workers below the age of 18 (World Asbestos Report, n.d.) adds to the existing issue of child labour in these countries (ILO; Anonymous n.d.; Kutub et. al 2017). High prevalence of sexually-transmitted diseases has also been reported due to the involvement of migrant workers in prostitution (Shipbreaking Platform; Kumar, Bentinck, and Holmes 2013; Ejatlas, n.d.). Furthermore, the workers face Occupational and environmental health (OEH) risks such as “asphyxiation, being crushed by steel plates, explosions, and electrocution” (Courtic et al. 2011). It has been reported that close to 50 people in Alang (Goyal 2016), and more than 90 workers in ship-breaking yards of Bangladesh (Shipbreakingbd; Anonymous n.d.a) have lost their lives in the past few years. Last year, 33 deaths (Krigslund 2018) were reported at beaching facilities in India, Pakistan, and Bangladesh due to accidental explosion, fire (The Express Tribune 2017a), blasting etc.

Implementation of national legislations and their relationship with the existing international legislation

The international legislation in ship-breaking mainly comprises of the Basel Convention, 1989 which came into force in 1992; and the Hong Kong Convention, 2009. The ILO also contributed to resolving issues surrounding unsustainable ship-breaking by releasing guidelines of a specific nature, titled “Safety and Health in Shipbreaking: Guidelines for Asian countries and Turkey” (ILO; Anonymous 2004) in 2004. The Hong Kong Convention, although very detailed and robust, has not yet entered into force. The Convention will enter into force 2 years after 15 States “representing 40 per cent of world merchant shipping by gross tonnage, and combined maximum annual ship recycling volume not less than 3 per cent of their combined tonnage” (IMO, n.d.) have ratified it. The Hong Kong Convention is a product of an interesting milieu of participants, with inputs and cooperation from parties of the IMO, ILO, and the Basel Convention. It is a comprehensive document, which addresses most of the issues pertaining to ship-breaking, by providing a wide range of legal provisions, ranging from the design to operation of a ship to its recycling plan. Currently, there are only seven parties: Belgium, France, Norway, Panama, the Republic of Congo, and Turkey. Among India, Bangladesh, Pakistan, China, and Turkey, which are the major ship recycling countries in the world, only Turkey is a party to the Convention.

The fact that three major South Asian countries, handling most of the ship-breaking activity in the world, are not parties to the Hong Kong Convention is likely to delay its entry into force. Although India, Pakistan, and Bangladesh are not signatories or parties to the Convention, they have undertaken many efforts in the direction of aligning their ship-breaking activities with environmentally sound principles. GMB in India is the owner of the shore of the coast at Alang. The 10 km-long coastline is home to 167 plots, leased out by the GMB (The Economic Times 2016). The coastline is administered through regulations of the GMB, Gujarat Pollution Control Board, and the Atomic Energy Regulatory Board. Although the Supreme Court of India had issued guidelines in respect of the implementation of the Basel Convention in 2003 (Galley 2014), it was in the aftermath of the directions issued by the Supreme Court of India in 2007 (Case of CWP 657 of 1995, in the matter of Research Foundation for Science Vs Union of India and Anr.), that the government of India notified the Shipbreaking Code in 2013. The Supreme Court judgment in 2012 (Union of India & Ors. vs. Research Foundation for Science [I.A. Nos.61 & 62 of 2012]) in the case regarding the disputed entry of Exxon Valdez at Alang-Sosiya Ship Recycling Yard also paved the way for the notification of the Shipbreaking Code. Although the Court allowed
Exxon Valdez to be beached after compliance with the requirements of the GMB, Gujarat Pollution Control Board, and the Atomic Energy Regulatory Board, the Court said,

in all future cases of a similar nature, the concerned authorities shall strictly comply with the norms laid down in the Basel Convention or any other subsequent provisions that may be adopted by the Central Government in aid of a clean and pollution-free maritime environment, before permitting entry of any vessel suspected to be carrying toxic and hazardous material into Indian territorial waters.

The Code provides for enhanced safety provisions for workers and industrial safety personnel; more training sessions for the unskilled workers; medical facilities, mandatory registration of workers for insurance; mandatory reporting of diseases, accidents and injuries; job security for workers; sanitation facilities; adequate housing facilities (Halliday 2013). Interestingly, S.2 (xv) of the Shipbreaking Code defines “Ship Recycling Activities” to include “all activities such as beaching, cutting, dismantling of the ship and disposal of all dismantled materials from the ship-recycling yard in safe and environmentally sound manner”. Since the definition includes “beaching”, it is not prohibited in India, but many countries in the European Union (EU) do not approve of the practice of beaching. The European Parliament and the Council of the European Union adopted the Ship Recycling Regulation on 20 November 2013. It has incorporated provisions of the Hong Kong Convention, 2009 as well as those of the Basel Convention, 1989. There is neither any explicit reference to nor tacit acceptance of beaching in the Hong Kong Convention (Peters 2016). But the provisions in the EU Regulation ban shipping companies from beaching European-registered vessels in coastal areas for dismantling (Euractiv 2013). Ship recycling yards in South Asia, especially in Alang, Gadani, and Chittagong, are infamous for poor working conditions, and unsafe ways of beaching, and this makes the EU adopt a sceptical approach. The debate about the choice of the method can be resolved if the EU chooses locations on the basis of evidence of compliance with the EU Ship Recycling Regulation and not on the basis of geography. Some attempts were made in this direction in 2016 (Manoj 2016b), when 11 ship recycling yards in Alang were certified for compliance with the Hong Kong Convention by Japanese ship classification society Class NK, and by the Italian classification society RINA (Manoj Oct 2016).

In Pakistan, the Gadani coastal strip comprises of 132 ship-breaking plots. Gadani is administered as part of the Balochistan province of Pakistan. Sustainable Development Policy Institute (based in Islamabad), and the NGO, Shipbreaking Platform released their research findings in the form of a joint report titled “Pakistan Shipbreaking Outlook: The Way Forward for a Green Ship Recycling Industry” in 2013 (further revised in 2014). As per reports, no measures mentioned in the study to remedy the existing problems were undertaken (Khan 2016). Asbestos from end-of-life vessels has been reported to be dumped in unmarked areas near the shipbreaking yards (Shipbreaking Platform 2015). Accidents in 2016 (Shah and Sasoli 2016) and 2017 (Baloch 2017) which led to injuries and proved fatal in some cases have been a grim reminder in Pakistan for adoption of measures in compliance with International legislation such as the Hong Kong Convention, Basel Convention, and important ILO conventions providing for welfare of labourers and migrant workers. This is despite the fact that the Balochistan Environmental Protection Act, 2012 is a rather comprehensive legislation, replete with stringent norms for compliance. S. 23 of the Act gives an exhaustive list of the onshore and offshore units that shall be monitored to prevent pollution and environmental degradation. Clause (2) of the Section provides that

The ship breaking at Gaddani or anywhere else in the coastal belt/zone of this province shall be subject to fulfilling all the relevant obligations under the Basel Convention “on the Control of Trans-boundary Movements of Hazardous Waste and their Disposal”, Rotterdam Convention “on the prior Informed Consent (PIC) Procedure for certain Hazardous Chemicals and Pesticides in International Trade” and other relevant Treaties/Protocols and provisions of this Act.

Ship-breaking activity was officially declared an industry in Bangladesh in 2006, even though Bangladesh has been one of the top-three ship-dismantlers in the world (Alam and Faruque 2014). This has been one of the many reasons for unregulated ship-recycling practices in Bangladesh. The NGO Shipbreaking Platform has reported close to 14 cases of fatality and serious injury in the Chittagong ship recycling yards in the first three quarters of 2017 alone (Safety4sea 2018). The regulatory framework for ship-breaking industry in Bangladesh is extremely focussed on enhancing the efficiency through legislation including the all-encompassing Environment Conservation Act, 1995, Ship-breaking and Recycling Rules, 2011. Alam and Faruque (2014) have noted that the judiciary in Bangladesh has also given pronouncements from time to time in the matters pertaining to entry of vessels (BELA v. Bangladesh, Writ Petition No. 3916/2006), compensation to injured persons (BELA vs. Bangladesh and others (MT Enterprise case), Writ Petition No. 7260 of 2008), and for compliance with the national legislation (Writ Petition No. 2911/2003). The Bangladeshi Parliament recently passed the Bangladesh Ship Recycling Bill, 2018, which provides for stringent punishments for violations such as establishment of a yard without permission, and lists duties of shipyard owners (Safety4sea 2018).
From sustainable ship-recycling to IMO Hong Kong Convention, 2009: way forward

The official website of the IMO declares ship-recycling as a “green” industry, subject to proper handling (IMO; Anonymous n.d.-c). Since ship-recycling comprises of “recycling,” the industry contributes to reduction in carbon dioxide emissions, and local sourcing of steel leaves a far lesser carbon footprint than importing steel from abroad (John et al. 2013). The IMO, through its Committees, such as the Marine Environment Protection Committee (MEPC), Legal Committee, and Marine Safety Committee has taken laudable steps to help countries adopt sustainable practices in shipping. But since the global ship-recycling industry is especially concentrated in five countries – India, Pakistan, Bangladesh, China, and Turkey – there has arisen an additional need for greater awareness about sustainable ship-breaking practices (Goyal 2016). Although most shipping companies prefer to get ships dismantled in Europe, China, and Turkey (The Financial Express 2015), some global shipping conglomerates like Maersk have shown a renewed interest in helping the shipyards of India, Pakistan, and Bangladesh become compliant with rules for responsible recycling (World Maritime News, n.d.). Compliance with rules has become necessary as the ship-breaking business in these three countries has not been seeing the growth it used to witness a few years back. For instance, although the Ship Recycling Policy of 2015 in India had been implemented by Gujarat government to revive the ship-breaking industry (Deshgujarat 2016), the results show otherwise. Between 2011 and 2017, the tonnage of ships broken at Alang has fallen by 37 per cent, and the yard has not witnessed the entry of any new players (Nair 2018). The situation has been similar in Pakistan and Bangladesh, with many yards shut down and decreased tonnage (Firstpost 2015). Moreover, there is considerable pressure on India to sign and ratify the Hong Kong Convention (Goyal 2016). For instance, the NIMBY (not in my backyard) approach has not been favoured by social activists and various groups working for environment protection, who have been compelling the Indian government to push for implementing stricter norms (Garud 2012). The situation is similar for other ship-breaking countries. Inevitably, adoption of an “overly restrictive approach” (Maritime Executive 2016) by countries might delay the entry into force of the Hong Kong Convention (Grey 2017).

With so many similarities in the functioning of ship-breaking yards in the three developing countries, their reasons for not being parties to the Hong Kong Convention are similar too. Puthucherril (2010, 176) has noted that the Hong Kong Convention does not mandate green recycling capacity in exporting countries. Before the adoption of the Hong Kong Convention in 2009, the developing countries were of the view that if pre-cleaning was not possible, the flag state should bear the cost of pre-cleaning (Karim 2018). Karim (2018) has observed that no provision to this effect was added to the Hong Kong Convention, and consequently, the developing countries construed the absence of such a provision in the form of “environmental injustice” being meted out to them. This strengthens the NIMBY (not in my backyard) approach of the Hong Kong Convention and stands in contrast with the principle of proximity incorporated in the Basel Convention, Art. 4 of which mandates the treatment and disposal of wastes in the country where the waste is generated or in proximate facilities which follow environmentally sound and efficient practices (Puthucherril 2010, 177). Apart from these concerns, the complexity within the ship-breaking industry—with interlinkages between ship owners, companies, yards, and registries—is susceptible to violations of important labour and environmental standards, and often, the “genuine link” of a ship with its registered country or owner cannot be determined easily (Alcaide, Piniella, and Rodriguez-Díaza 2016). Among all the methods used for ship-recycling, beaching is the most widely used (95 percent approximately) (Pastorelli 2014), and represents the most cost-effective choice for developing countries like India, Pakistan and Bangladesh. Even though dry-docking is considered one of the most favourable methods of ship-breaking, its capital-intensive nature deters the developing countries from implementing it (Poddar and Sood 2015). Severe lack of funding has made it difficult for these countries to invest adequately in capacity-building and technology transfer (Alam and Faruque 2014, 55–56). The reliance of the world’s exporting countries (the developed countries) on these three developing countries for ship-recycling means that these countries might not be becoming parties to the Hong Kong Convention anytime soon, and creates doubts over its long-term effectiveness. Also, India, Pakistan, and Bangladesh might be reluctant to abandon their current method of ship-breaking as it provides livelihoods to many people.

Clearly, the aims of the Hong Kong Convention cannot be achieved in totality without the participation of the three South Asian countries – India, Pakistan, and Bangladesh. Till these countries reach that point, there is an increasing need to help these countries harmonize their national legislations in alignment with the international legislation, even if they do not become parties to the Convention in the near future. One of such examples is the Safe and Environmentally Sound Ship Recycling in Bangladesh (SENSREC) project, being jointly implemented by the IMO and Bangladesh since January 2015. The project comprises of studies for impact of the ship recycling industry, need for environmentally sound hazardous waste management etc. Phase-I of the project has
been successfully completed. The long-term aim of the project is to assist the industry to eventually meet the requirements of the Hong Kong International Convention on the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention), so that the Government of Bangladesh may be in a position to accede to the Convention at an appropriate time (IMO; Anonymous n.d.-d).

The concept of “green passport” as introduced in the IMO Guidelines on Ship Recycling, 2003 should be implemented by countries. The “Green Passport” is supposed to be a document that would accompany a ship throughout its life and would contain “an inventory of all materials used in the construction of a ship that are potentially hazardous to human health or the environment” (IMO; Anonymous n.d.-c). Although the IMO Guidelines are non-binding, and though the term “Green Passport” has sometimes been criticized by the NGO Greenpeace for being misleading, it does not negate the fact that such a document can “act as a roadmap, enabling the recycling facility to shred the ship in a manner that causes least damage to the environment” (Puthucherril 2010, 142). In fact, Greenpeace itself complied with the requirement for a “Green Passport” and other environment-friendly requirements for Rainbow Warrior-III, because of which the ship was considered the world's most environment friendly ship in 2011 (Smith 2011). Scuttling of ships is another alternative that could be explored in comparison to scrapping. Scuttling depends upon factors like bottom depth, ship type, and number. Both scrapping and scuttling have their own benefits, and both need appropriate management which could help prevent soil, air and marine pollution (Devault, Belivert, and Winterton 2017). Also, ship-breaking locations like Alang, Gadani, and Chittagong could experiment with the gravity method, ensuring that large steel units could be dismantled by using their own weight and disposed off (Talas 2015, 40).

A unique process carried out by Dalian, China's largest state-owned shipbuilder at Changxing Island employs a three-stage ship-breaking process and includes provisions for safe disposal of sewage and asbestos, and incineration (Galley 2014, 211). Such a process can offer a new perspective to India, Pakistan, and Bangladesh in sustainable ship-breaking. The ban by IMO in 2011 (Kazan-Allen n.d.) on asbestos-containing material in ships has not been judiciously implemented yet. Thus, countries involved in the ship-building and ship-breaking industry should take steps in this direction (Kazan-Allen n.d ). Even small initiatives could make a big difference. It has been suggested by Puthucherril (2010, 2011) that these countries could form regional arrangements in alignment with the Hong Kong Convention and undertake initiatives to protect the Bay of Bengal and the Arabian Sea. Such an arrangement could be on the lines of the SENSREC, aided by international organisations such as the IMO. As an additional benefit, such an arrangement would definitely enhance efforts towards regional cooperation. All these measures could form part of a transitional phase which could be succeeded by a move towards ratification/accession to the Hong Kong Convention.

Conclusion

Ship-breaking as an industry is extremely important for the three developing countries in the Indian Subcontinent. On one hand, it is indispensable for those involved in it. Since it mostly employs people in the unorganised sector, it acts as a livelihood for them and offers many employment opportunities to them. On the other hand, it is equally important for all those involved to collectively ensure that the outcome of ship-breaking activities is environment-friendly. International conventions like the Basel Convention, and most recently, the IMO Hong Kong Convention have from time to time aimed to achieve the goal of maintaining the “green” nature of ship-breaking as an industry. But it is indeed a cause of concern that the comprehensive Hong Kong Convention has not come into force yet. The top three countries involved in this industry – India, Pakistan, and Bangladesh – are not parties to the Convention yet. Their national legislations have not been implemented in a manner that would ensure both environmental and socio-economic sustainability of the industry. But since almost 95 percent of ship-breaking activity is being handled by these countries, it is imperative that they adopt sustainable practices, and consider the adoption of such practices as part of a transition phase which allows them to bring their laws and policies in alignment with globally accepted standards. This transition phase would perhaps be instrumental in helping them become parties to the Hong Kong Convention.

Acknowledgments

The labour involved in writing for an international journal is its own reward. The completion of this research paper would not have been possible without the cooperation of certain people, whom I would like to thank.

I sincerely thank the entire editorial team of the Journal of International Maritime Safety, Environmental Affairs and Shipping, for their valuable inputs. I sincerely thank Ms. Hyunjoo Kim in particular, for giving me the opportunity to contribute a paper to the journal.

I thank the administrative staff and the library staff of my University, for their painstaking efforts in providing access to online library databases as well as physical copies of books by distinguished authors.
Last but not the least, I would like to thank my parents, my brother, and my colleagues, for their untiring support throughout, and for boosting my morale and motivating me to reach the final stages of completion of the paper.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This work was supported by the JIMSEAS journal – INWUSD1992.5@63.05 2912171049901395 [291217038494].

References

Alam, S., and A. Faruque. 2014. “Legal Regulation of the Shipbreaking Industry in Bangladesh: The International Regulatory Framework and Domestic Implementation Challenges.” Marine Policy 47: 46–56. doi:10.1016/j.marpol.2014.01.022. July.
Alcaidea, J. I., F. Piniella, and E. Rodríguez-Diaz. 2016. “The "Mirror Flags": Ship Registration in Globalised Ship Breaking Industry.” Transportation Research Part D: Transport and Environment 48: 378–379. doi:10.1016/j.trd.2016.08.020. October.
Anonymous. “Asbestos – A Hidden Hazard on Board Ships: Training Course Managing Issues Related to Asbestos in Line with the Latest Standards and Experiences.” DNVGL. Accessed April 17 2018. http://www.dnvgl.com/training/asbestos-a-hidden-hazard-on-board-ships-11291. The IMO SOLAS Regulations (Chapter II-1, Part A-1, Structure of ships, Regulation 3-5) bans the use of asbestos on vessels from 1 January 2011
Anonymous. “Child Labour in South Asia.” The South Asian Situation, ILO. Accessed April 6 2018. http://www.ilo.org/newdelhi/areasofwork/child-labour/WCMS_300805/lang-en/index.htm
Anonymous. “Dirty and Dangerous Shipbreaking in Chittagong, Bangladesh.” Ejatlas. Accessed April 1 2018. https://ejatlas.org/conflict/dirty-and-dangerous-shipbreaking-in-chittagong
Anonymous. “Killing the Future: Asbestos Use in Asia.” World Asbestos Report: Bringing Together This Century’s Asbestos Research. Accessed April 17 2018. http://worldasbestosreport.org/articles/killing_future/India_shipbreak.php
Anonymous. “Maersk: Ship Recycling Policy Not Changed with Alang Move.” World Maritime News. Accessed April 13 2018. https://worldmaritimenews.com/archives/194560/maersk-ship-recycling-policy-not-changed-with-alang-move/
Anonymous. “The Global Programme for Sustainable Ship Recycling.” 1, Basel. Accessed April 2 2018. http://www.basel.int/Portals/4/Basel%20Convention/docs/pub/leaflets/leafShips.pdf
Anonymous. “The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.” List of Conventions, IMO. Accessed April 5 2018. http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/The-Hong-Kong-International-Convention-for-the-Safe-and-Environmentally-Sound-Recycling-of-Ships.aspx
Anonymous. 2003. Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships. Basel Convention series/SBC No. 2003/2, 29. http://www.basel.int/Portals/4/Basel%20Convention/docs/meetings/sbc/workdoc/techships-m.pdf
Anonymous. 2004. “ILO Safety and Health in Shipbreaking: Guidelines for Asian Countries and Turkey.” International Labour Office, 3. http://www.itc.iolo.org/wcm05/groups/public/-ed_protect/-proshr/-safework/documents/normativeinstrument/wcms_107689.pdf.
Anonymous. 2013. “Activists Say EU’s New Ship Recycling Regulation Breaches UN Agreement.” Euractiv, June 28. https://www.euractiv.com/section/transport/news/activists-say-eu-s-new-ship-recycling-regulation-breaches-un-agreement/
Anonymous. 2015a. “EU to Ban Scraping Ships on Indian, Pakistan, Bangladesh Beaches.” The Financial Express, March 31. https://www.financialexpress.com/industry/eu-to-ban-scrapping-ships-on-indian-pakistan-bangladesh-beaches/59089/.
Anonymous. 2015b. “This Is My Last Ship’: Why Business Is Dying for Ship-Breaking Yards in This Gujarat Town.” Firstpost, July 17. https://www.firstpost.com/amp/last-ship-business-dying-ship-breaking-yards-gujarat-town-2347610.html
Anonymous. 2015c. “South Asia Quarterly Update: Update on Shipbreaking in South Asia from the NGO Shipbreaking Platform.” Shipbreaking Platform (4): 7.
Anonymous. 2016a. “Centre Proposes Amendments to Shipbreaking Code 2013 for Safe Recycling.” DownToEarth, June 17. http://www.downtoearth.org.in/news/centre-proposes-amendments-to-shipbreaking-code-2013-for-safe-recycling-54438
Anonymous. 2016b. “European Shipowners Upbeat after Alang Visit.” Maritime Executive, May 4. https://www.maritime-executive.com/article/european-shipowners-upbeat-after-alang-visit/#gs.qqr0ujg
Anonymous. 2016c. “Gujarat Comes Out with Policy to Help Alang Ship-Breaking Industry.” The Economic Times, January 18. https://economictimes.indiatimes.com/industry/transportation/shipping/-transport/gujarat-comes-out-with-policy-to-help-alang-ship-breaking-industry/articleshows/50631152.cms.
Anonymous. 2016d. “Gujarat Govt Announces Ship Recycling Policy 2015.” Deshgujarat, January 18. http://deshgujarat.com/2016/01/18/gujarat-govt-announces-ship-recycling-policy-2015/
Anonymous. 2017a. “3 Killed as Fire Breaks Out at Gadani Shipbreaking Yard.” The Express Tribune, January 9. https://tribune.com.pk/story/1288930/fire-breaks-gadani-shipbreaking-yard-2/.
Anonymous. 2017b. “Asbestos Handling Training in Alang, Gujarat.” EPSICO, February 23. http://epscoidiaca.com/asbestos-handling-training-in-alang-gujarat/
Anonymous. 2017c. “Shipbreaking Woes.” The Hindu, December 8. https://www.thehindubusinessline.com/opinion/editorial/shipbreaking-woes/article22304912.ece1.
Anonymous. 2018. “Bangladesh Passes Bill to Improve Working Conditions in Shipbreaking.” Safety4sea, January 25. https://safety4sea.com/bangladesh-passes-bill-to-improve-working-conditions-in-shipbreaking/
Anonymous. n.d-a. “A List of Dead Workers from the Year of 2005 to 2012 (September).” Death Trap! Accessed April 15 2018. https://www.shipbreakingbd.info/death_trap.html
Anonymous. n.d-b. “The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.” List of Conventions, IMO. Accessed April 5 2018. http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/The-Hong-Kong-
Manoj, P. 2016b. “Application to EU Could Settle Debate on 'Beaching Method of Ship Breaking'” Livemint, July 22. https://www.livemint.com/Opinion/x4UyjypBVEyDLZJQdf8FmFm/Application-to-EU-could-settle-debate-on-beaching-method-of.html

Mikalis, N. 2012. “TRADEWINDS SHIP RECYCLING FORUM, SHIP RECYCLING - WILL THE BURDEN BE SHARED EQUITABLY?” IMO, March 12–13. http://www.imo.org/en/KnowledgeCentre/PapersAndArticlesByIMOStaff/Documents/2012-03-03%20%20%20Singapore%20Tradewinds%20Ship%20Recycling%20Forum%20-%20%20Sharin.pdf

Nair, A. 2018. “Gujarat: Shipbreaking Business at Alang Sees 12% Dip.” The Indian Express, April 8. https://indianexpress.com/article/cities/city-others/gujarat-shipbreaking-business-at-alang-sees-12-per-cent-dip-5128355/

Nast, T. H., A. K. Halse, S. Randall, A. R. Borgen, M. Schlabach, A. Paul, A. Rahman, and K. Breivik. 2015. “High Concentrations of Organic Contaminants in Air from Ship Breaking Activities in Chittagong, Bangladesh.” Environmental Science & Technology 49 (19): 11372–11380. doi.org/10.1021/acs.est.5b03073.

“Technical guidance note under Regulation (EU) No 1257/2013 on ship recycling”. OJEU (Official Journal of the European Union). 2016. 59: 8. (April 2016). http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:LC:2016:128:FULL&format=EN.

Pasha, M., A. H. Mahmood, I. Rahman, and A. Hasnat. 2012. “Assessment of Ship Breaking and Recycling Industries in Bangladesh - an Effective Step towards the Achievement of Environmental Sustainability.” International Conference on Agricultural, Environment and Biological Sciences (ICAESB’s 2012), Phuket, May 26–27. 43. https://www.researchgate.net/profile/Mosabbir_Pasha/publication/284014833_Assessment_of.Ship_Breaking_and_Reycling_Industries_in_Bangladesh_-_An_Effective_Step_Towards_The_Achievement_Of_Environmental_Sustainability/links/564ae02f08ae27ff9986e4a4.pdf.

Pastorelli, S. 2014. “EU-Asia at a Glance, EU Ship Recycling Regulation: What’s in It for South Asia?” http://www.eias.org/wp-content/uploads/2016/02/EU-Asia-at-a-glance-Pastorelli-EU-Recycling.pdf

Patel, V., H. Munot, Y. S. Shouche, and D. Madamwar. 2014. “Response of Bacterial Community Structure to Seasonal Fluctuation and Anthropogenic Pollution on Coastal Water of Alang-Sosiya Ship Breaking Yard, Bhavnagar, India.” Bioresource Technology 161: 362–370. (June 2014). doi.org/10.1016/j.biortech.2014.03.033.

Peters, G. 2016. “Ship Recycling: Creating a Sustainable Future.” Ship Technology, June 21. https://www.ship-technology.com/features/featureship-recycling-creating-a-sustainable-future-4926094/.

Poddar, P., and S. Sood. 2015. “Revisiting the Shipbreaking Industry in India: Axing Out Environmental Damage, Labour Rights’ Violation and Economic Myopia.” NUS Law Review 8 (3–4): 279.

Puthucherril, T. G. 2010. Legal Aspects of Sustainable Development: From Shipbreaking to Ship Recycling: Evolution of a Legal Regime, 7. Leiden: Martinus Nijhoff.

Quddus, M. M. A., N. A. Siddiququee, P. Barua, and S. Parween. 2012. “Heavy Metal Pollution in Sediments at Ship Breaking Area of Bangladesh.” In Coastal Environments: Focus on Asian Regions, edited by V. Subramanian, 78. New Delhi: Springer. doi:10.1007/978-90-481-3002-3_6.

Rahman, M. M., A. T. Islam, M. Kamal, and M. I. Chowdhury. 2012. “Radiation Hazards Due to Terrestrial Radionuclides at the Coastal Area of Ship Breaking Industries, Sitakunda, Bangladesh.” Science Journal of Physics, no. 2: 1. doi:10.7237/sjp/211.

Rahman, S. 2017. “Aspects and Impacts of Ship Recycling in Bangladesh.” Procedia Engineering 194 (2017): 268–275. doi.org/10.1016/j.proeng.2017.08.145.

Reddy, M. S., S. Basha, S. Adimurthy, and G. Ramachandraiah. 2006. “Description of the Small Plastics Fragments in Marine Sediments along the Alang-Sosiya Ship-Breaking Yard, India.” Estuarine, Coastal and Shelf Science 68 (3–4): 656–660. doi.org/10.1016/j.ecss.2006.03.018.

Sethi, N. 2008. “98 Ships Beach at Alang without Any Safety Certificate.” The Economic Times, April 28. https://economictimes.indiatimes.com/news/environment/pollution/88-ships-beach-at-alang-without-any-safety-certificate/articleshow/2990727.cms.

Shah, S. A., and I. Sasoli. 2016. “17 Dead in Explosions at Gadani Shipbreaking Yard.” Dawn, November 1. https://www.dawn.com/news/1293599.

Shipbreaking Platform. 2017. Substandard Shipbreaking: A Global Challenge. http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2017/01/Worldwide-overview_FINAL_2017.pdf.

Singh, R., B. Rao, and R. Asolekars. 2017. “Treatment and Disposal of Glass-Wool and Asbestos Bearing Waste-Insulation Materials from Ship Dismantling Yards in India.” 15th International Conference on Environmental Science and Technology Rhodes, Greece, 31 August-2 September. 2. https://cest.gnest.org/sites/default/files/presentation_file_list/cest2017_00548_oral_paper.pdf.

Smith, T. 2011. “On-Board the World’s Most Famous Campaign Ship.” Climate Change News, November 14. http://www.climatechangenews.com/2011/11/14/on-board-the-worlds-most-famous-campaign-ship/.

Shipbreaking Platform. 2017.Substandard Shipbreaking: A Global Challenge. . http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2017/01/Worldwide-overview_FINAL_2017.pdf.

Sujaudin, M., R. Koide, T. Komatsu, M. M. Hossain, C. Tokoro, and S. Murakami. 2015. “Characterization of Ship Breaking Industry in Bangladesh.” Journal of Material Cycles and Waste Management 17 (1): 72–83. doi.org/10.1016/s10163-013-0224-8.

Talas, K. 2015. “Migrating Ship Waste Management From India to Finland.” Masters thesis, Jyväskylä University School of Business and Economics. 33. https://jyx.jyu.fi/dspace/bitstream/handle/123456789/46430/URRN%3AANBN%3FAfth%3Ajyu-201506292463.pdf?sequence=1.

Wu, W.-T., Y.-J. Lin, C.-Y. Li, P.-J. Tsai, C.-Y. Yang, S.-H. Liou, and T.-N. Wu. 2015. “Cancer Attributable to Asbestos Exposure in Shipbreaking Workers: A Matched-Cohort Study.” PLoS ONE 10: (July 2015). doi.org/10.1371/journal.pone.0133128.

Wu, W.-T., Y.-J. Lin, H.-S. Shue, C.-Y. Li, P.-J. Tsai, C.-Y. Yang, S.-H. Liou, and T.-N. Wu. 2014. “Cancer Incidence of Taiwanese Shipbreaking Workers Who Have Been Potentially Exposed to Asbestos.” Environmental Research 132: 370–378. (July 2014). doi:10.1016/j.envres.2014.04.026.