



# Global Major Ship Recycling Players & Their Fate In Future

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## Abstract

Perfect green ship recycling is a costly affair. But, viable green ship recycling with the merging of present usual practice (beaching method) in Asian countries is very much possible. In recent decade ships are beached in mainly in few Asian countries; such as Bangladesh, India, China and Pakistan, allowing locals to dismantle the vessel with less preventing measures. However, those countries are doing a great job as they are in fact doing recycling of obsolete old ships end of their life with good efficiency, but with less professional manner. Currently, three-quarters of the shipping tonnage recycled annually occurs on the beaches of Bangladesh, India and Pakistan, employing over 150,000 workers in the process. On the other hand, it is estimated that as of today, globally around 20,000 ships over 500 Gross Tonnage are more than 23 years old and will soon be sent for recycling. IMO has introduced Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) in 2009. But the HKC has not been ratified yet by the majority of the countries involved. Significant decisions that will be made in 2017 as per EU ship recycling regulation have the potential to significantly alter the global ship recycling industry. If the EU decides to Dr Statement of Compliance (SoC) standards and applied for EU approval, it could be a huge boost to the already booming investment in improving standards in Alang as well as other yards of South Asia countries. In this way, viable ship recycling process and practice will continue to progress and achieve standard ship recycling at HKC certified yards will become the custom for all ship-owners, not the omission. To make viable and sustainable ship recycling standard, all three Asian ship recycling major players need to be work together jointly and effectively.

**Key words** Ship recycling, Compliance, Beaching, viable practice, etc.

## Introduction

Ship dismantling, also commonly referred to as ship “recycling”, is an inherently sustainable activity, the benefits of which are felt at the global level. Actually ship recycling is an engineering process<sup>1</sup> and more particularly a reverse engineering process of dismantling obsolete ship to recover reusable materials in a safe

<sup>1</sup>Hossain K. A. 2015, Overview of Ship Recycling Industry of Bangladesh, Journal of Environmental and Analytical Toxicology, Volume 5, Issue 5, 297-302 pp, Sep 2015.

and environmental friendly way.<sup>2 3</sup>In recent decade ships are beached in mainly in few South Asian countries; such as Bangladesh, India, China and Pakistan, allowing locals to dismantle the vessel with less preventing measures. Ultimately those countries are doing a great job as they are in fact doing recycling of obsolete old ships end of their life with good efficiency, but with less professional manner. For the last twenty three years, ship recycling yards in Bangladesh, China, India, Pakistan and Turkey have been recycling 98% of all the recycled tonnage in the world. The increase in demand for ship recycling has rightly led to an increase in regulatory pressure at both national and international levels. This regulatory pressure resulted in the development of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) by IMO in 2009, to mandate safety and environmental protection standards at yards. Although discussions are at an advanced stage, the HKC has not been ratified yet by the majority of the countries involved.

Significant decisions that will be made in 2017 as per EU ship recycling regulation have the potential to significantly alter the global ship recycling industry. 2017 will also see the European Commission announce its decision on which non-EU yards it will approve for recycling EU flagged ships. If the European Commission does not approve South Asian Hong Kong Convention compliant yards that have met the application criteria, due to their use of the beaching method, it will create an undefeatable divide based solely on geographic location. With three-quarters of the world's recycling capacity located in South Asia, where beaching is prevalent, the idea that Europe should ban its ships from being recycled there in order to protect workers' health and safety and the environment is not only irresponsible but immature. On the contrast, if the EU decides to include on its approved list the leading yards in India that have met the Hong Kong Convention Statement of Compliance (SoC) standards and applied for EU approval, it could be a huge boost to the already booming investment in improving standards in Alang as well as other yards of South Asia. For Pakistan and Bangladesh, the approval of Indian yards would demonstrate the benefits that could be gained through Hong Kong Convention compliance ahead of its entry into force, tarmac this way the groundwork of the recycling industries of the two countries for their eventual accession to the Convention. To make viable and sustainable ship recycling standard, all three Asian ship recycling major players need to be work together jointly and effectively. It is a research paper which will describe the global major ship recycling countries and their usual ship recycling practice, HKC and EU decision on 2017, SoC standards and approval from EU commission, fate of South Asian recycling yards and their essential steps to do for survival.

### Global Major Ship Recycling Locations

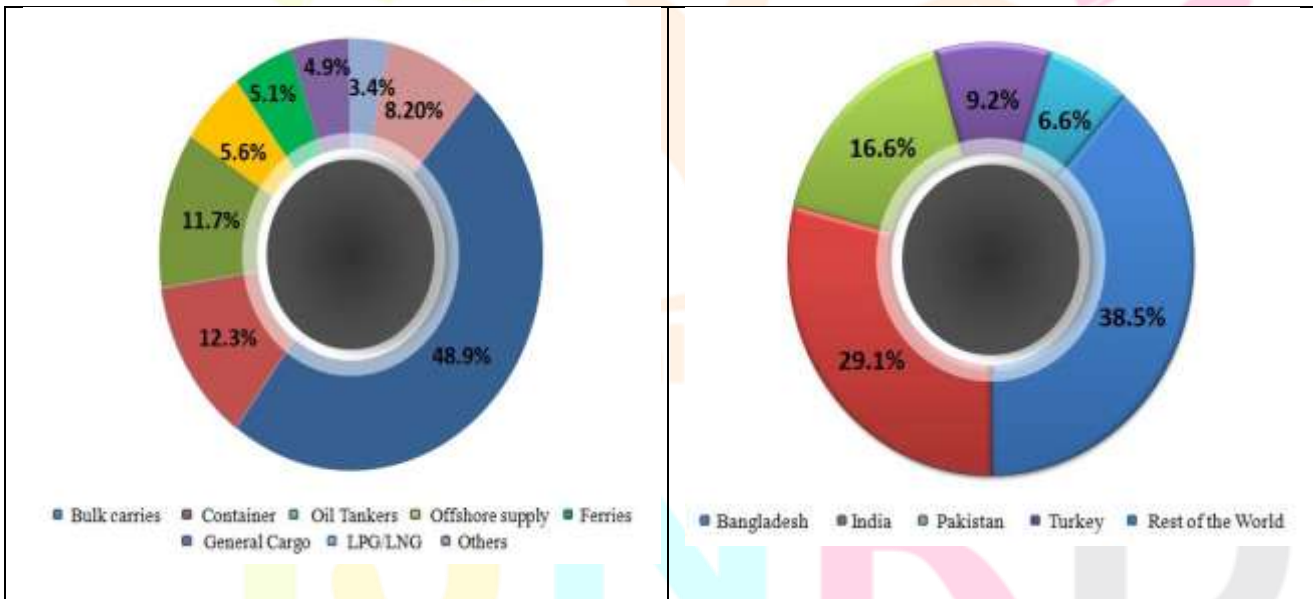
The world-wide ship recycling industry dismantles around 1,000 large ocean-going vessels per year, such as container ships, cargo & bulkers, oil & gas tankers (LNG, LPG), passenger ships and other types of ships, in order to recover steel and other valuable metals or recyclable items. However at present almost all ship recycling activities are concentrated in five countries: the three South Asian countries (India, Bangladesh, China and Pakistan), China, and Turkey. Further capacity is available in North America (US, Canada, Mexico) and within the European Union (amongst others Denmark, Belgium and UK). At present, South East Asia is undoubtedly the global centre for ship recycling activities. South East Asia contributes to more than ninety percent of global ship recycling activities. Countries such as Pakistan, India, Bangladesh and China are the major ship recycling player and centers of the world.

<sup>2</sup>Hossain K. A. 2017, Ship Recycling Practice and Annual Reusable Materials Output from Bangladesh Ship Recycling Industry, Journal of Fundamentals of Renewable Energy and Applications, Volume 7, Issue 5, Sep 2017.

<sup>3</sup>Hossain K. A. 2017, Ship Recycling Status in Bangladesh and Annual Reusable Materials Output, Journal of Biomedical Journal of Scientific and Technical research, Volume 1, Issue 5, Oct 2017.

**Table 1.** Global ship recycles in LDT in thousand gross tons sold in 2020<sup>4</sup>

Ship Types	Bangladesh	India	Pakistan	Turkey	China	Rest of the world	World Total	Percentage
<b>Bulk Carriers</b>	5,254	1,317	1,718	34	125	61	8,509	<b>48.9</b>
<b>Container</b>	160	1,428	282	206		68	2,143	<b>12.3</b>
<b>Oil Tankers</b>	616	410	617	159	10	226	2,038	<b>11.7</b>
<b>Offshore supply</b>	125	257	4	308	3	273	969	<b>5.6</b>
<b>Ferries</b>	26	279		545	3	26	879	<b>5.1</b>
<b>General cargo</b>	176	219	175	203	47	29	848	<b>4.9</b>
<b>LPG/ LNG</b>	169	241		8		176	594	<b>3.4</b>
<b>Chemical Tankers</b>	12	125	94	1		10	241	<b>1.4</b>
<b>Others</b>	157	786		135	9	93	1,180	<b>6.8</b>
<b>Total</b>	6,694	5,061	2,890	1,598	195	962	17,401	<b>100</b>
<b>Percentage</b>	<b>38.5</b>	<b>29.1</b>	<b>16.6</b>	<b>9.2</b>	<b>1.1</b>	<b>5.5</b>	<b>100</b>	<b>(%)</b>



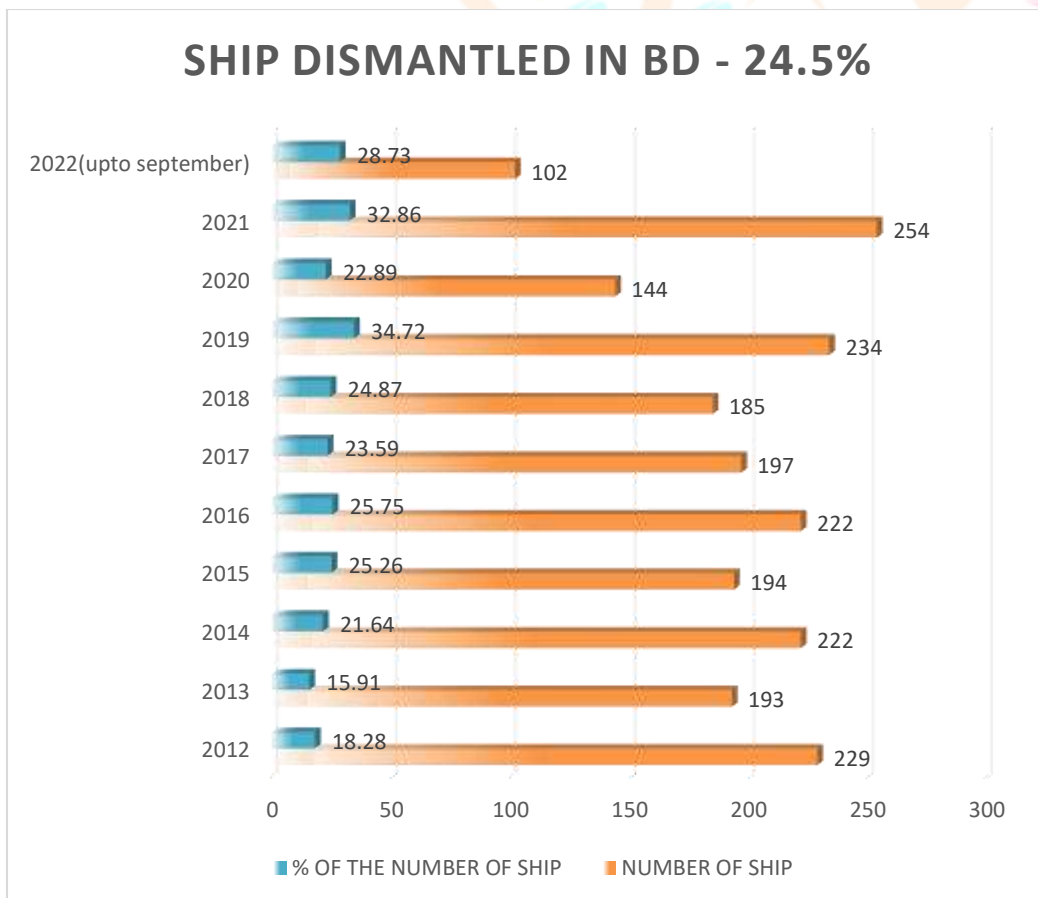
**Figure 1.** Percentage of different type ship recycles worldwide in 2020

**Figure 2.** Percentage of Global ship recycles in 2020

<sup>4</sup>Golam Mohiuddin, Khandakar Akter Hossain, Mir Tareque Ali, "Evaluation of present ship recycling scenario and opportunity for Bangladesh," Environment and Analytical Toxicology, Volume 13, Issue 4, April 2023.

**Bangladesh.** Very steady growth has observed in ship recycling volume of local ship recycling yards in Bangladesh during the last decade. Chittagong is the major ship recycling location in Bangladesh. Sitakund (Bhatiary to Barwalia), a coastal strip about 18 kilometers long, 20 kilometers northwest of Chattogram is home to these activities. Now it is world's second largest ship recycling yard after Alang ship breaking yard (India), followed by Gadani ship breaking yard (Pakistan) where 8 square kilometers area is available for the recycling related activities which playing a pivotal role in both macro and micro economic activity. Due to high tidal difference available these yards are suitable for dismantling of big tankers, cargo ship and bulk carriers.<sup>5</sup>

The recycling yards in Bangladesh follow moderate safety standards for recycling. Few yards follow recommended ship recycling practices given by leading international ship recycling agencies. Pre-beaching and beaching activities are done with proper routine checks. The Ship Breaking and Recycling Rules, 2011 issued by the MoI encompasses the overall administrative and legal framework for safe and environmentally sound ship recycling in Bangladesh. According to the section 3(3.1) rule, to import a vessel, obtaining a 'No Objection Certificate' from the SBRB is mandatory by submitting an inventory of hazardous materials on board prior to the import of the ship at the outer anchorage.<sup>6</sup> Again, Section 15 orders that each yard has to obtain approval of Ship Recycling Facility Plan (SRFP) from the MoI. Each yard must have an authorization for handling hazardous waste generated from ship recycling activities issued by the DoE. As a result Bangladesh is closing to viable ship recycling process by improving its dismantling activities in the local yards. From 2020 to 2022, Bangladesh has been dismantled 144 (22.29%), 254 (32.86%) and 102 (27.13%) number of ships respectively by following beaching method.



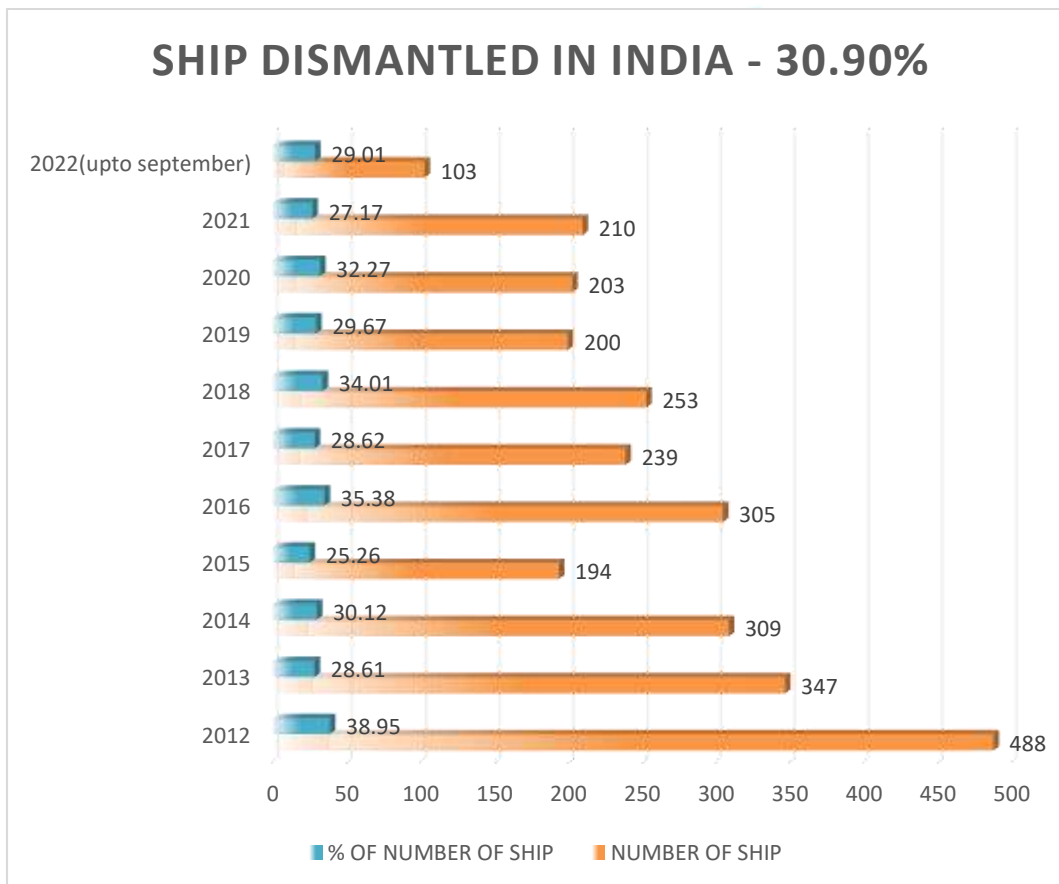
**Figure 3. Percentage & number of ships dismantled in Bangladesh (2012 to 2022)**

<sup>5</sup>TERA international, 2004; Report on Chittagong port trade facilitation project, Bangladesh by Asian Development Bank and Bangladesh Ministry of shipping, Chittagong Port Authority (TA 4136-BAN).

<sup>6</sup>Jobaid M. I., Khan M. M., Haque A.K.M. K, and Shawon I. A. 2014; Ship Recycling and Its Environmental Impact: A Brief Overview of Bangladesh, IOSR Journal of Business and Management, Volume 16, Issue 10.Ver. I, Oct. 2014.



**India.** Major Ship dismantling centres in India are Alang, Vishakapatnam, Tadri, Cochin, Mumbai, Tuticorin, Kolkatta. Alang is in the upper NorthWest of the Indian subcontinent, in the district of Gujarat. It is a typical beaching facility. Alang has around 150 potential plots for use as ship recycling facilities. The modes operating remains the same as other neighboring countries like Pakistan and Bangladesh. Gujarath (Alang) Maritime Board has an exclusive wing for monitoring ship recycling in Gujarath region whereas other states do not have any such administrative or technical mechanism to manage ship recycling activities in the centers coming under their geographic limits. Currently, of the 132 registered recycling yards in Alang, 17 have been awarded Statements of Compliance with the Hong Kong Convention, a further 26 are expected to receive SOCs shortly, and another 20 are expected to apply.<sup>7</sup> Using beaching method, India has been dismantled 203 (32.27%), 210 (27.17%) and 103 (30.43%) number of ships respectively from 2020 to 2022.



**Figure 4.** Percentage & number of ship dismantled in Bangladesh (2012 to 2022)

**Pakistan.** Major ship recycling yards are located near Karachi, the largest port entry of Pakistan. The yards are under the control of Baluchistan Development Authority situated in Gaddani. These yards use mainly beaching method to position the obsolete ships arriving at Gaddani. The yards here have the capacity to dismantle large ships. More than 50 large ships can be dismantled at a time. The recycling yards are underdeveloped and they are using combination of manual and mechanical method for dismantling activities. The beaching is done by experienced hands in this field and limited statutory inspection is carried out during beaching. Environmental impact survey and safety system are seldom done. The yards use deck lift, winch

<sup>7</sup>Hiremath A, 2016. Doctorate thesis paper on the “Development of integrated risk assessment framework for best practices in ship recycling”. Indian Institute of Technology of Mumbai, India. <https://www.green4sea.com/the-best-practices-in-ship-recycling>.

lift; combination for lifting operations.<sup>8</sup> Moderate concrete flooring is provided where cutting and removal TBT based paints are carried out. There is limited inspection and control over the downstream industries which collect the waste and pre-used items from the dismantled ships. The government control over ship dismantling is effective, though few agencies are working in tandem with the ship recycling industry. Recently government formulate and implement ship recycling rules for safe and environmentally sound ship recycling in Pakistan. It's hope that, they will also achieve viable ship recycling process in near future. Using beaching method, India has been dismantled 99 (15.74%), 119 (15.39%) and 37 (12.40%) number of ships respectively from 2020 to 2022.

**China.** China is rapidly accelerating its capability in ship recycling. The country cannot fail to impress with its best facilities and the combination of scrapping price, quality and volume is unmatched anywhere in the world. Chinese ship recycling yards are located in Jiangmen and Jiangsu provinces and are situated in Pearl and Yangtse river deltas. There are more than 50 ship recycling yards located in these provinces. There are a few inland recycling yards which are operating exclusively for inland vessels. Beaching is banned in China and ship recycling is undertaken alongside. Chinese ship dismantling yards are using buoy (wharf based) or alongside method. The dismantling is done using vertical lift off method with concrete support base. The whole process is controlled, from ship to landfill. Yards are relatively strongly regulated by the government and can also be subject to intense scrutiny from the local authorities. Fully developed asbestos treatment and ballast water treatment facilities are present in ship recycling yards. The hull paint removal is done using advanced Rough Paint Treatment (RPT) facility. Chinese government has included ship recycling industry in the environmental industry category. Special policy on energy saving and environmental protection has been envisaged very recently. Cooperation between stakeholders of ship recycling is identified by the government as key to clean and efficient ship recycling. Advanced dismantling facilities, futuristic vision based recycling policy, stringent laws and regulations and “stakeholders cooperative working model” are reported to be the four pillars of enterprising ship recycling industry in China. Lloyd’s Register has visited yards in Shanghai and Guangzhou, and the levels of safety, welfare and environmental awareness are excellent. They take pride in their membership of the International Ship Recycling Association (ISRA), and their high standards are often achieved with considerable co-operation and involvement from the owners or their representatives; an approach which is to be recommended. They have also benefited from a very high standard of existing infrastructure and a good deal of further investment.

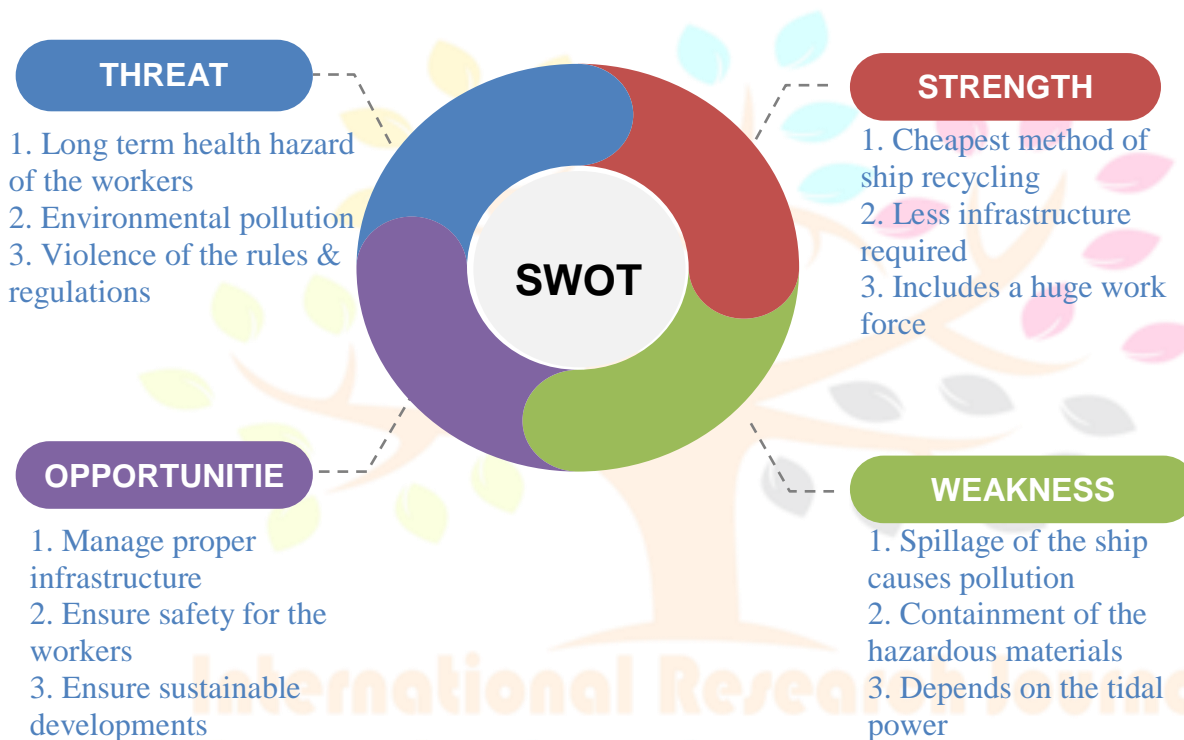
**Turkey.** Ship recycling industry was established in Aliaga and Itmir regions of Turkey during early Seventies. The industry got recognition and the ship recycling was declared as a legal industrial activity in 1986. The Turkish government only allows ship recycling in Aliaga, near Izmir, on the west coast. There are between nineteen and twenty one facilities active on this short peninsular stretch of the Mediterranean. This concentration of yards allows Turkey to centrally control many of the hazardous activities. Because the Mediterranean has such a small tidal range, the maximum tide is roughly two feet (60 cms); the yards at Aliaga are able to control the inter-tidal zone and use a slipway approach. Hard standing can be permanently provided and large areas of the yards are concreted to a considerable depth with permanent drainage systems to protect the sea. Booms and spills will also not be swept away. Environmental and occupational controls are being exercised rigorously by the concerned government authorities. Turkey is placed 5<sup>th</sup> in the current ranking of world ship recycling output. Lloyd’s Register has visited all the yards in Turkey and found that they remove pieces from ships in small sections by crane. Because of the low tidal range, access to

**America.** Ship recycling facilities in the US are subject to intense scrutiny by the US Environmental Protection Agency as well as MARAD (the US Maritime Administration), who are one of the industry’s major clients. Operational yards in the US include: All Star Metals and Esco Marine, Inc in Texas; and Marine Metals, Inc and Bay Bridge Enterprises in Maryland. Yards in the US are understood to operate to

<sup>8</sup>ILPI Paper, 2016. Ship-breaking Practices in Bangladesh, India and Pakistan; Published by International Law and Policy Institute (ILPI) on May 18, 2016.

very high standards. However, there is a price for this, and although costs have fallen; from a reported \$253 per ton in 2001, through the Able UK project at \$144 per tonne, to \$79 in 2007.

From the above-mentioned facts and figures it can be observed that beach-based ship recycling method is being followed in all the major ship recycling countries except China. Bangladesh, China, India, Pakistan and Turkey have been recycling 97% to 98% of all the recycled tonnage in the world for the last 20 to 30 years by beaching method as this method is more viable than other methods. Ship recycling becomes economically viable in the developing countries only when the actual operations are carried out in beaches. There are number of guidelines in ship recycling which, when applied to the respective fields would improve the status of the industry as safe and environment friendly.<sup>9</sup> Considering these two observations, both operations in beach-based activities and guidelines, a set of viable roles and procedures for the industry can be formulated. If these viable roles and procedures are implemented through a user-friendly knowledge base system, it is possible for useful, competent and viable ship recycling by applying beaching method



**Figure 5. SWOT Analysis of Beaching Method<sup>10</sup>**

### **Achieving Viable Ship Recycling Process by Global Major Players**

The recycling of end-of-life vessels in an environmentally friendly and safe manner has been a major challenge faced by ship owners and ship recycling facilities in recent years and it is not a subject that will subside any time soon. In fact, it is estimated that as of today, globally around 20,000 ships over 500 Gross Tonnage are more than 23 years old and will soon be sent for recycling. There are various reasons why an owner may choose to recycle a ship: due to its increasing age, an uneconomic cost of repair, the current oversupply in the market, specific regulatory requirements such as double-hull specifications for tankers or very occasionally due to the introduction of innovative technology and important changes to trading patterns.

<sup>9</sup>Mambra S., 2017; What is Green Ship Recycling, Green Shipping Marine Environment, Marine Insight, Oct 04, 2017. (<https://www.marineinsight.com/environment/what-is-green-ship-recycling>).

<sup>10</sup>Golam Mohiuddin, Dr. Khandakar Akter Hossain, Dr. Md Shahidul Islam, "Analysis of present global ship recycling status and challenges for Bangladesh," Global Scientific Journal, Volume 11, Issue 4, April 2023

On an average, vessels tend to go for recycling at around 25 years; however this can be a few years later if they are on long charters, or earlier in periods of economic recession with fewer charters available, as we are seeing at present.

For the last twenty three years, ship recycling yards in Bangladesh, China, India, Pakistan and Turkey have been recycling 97% to 98% of all the recycled tonnage in the world. The increase in demand for ship recycling has rightly led to an increase in regulatory pressure at both national and international levels. This regulatory pressure resulted in the development of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) by IMO in 2009, to mandate safety and environmental protection standards at yards.<sup>11</sup> Although discussions are at an advanced stage, the HKC has not been ratified yet by the majority of the countries involved. This means that for the time being, the growth of responsible ship recycling is reliant on market dynamics between ship owners and recycling yards. However, the scrutiny that the development of the HKC brought to the yards has been driving change. The shipping industry has become increasingly aware of its responsibility to improve its sustainability and the ship recycling industry has been developing its best practices accordingly.

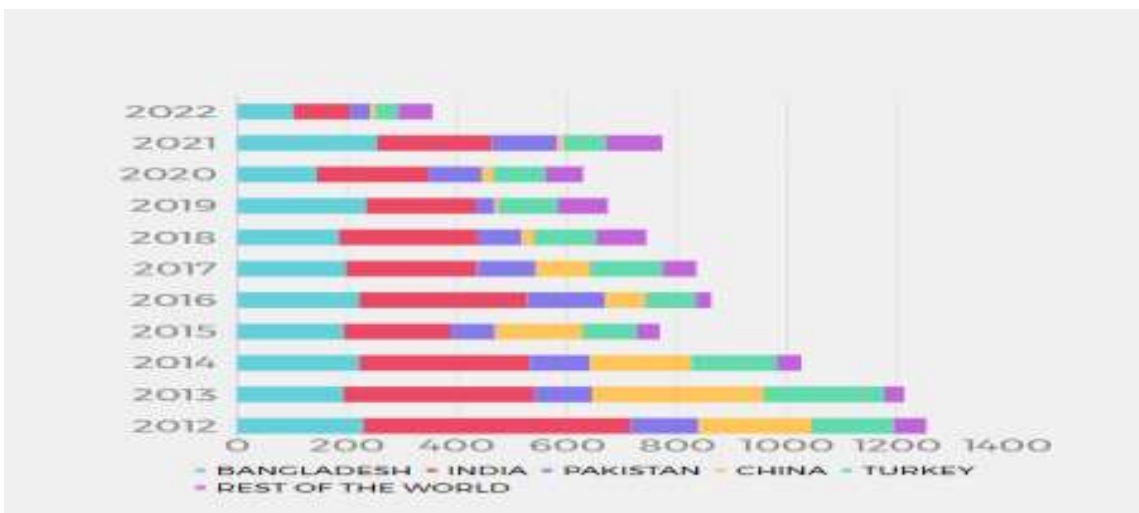


Figure 6. Ship dismantled by number of ship from 2012 to 2022 around the world.<sup>12</sup>

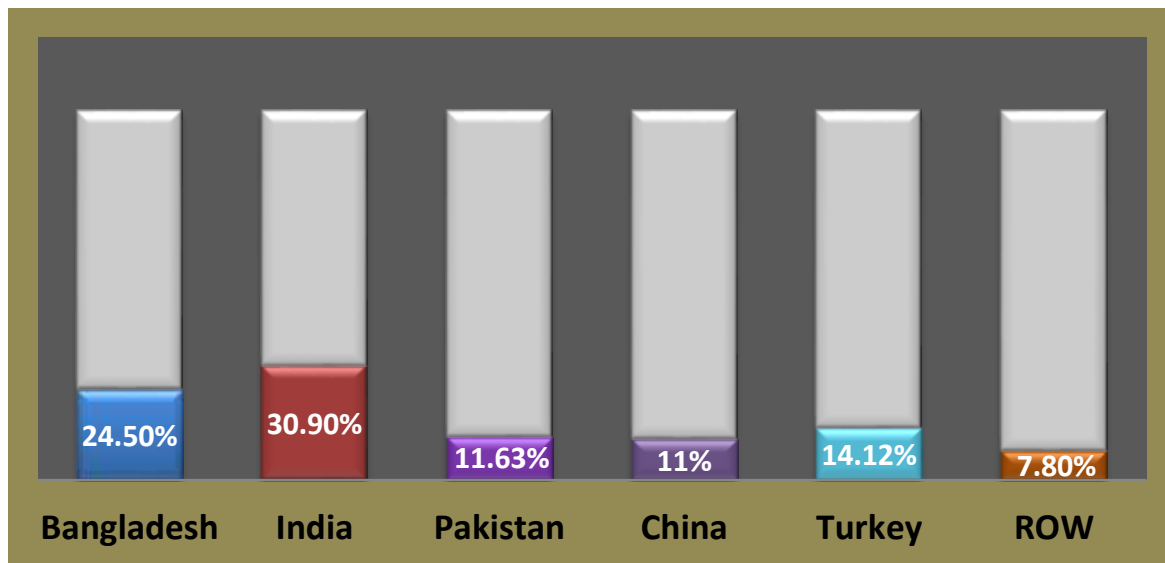


Figure 7. Ship Dismantled by Gross Tonnage from 2013 to 2021 (Sep)

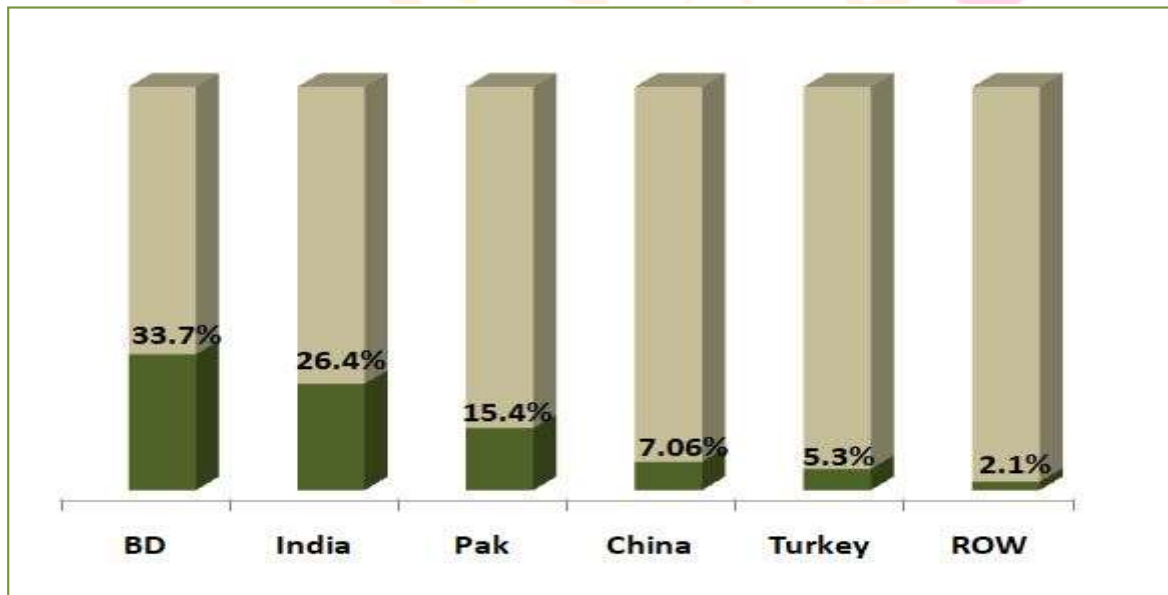
<sup>11</sup>IMO Resolution A.951(23), IMO Guidelines on Ship Recycling (resolution A.962(23), 4 March 2004, International Maritime Organization. Regulatory Guidance.(<http://www.iadclexicon.org/ship-recycling>).

<sup>12</sup>Golam Mohiuddin, Dr. Khandakar Akter Hossain, Dr. Md Shahidul Islam, “Analysis of present global ship recycling status and challenges for Bangladesh,” Global Scientific Journal, Volume 11, Issue 4, April 2023





**Figure 8.** Comparison of Ship dismantled by number from 2012 to 2022(up to June).<sup>13</sup>



**Figure 9.** Comparison of Ship dismantled by gross tonnage from 2013 to 2022.<sup>14</sup>

The demand for responsible ship recycling now exceeds supply in South Asia. Yards that have invested in achieving the standards of the HKC are now seeing growth in demand for their services based on the good health, safety and environmental practices they follow. This has in turn incentivized other yards to improve their own standards and consider ISO and OHSAS and HKC Statements of Compliance Certifications. But the key question remains, what does “option for viable green ship recycle” in the ship recycling industry look like? It is needless to emphasize that recycling is the sustainable option for handling end-of-life vessels. When we look for “option for viable green ship recycling” in recycling, it means recycling activity with viable available techniques and viable environmental friendly practices in use. In other words, option for viable green ship recycling is the systematic prevention and the mitigation of safety and environmental risks

<sup>13</sup>Golam Mohiuddin, Dr. KhandakarAker Hossain, Dr. Md Shahidul Islam, “Analysis of present global ship recycling status and challenges for Bangladesh,” Global Scientific Journal, Volume 11, Issue 4, April 2023

<sup>14</sup>Golam Mohiuddin, Dr. KhandakarAker Hossain, Dr. Md Shahidul Islam, “Analysis of present global ship recycling status and challenges for Bangladesh,” Global Scientific Journal, Volume 11, Issue 4, April 2023

at yard facilities, in procedures and operations, supported by preparatory work by the ship owners, flag states and classification societies. The standards of the HKC and its guidelines are designed to reflect this viable-practice approach in ship recycling and although it is yet to enter into force, it defines the basis of what we mean when we talk about responsible ship recycling. Therefore, responsible ship recycling starts when both the ship owner and the recycling yard comply with the standards and guidelines of the HKC.<sup>15</sup>

Major ship recycling player need to develop an environmentally friendly and sound ship recycling plan (SRP) and provide advanced training to their local yards in areas such as: the handling of hazardous wastes / materials, working in confined spaces and at heights, fire prevention and control, use of proper protective equipment (PPE), emergency evacuations and rescue plans, preventive environmental practices through environmental awareness in regular basis. The yards and company need to be produced IHM reports with proper guidance and supervision by respective ministry and academic bodies and also in collaboration with the ship-owners, for the identification, removal and safe disposal of hazardous materials.

Moreover, a HKC-compliant ship recycling yard will produce a Ship Recycling Facility Plan (SRFP), documenting the yard's systems, facilities and processes to ensure safety and environmental protection. Each recycling project is then planned out in advance and managed according to a individual and specific Ship Recycling Plan (SRP). The SRP is developed by the yard management under the guidance of GMS Green Team, using the SRFP, design particulars of the vessel and its Inventory of Hazardous Materials to plan a safe and environmentally friendly recycling sequence.<sup>16</sup> The GMS Green Team along with the yard management also develop and implement a system of standard operating procedures for each work activity practiced during the recycling of vessel: from beaching to complete recycling, including the safe removal and temporary storage of hazardous wastes with proper training on PPE and recycling yards activates. The implementation of the Ship Recycling Facility Plan (SRFP) is essential, and currently active shipyards in Bangladesh are ready to execute it. At present, 150 yards are registered out of which 50-60 yards are actively in use. So far SRFP has been adopted by only 04 yards. Reports from the Ministry of Industry have shown more 85 yards are currently working on implementing SRFP as part of their work plan. Besides, in India total 94 ship breaking yards are complying SRFP.



<sup>15</sup>Nikos Mikelis, 2017; What Will 2017 Bring to the Ship Recycling Industry? <http://www.maritimeexecutive.com/editorials/what-will-2017-bring-to-the-ship-recycling-industry>.

<sup>16</sup>Nikos Mikelis, 2017; What Will 2017 Bring to the Ship Recycling Industry? <http://www.maritime-executive.com/editorials/what-will-2017-bring-to-the-ship-recycling-industry>.

**Table 2.** Summary of the Ship recycling legislation<sup>17</sup>

Legislation	Aim	Entry into Force & Contracting States	Guidelines
Basel Convention (BC) 1989 (UNEP)	To control of trans boundary movement of hazardous wastes and their disposal	05 May 1992 (186)	Technical Guidelines for ESM of Dismantling of EOL Ships (2002) (186)
Ban Amendment (1994)	To control of trans boundary movement of hazardous wastes and their disposal from NON-OECD to OECD Country	06 Sept 2019	--
WSR 2006 (EU)	To combat issue of unauthorized waste transport & establishes standards of BC in EU		--
HKC 2009 (IMO)	<ul style="list-style-type: none"> <li>• For Safe and Environmentally Sound Recycling of Ships</li> <li>• Specifically designed for ship dismantling</li> </ul>	Not yet (Expected within 2023) (17)	<ul style="list-style-type: none"> <li>• Development of SRP</li> <li>• Safe &amp; Environmentally Sound Ship Recycling</li> <li>• Authorization of SRF</li> <li>• Development of IHM</li> </ul>
SRR 2013 (EU)	To quickly adopt and ratify Hong Kong Convention	31 Dec 2018	Vessels visiting EU harbors must have IHM certificate

### EU Ship Recycling Regulation and Fate of Major Ship Recycling Global Major Players

Significant decisions that will be made in 2017 as per EU ship recycling regulation have the potential to significantly alter the global ship recycling industry. 2017 will also see the European Commission announce its decision on which non-EU yards it will approve for recycling EU flagged ships. The question is whether the European Commission will approve any one of the five yards in India that have already applied and which have already proven their compliance with the Hong Kong Convention in advance of it entering into force. This will be a pivotal decision for the industry in South Asia. Currently, three-quarters of the shipping tonnage recycled annually occurs on the beaches of Bangladesh, India and Pakistan, employing over 150,000

<sup>17</sup>Golam Mohiuddin, Dr. Khandakar Akter Hossain, "Strategic plan to ratify HKC 2009 by Bangladesh: Challenges & Approach Towards Implement SRFP in Local Yards Towards Green Ship Recycling," International Journal of Novel Research & Development (IJNRD), Volume 8, Issue 5, May 2023.

workers in the process. It is these yards and their workers who will either benefit most or lose out based on the decisions made in 2017. The upcoming year holds the opportunity to raise standards, improve workers' health, safety and welfare, reduce environmental impact and drive widespread sustainability in recycling practices across the world.<sup>18</sup> However, as shipping is an international business, this must be done on a global basis, as it cannot be limited to selected regions.

This is the danger held within the EU Ship Recycling Regulation. If the European Commission does not approve South Asian Hong Kong Convention compliant yards that have met the application criteria, due to their use of the beaching method, it will create an undefeatable divide based solely on geographic location. With three-quarters of the world's recycling capacity located in South Asia, where beaching is prevalent, the idea that Europe should ban its ships from being recycled there in order to protect workers' health and safety and the environment is not only irresponsible but immature. It is not the location of the recycling process that determines its safety or sustainability, but how the process is managed and what oversight is in place. It is just as possible to implement clean and safe recycling practices on a beach as it is to conduct dangerous and polluting recycling alongside a pier. A misjudged European decision could also threaten the further development and adoption of the Hong Kong Convention, damaging the prospects of improvements in health and safety for workers in South Asian at yards that are not currently investing in becoming Hong Kong Convention compliant. The global pressure for the Hong Kong Convention to enter into force is largely driven by western economies and Japan, with European nations playing a huge part. With a list of approved yards, EU governments could consider their work on ship recycling as "job done," removing that international pressure in support of the Hong Kong Convention. If they were to be excluded from EU approved lists and with momentum lost on the Hong Kong Convention, financial and regulatory incentives to improve environmental protection and workers' conditions in South Asia would be lost, and investments and improvements in South Asian yards could be abandoned. It's a miserable outlook.

The EU regulations go further than the HKC and will see European flagged vessels only be permitted to be recycled at yards reviewed, accepted and published in the European List of approved ship recycling facilities. GMS is very concerned that this regulation appears to re-enforce the idea that when implemented, it will be interpreted by the European Commission as a total ban on beach recycling for European flagged vessels. If imposed in this way, the legislation will set the global recycling industry on a knife-edge and threaten a reversal of the significant progress that has been set in motion by the HKC. Dividing the market with a false explanation of the EU Regulation, superficial as a ban on beaching will create precisely the false dichotomy that they say they are working to solve; poor conditions on beaches and higher standards elsewhere. A number of yards from the Indian subcontinent that have already obtained Statements of Compliance with the Hong Kong Convention and verification by IR Class as meeting the requirements and standards of the EU Ship Recycling Regulation, have submitted applications for inclusion in the first list of EU approved yards, which is expected to be released by the end of this year. South Asian yards sincerely hope that these yards will be accepted, putting to bed this potential "beaching ban" and committing the European Union to supporting the ideal of raising standards at yards, wherever in the world they happen to be. Legislation that reinforces viable practice standards in the industry and drives progressive change, such as the HKC, should be welcomed by all parties. High levels of safety and environmental standards are being introduced and achieved in Alang as well as other yards of Asia.

Conversely, if the EU decides to include on its approved list the leading yards in India that have met the Hong Kong Convention Statement of Compliance (SoC) standards and applied for EU approval, it could be a huge boost to the already booming investment in improving standards in Alang. Currently, of the 132 registered recycling yards in Alang, 17 have been awarded SoC with the Hong Kong Convention, a further 26 are expected to receive SoCs shortly, and another 20 are expected to apply. Furthermore, worker health

<sup>18</sup>Hiremath, A.M., Tilwankar, A.K. and Asolekar, S.R. *et al.* 2015. Significant steps in recycling vis-a-vis wastes generated in a cluster of yards in Alang: A case study. *Journal of Cleaner Production* 87, pp: 520-532.



and safety is set to be boosted via a US\$ 4.4 million grant towards training, as part of the Indian Government's Sagarmala Project. With such positive developments already in place, inclusion on the EU approved list would only drive a further revival in momentum towards increased standards. It is high time for the officials in Brussels to understand how this industry works if they wish to regulate it in a way that is just, that is practical for the shipping industry and that is enforceable. The approval of Indian yards, will also demonstrate that the Hong Kong Convention and the EU Ship Recycling Regulation are be balancing rather than mutually restricted, helping in this way to sustain the momentum towards the Hong Kong Convention's entry into force. For Pakistan and Bangladesh, the approval of Indian yards would demonstrate the benefits that could be gained through Hong Kong Convention compliance ahead of its entry into force, tarmac this way the groundwork of the recycling industries of the two countries for their eventual accession to the Convention. At the same time, this will provide a greater encouragement for the two countries to secure funding for hazardous waste handling facilities to enable them to meet the standards of the Hong Kong Convention for the ship recycling industry and the requirements of the Basel Convention across all industries in this region.<sup>19</sup> This will benefit all industrial workers in these countries.

**Table 3.** Criticism on EU WSR & EU SRR

Legislation	Strength	Weakness
<b>EU WSR &amp; EU SRR</b>	<p>1. In 2014, Regulation (EU) No 660/2014 was amended to improve Member States' inspection systems, requiring them to implement the new changes in 2016/17.</p> <p>2. While the size of the EU list is adequate, we should work on diversifying and expanding our locations globally to get better geographical coverage.</p>	<p>1. Despite the rules and regulations, illegal dumping of waste is still rampant. Estimates suggest that 25% of shipments related to this activity fail to meet the legal standards.</p> <p>2. This regulation does not apply to all ships travelling around the world.</p> <p>3. By reflagging to a non-EU flag, ships are able to bypass the regulations set forth by the European Union. This is a swift and simple process which can easily be done in order to dodge any rules that may be in place.</p> <p>4. The challenge lies in consistently implementing EU regulations across all member states, so that vessels registered under the EU flag don't end up at substandard recycling facilities.</p> <p>5. There has been no consensus among EU SRR members regarding the purpose of casinos and how beach facilities should be approached. This has resulted in uncertainty about the future of beach procedures.</p>

<sup>19</sup>Hiremath A, 2016. Doctorate thesis paper on the "Development of integrated risk assessment framework for best practices in ship recycling". Indian Institute of Technology of Mumbai, India. <https://www.green4sea.com/the-best-practices-in-ship-recycling>.

## Conclusion

Ship recycling is an essential part of the shipping industry and part of every vessel's lifecycle, but it can easily be overlooked in the day-to-day discussion of operations. However, there is no doubt that the industry stands on a knife-edge as we head into 2017. GMS stands alongside the Industrial Union in calling on the EU to choose to support global enhancement. It is well deserved that, the rest of the industry will join to Indian yards in view that if the EU's list excludes recycling yards based on their use of the beaching method, then this cannot be achieved. Indeed, this will destroy the opportunity of improving safety and welfare standards at some of the world's unsustainable yards. Shipping industry leaders must now come together to call on the EU to accept the selected Indian recycling yards (consequently other Asian selected yards) on its approved list and on all IMO member states to comply to the Hong Kong Convention to speed up its entry into force. To making headway towards further improvement it to be needed to make accountable ship recycling a general anticipation and it also to be needed ship owners across the world to hold recycling yards to these high standards. In this way, viable ship recycling process and practice will continue to progress and achieve standard ship recycling at HKC certified yards will become the custom for all ship-owners, not the omission.<sup>20</sup> To make viable and sustainable ship recycling standard, all three Asian ship recycling major players need to be work together jointly and effectively.

**Table 4.** A comparative study among major ship recycling nations<sup>21</sup>

Country	Bangladesh	India	Pakistan	Turkey	China
Methods	<b>Beaching Method</b>	<b>Beaching Method</b>	<b>Beaching Method</b>	<b>Slipway method</b>	<b>Alongside/ Pier Method</b>
	<b>Reasons:</b>	<b>Reasons:</b>	<b>Reasons:</b>	<b>Reasons:</b>	<b>Reasons:</b>
	<ol style="list-style-type: none"> <li>Cheapest method</li> <li>Minimal infrastructure required</li> <li>Includes larger work force</li> <li>Geographical and weather condition</li> </ol>	<ol style="list-style-type: none"> <li>Require less infrastructure</li> <li>Provides huge employments</li> <li>Cheapest method with reasonable profit</li> <li>Geographical situation.</li> </ol>	<ol style="list-style-type: none"> <li>Cheap and profitable.</li> <li>Includes a huge amount of work force.</li> <li>Geographical and weather conditions.</li> </ol>	<ol style="list-style-type: none"> <li>Less tidal variation.</li> <li>Comparatively Safe.</li> <li>The ship is dismantled part by part.</li> <li>Facilitates the control and avoidance of spillage of toxic substances.</li> </ol>	<ol style="list-style-type: none"> <li>Process is done through as systematic way.</li> <li>Less chance of pollution.</li> <li>Independent of tidal variations.</li> <li>Beaching is prohibited In China.</li> </ol>

<sup>20</sup>Nikos Mikelis, 2017; What Will 2017 Bring to the Ship Recycling Industry? <http://www.maritime executive.com/editorials/what-will-2017-bring-to-the-ship-recycling-industry>.

<sup>21</sup> Golam Mohiuddin, Dr. Khandakar Akter Hossain, Dr. Md Shahidul Islam, "Analysis of present global ship recycling status and challenges for Bangladesh," Global Scientific Journal, Volume 11, Issue 4, April 2023

Major Concerns	1. Beaching method results in pollution and unsafe working conditions. 2. Lack of proper training. 3. Full absence of downstream Hazardous waste management. 4. Below standard living conditions, lack of proper medical facilities, Wages lower than living cost. 5. Child labor in a hazardous industry. 6. No strict law Enforcement.	1. Dismantling of ships in beaching method. 2. Adverse environmental impact caused by toxic paints, slag and debris. 3. Lack of sufficient personal protective equipment (PPE) as well as lack of proper training. 4. Re-sale of asbestos containing materials. 5. No strict law enforcement.	1. Ship breaking on the unprotected beach which results in pollution and unsafe working conditions. 2. Lack of proper training of the workers. 3. Absence of any adequate downstream hazardous waste management. 4. Poor living condition, lack of proper medical facilities, long working hours. 5. No strict law enforcement.	1. Conflicts among different yards. 2. Tracking of hazardous wastes downstream. 3. Absence of independent Trade unions. 4. No particular environmental monitoring system of sea, sand & air pollution and scrutiny of landing method. 5. High accident rate.	1. Conflicts among different yards, the method and technology used. 2. Lack of fully safe asbestos removal. 3. Full absence of independent trade unions and active environmental organizations working on ship recycling.
Main Location	Chittagong	Alang	Gadani	Aliaga	Shanghai, Xinhui & Dalian
No of Ship dismantled (2012-2022june)	2148	2836	1033	1275	1097
Percentage of ship dismantled (2012-22june)	24.5%	30.9%	11.63%	14.92%	11%

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