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Shipbreaking in the Indian subcontinent

Practices, consequences and applicable legislation

Supervisor

Ch. Prof. Vania Brino

Graduand

Giulia Gazzola

Matriculation number 856241

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Abstract

Shipbreaking activities play a fundamental role in maintaining a healthy shipping market, and they are important also for the economy of the countries in which they are carried out. However, unless regulated and monitored properly, these activities can generate negative consequences: in fact, pollution of the air, the water and the soil in major shipbreaking locations has seriously damaged the ecosystem, and the quality of life of the local population has decreased. Even inside shipbreaking yards, the situation is alarming: many workers are exploited and deprived even of basic rights, and they risk their lives due to lack of protective equipment, rudimentary breaking methods and poor health and safety rules. Shipbreaking in India, Pakistan and Bangladesh brings in lots of scrap steel, employment and revenues, but at a very high price. The conditions under which shipbreaking takes place in South Asia would not be considered acceptable in any developed country. However, shipbreaking benefits from being an “overlooked” and secretive industry which does not attract much attention from the general public, and as a result, few shipowners so far have suffered any backlash for their choices. The international nature of shipbreaking also raises issues for law adoption and enforcement: in fact, while appropriate regulations are already in place, they are relatively easy to circumvent, and the countries which need them the most often do not have the resources and/or the willpower to effectively enforce them. For these reasons, cooperation between shipowners, shipbreaking yards, financial institutions, NGOs, flag states and shipbreaking countries will be crucial for improving labor and environmental conditions in shipbreaking areas, and for ensuring a sustainable development for South Asian coastal communities.

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List of abbreviations

BIMCO	Baltic and International Maritime Council
CSR	Corporate Social Responsibility
ECSA	European Community Shipowners' Association
EFTA	European Free Trade Association
EU	European Union
EUSSR	European Ship Recycling Regulation
EUWSR	European Waste Shipment Regulation
FIDH	International Federation for Human Rights
FOC	Flag of Convenience
HKC	Hong Kong Convention
GMB	Gujarat Maritime Board
ICIMH	International Certificate on Inventory of Hazardous Materials <i>Materials</i>
IHM	Inventory of Hazardous Materials
ILO	International Labour Organization
IMO	International Maritime Organization
ISRA	International Ship Recycling Association
LDT	Light Displacement Ton
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
PAHs	Polycyclic Aromatic Carbons
PCBs	Polychlorinated Biphenyls
PIC	Prior Informed Consent
PPE	Personal Protective Equipment
SBSRB	Ship Building and Ship Recycling Board
SDGs	Sustainable Development Goals
SRTI	Ship Recycling Transparency Initiative
TBT	Tributyltin
UDHR	Universal Declaration of Human Rights
UK	United Kingdom

UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
US	United States
VAT	Value Added Tax

Introduction

Shipping has been defined as the world's oldest global industry (Mansell, 2009). Thanks to important technological advancements, over the years maritime transport managed to remain the most cost-effective way to move cargo over long distances, forming the backbone of international trade and of the global economy: in fact, today 90% of the world's traded goods are transported by ocean-going vessels (Wan et al., 2021). In this scenario, by removing inefficient and obsolete vessels, ship recycling contributes to maintaining a healthy shipping market, in addition to helping sustain the local economy of coastal South Asian States and allowing tons of metal, equipment and furniture to be recycled.

However, scratching beneath the surface reveals multiple issues related to human rights violations and environmental protection. In fact, pollution of the air, the water and the soil in major shipbreaking locations has seriously damaged the ecosystem, and the quality of life of the local communities has decreased as a result. Even inside the yards, the situation is alarming: many workers are exploited and deprived even of basic rights, and they risk their lives due to lack of protective equipment, rudimentary breaking methods and poor health and safety rules. The root of these problems is lack of regulation, poor monitoring and weak law enforcement; probably these are also the most important factors which allowed the ship recycling industry to prosper in the Indian subcontinent.

Over the years it became clear that lack of regulation was fueling development at the expense of people and the environment, whereas shipowners and shipbreakers were successfully reaping the profits of shipbreaking while externalizing most financial and non-financial costs. However, this realization was not enough to drive change: in fact, both the Governments of shipbreaking States and yard owners are aware that, if they started imposing stricter requirements for ship recycling, the industry could move to a cheaper and less regulated country. In other words, a combination of vulnerability, inability and unwillingness to take a strong stance are impeding the South Asian ship recycling industry from becoming safer and 'greener'. This thesis offers an overview of the South Asian shipbreaking industry's enabling factors, its characteristics, attempts at regulating it and, finally, some suggestions for improving the shipbreaking industry's social and environmental sustainability.

More specifically, Chapter 1 ('Overview of the shipbreaking industry') explains how ship recycling activities are carried out and what influences their demand and supply. Furthermore, this Chapter briefly analyzes the history of ship recycling activities and how their geographical location moved first to East Asia and later to South Asia during the second half of the 20th century.

Chapter 2 ('Issues related to shipbreaking activities in the Indian subcontinent') focuses on the adverse effects of substandard ship recycling activities in India, Pakistan and Bangladesh. The first part of this Chapter covers issues related to environmental pollution, workers' rights and occupational health and safety, whereas the latter part of the Chapter illustrates how flags of convenience allow shipowners to dodge many conventions and regulations on shipbreaking and transboundary movements of hazardous wastes.

Chapter 3 ('National and international regulatory instruments') deals first of all with human rights legislation by the International Labour Organization and by the United Nations. Later on, the second part of this Chapter focuses on international environmental regulations on hazardous waste management, marine pollution and ship recycling. Finally, the third part of Chapter 3 offers an overview of the main applicable laws in India, Pakistan and Bangladesh. All three sections also contain a commentary of the most important regulations, which analyzes their main weaknesses and offers some suggestions.

Finally, Chapter 4 ('The way forward') offers some potential solutions for overcoming the shipbreaking industry's main problems. Most of the attention is concentrated in what shipowners and developed countries can do, since South Asian yards cannot (and should not) be expected to carry alone the brunt of upgrading their infrastructure and taking measures to make the shipbreaking industry more environmentally friendly and safer for its workers.

As a final note, it should be mentioned that, at times, it was challenging to find complete and reliable information on ship recycling. First of all because, compared to other well-known infamous industries, shipbreaking receives less coverage in the media (often restricted to smaller, local news outlets) and even from non-governmental organizations (the most vocal one being Brussels-based NGO Shipbreaking Platform). Secondly, most

sales of end-of-life vessels involve third parties known as 'cash buyers'; since they often operate in a 'grey area', they generally select very carefully what little information they disclose, and in multiple cases further research on their claims showed that they were sharing only half-truths. Furthermore, local and national Governments in shipbreaking States are not carrying out environmental monitoring and frequent inspections of ship recycling facilities and, even when they do, they do not make the results of these inspections public and do not keep any official statistics on this industry. The same can be said for shipbreaking yards: most of them do not share any information regarding employment and accidents, and they often act hostile towards the NGOs and workers' union which are trying to shed some light on the ship recycling industry. And lastly, many stakeholders have a strong incentive to report facts and news in a biased way. As a result, information had to be collected from a large number of fragmented sources and then pieced back together in order to offer a perspective as balanced as possible.

Chapter 1 – Overview of the shipbreaking industry

1.1 What is shipbreaking and how does it happen?

Shipbreaking takes place when, for whatever reason, a seagoing vessel is scrapped and disposed of (Taylan, 2013); usually this happens after 20 to 30 years of service (Sujauddin et al., 2015). At this point, its shipowner usually either arranges scrapping ‘personally’ at a shipbreaking facility of his choice, or he involves a cash buyer (see Figure 1); the second option is the most popular one, since about 80% of all transactions are intermediated by cash buyers (Alcaide et al., 2016).

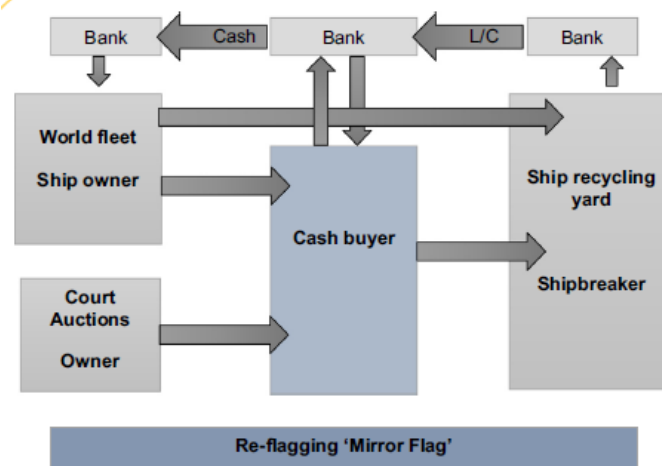


Figure 1: Sale process for an end-of-life vessel.
Retrieved from Alcaide et al. (2016)

Sometimes cash buyers are mere middlemen which put the shipowner in contact with a shipbreaking yard, but in most cases they actually buy the ship from the shipowner (paying for it upfront rather than through a letter of credit, hence the name ‘cash buyers’) and then arrange the final voyage of the ship from its current location to a shipbreaking yard (which entails setting up a crew for navigation to the yard, arranging paperwork, dealing with the ship recycling company, renaming and reflagging the vessel, etc.). Currently, the world’s leading cash buyers are GMS (Dubai), Best Oasis (Hong Kong) and Wirana (Singapore). Cash buyers are especially popular for ships broken in South Asia, because, in addition to being highly specialized in end-of-life vessels, they also reduce shipowners’ exposure to legal risks and to liability in case of accidents or other issues. Another advantage of employing the services of a cash buyer is that it creates some distance between shipowners and the unpleasantness of substandard shipbreaking in developing countries, thus helping protect the shipowner’s reputation. What happens after this point depends mainly on the ship’s final destination, on the involvement of cash

buyers (or lack thereof), and on the level of compliance with national and international regulations, as will be explained over the next chapters.

Ship recycling can be divided into three main phases: preparation, deconstruction and scrap stream management (ILO, 2004). The dismantling procedures start after the vessel is beached on the coast in front of a recycling yard; usually this is done either directly by the shipowner, or by a cash buyer who bought the vessel from the previous shipowner for the exact purpose of dismantling it. After the vessel is beached, workers start removing every part of the ship which can be moved or disassembled; often these components will later be sold at local secondhand markets for a profit. After this stage has been completed, flame cutters start cutting away the hull and other steel parts with acetylene torches; the steel plates are then carried away (either mechanically or manually) from workers, in order to be cut into smaller pieces, weighed and sold to re-rolling mills for recycling.

There are 4 main ways to break a ship (Andersen, 2001; Stopford, 2008):

- Open beaching means that all dismantling activities are conducted on a beach after the ship has been grounded in the sand during the high tide. Cutting happens in the intertidal zone and, as a result, mechanization is very limited. This method – which is the most popular one – is used especially in South Asia because the workforce is abundant and cheap, and it does not require any specific infrastructure (in other words, beaching is labor-intensive, rather than capital-intensive).
- Landing (also known as ‘non-tidal beaching’) is similar to regular beaching, but the main difference is that the ship is dismantled over a concrete slipway. This method is safer than beaching because the concrete allows a more extensive use of cranes and other machinery, prevents the vessel from shifting and makes it easier to prevent and control spillage of oil and other substances, but it is more expensive than plain beaching. This technique is employed mainly in OECD and non-EU nations.
- Alongside scrapping means that the ship is brought to a dock in protected waters, where dismantling happens in two stages, because first of all a crane alongside the pier removes the upper part of the ship, and then the remaining section is removed from the water and dismantled on land. This method is relatively safe for the

environment because, since dismantling takes place in a delimited area, it is easier to cleanup any spill, but it is also quite expensive compared to the previous methods. Alongside scrapping is popular especially in China and in some European countries.

- Dry-dock (also known as ‘docking’ or ‘dry-dock recycling’) is the safest technique, because the ship is brought into an enclosure, the enclosure is sealed, and then the water is drained. The main benefit of this method is that spills can be cleaned up easily, since they take place into a sealed area. This method (the most capital-intensive one) is frequently used where labor costs are high and there are strict health, safety and environmental regulations in place, such as in Europe and (to a lesser degree) in China.

Environmental and health and safety concerns aside, shipbreaking does actually contribute to sustainable development (ILO, 2004), since it prevents old ships from being abandoned or used as artificial reefs, and it enables recycling of steel and other materials (which saves energy compared to producing them from scratch). Additionally, ship recycling plays an important part in maintaining a healthy shipping market (Stopford, 2008), since it removes outdated tonnage from international waters (thus contributing to the modernization of the world fleet), and since it also allows shipowners to get rid of unproductive assets. Finally, as explained more in detail further ahead, even local communities benefit from shipbreaking, since it generates employment and tax revenues which can be redirected towards national development.

1.2 Price formation and drivers of shipbreaking activities

Demand and offer for ship recycling activities are influenced by multiple stakeholders and factors. The main stakeholders involved (either directly or indirectly) in shipbreaking activities are:

- Shipowners, who decide when to order new ships, when to lay-up the tonnage they already own, and when to scrap old ships. Basically, shipowners look at the market conditions and decide how to manage their own shipping capacity.
- Shippers and charterers, who make agreements with shipowners to ‘rent’ vessels for a certain amount of time. When the shipping market is slow, it becomes difficult for shipowners to get older ships chartered because they are less competitive

compared to new ones, and charterers are pickier because they are in a stronger position compared to shipowners.

- Bankers, who finance shipping activities. When the shipping market is slow, bankers can tighten credit conditions and thus pressure shipowners to scrap old and/or inefficient vessels to improve their cashflow.
- Regulatory authorities, who issue regulations on safety and health. If a ship is not compliant with these regulations, its owner will have to weigh the pros and cons of retrofitting to decide whether it is worth to invest in modernizing a vessel, or whether it is more economically convenient to scrap it.

As for the factors which influence the demand and supply of shipbreaking activities, the main ones are presented in the next paragraphs.

1.2.1 Supply-side drivers

1.2.1.1 Freight rates

The demand for shipping services is called a ‘derived demand’ or ‘indirect demand’, because it depends on the demand for the goods which are being transported: this means that shipping companies can only adapt supply to the level of demand for their services, but they cannot influence it. In this sense, freight rates act similarly to a switchbox (Stopford, 2008): high freight rates mean that the demand for shipping is high, and therefore it is less likely that shipowners decide to demolish their ships (Merikas et al., 2015). However, the situation is a bit more complex than this, considering that Stopford (2008) defined shipowners as “players in the world’s biggest poker game” exactly because any sudden event can dramatically change their financial situation.

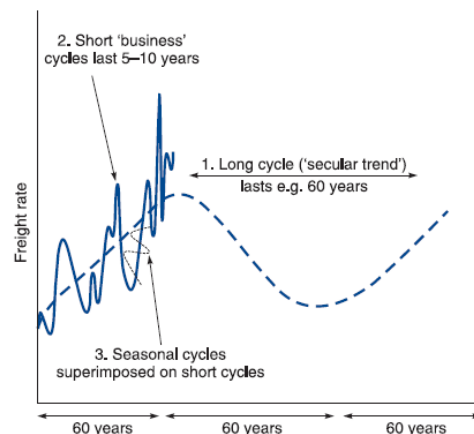


Figure 2: Seasonal, short and long cyclical components of shipping market cycles. Retrieved from Stopford (2008)

The level of freight rates depends on market cycles (see Figure 2), which are made of three main components with differing temporal horizons (Stopford, 2008):

- Long-term cycles (50-60 years), usually driven by technological advancements or by demographic change. If the trend is moving upward, this is good news for the shipping industry; on the other hand, in presence of a downward trend, the situation is getting worse. However, due to the long duration of these cycles, they can be difficult to evaluate, and they are not particularly important for determining whether ship demolitions will increase or decrease in the short term because they do not have any immediate effect on freight rates.
- Short-term cycles, also known as 'business cycles' (5-10 years) are usually made of 4 stages (see Figure 3): trough, recovery, peak and collapse. Between the trough and the actual recovery, an abortive recovery can occur (usually because shipowners, anticipating a recovery, aggressively order too many ships too soon). Short-term cycles are very important for the shipping market, because they often end with an unpredictable event (wars, revolutions, changes in the prices of commodities, etc.) which causes a severe economic collapse, thus triggering a new wave of ship demolitions.

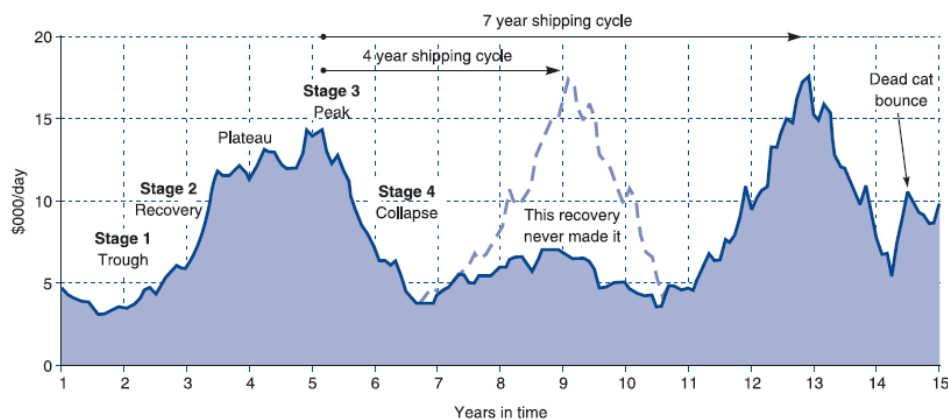


Figure 3: Stages in a typical shipping market cycle.
Retrieved from Stopford (2008)

- Seasonal cycles have the same effect on the shipping market each year because these fluctuations do not have long-term effects. Moreover, these fluctuations have a regular pattern because they are triggered by the same conditions. For example, during the summer season the dry bulk market is generally weak, but it picks up in early autumn, when grains are harvested. Similarly, every year in late autumn and early winter there is a noticeable surge in the transportation of oil when

countries in the northern hemisphere stock up on oil for the winter.

As stated previously, short-term cycles are the ones which affect ship demolition the most. What happens is that, during a trough, the first signs of a surplus of shipping capacity become evident, and freight rates go down; as a result, ships switch to slow-steaming in order to save fuel, and the least efficient ships are laid up because they have become unprofitable to operate. At this point, given the negative outlook, financial institutions are more reluctant to lend money, adding further pressure to shippers, which are already operating at tight margins due to plunging freight rates. The financial pressure keeps building up until some shipowners will be forced to make a 'distress sale' of their least efficient vessels in order to improve their cashflow positions. Distress sales imply that vessels are sold at a price below their book value, because the sudden surge in ships available for scrapping decreases their price on the demolition market.

In the recovery phase, as shipbreaking gradually corrects the imbalance between supply and demand of shipping capacity, freight rates increase, rising above the level of operating costs. In the recovery stage, the rate of demolition slows down, and optimism and confidence in the shipping market improve. At this point, the prices for secondhand tonnage also increase, thus making sale a more attractive alternative than breaking.

In the peak stage, shipping capacity surplus has been mostly absorbed, and as a result, the only ships being demolished are the ones which are too old, inefficient or damaged to be traded on the secondhand market. Now, freight rates are two or three times higher than operating costs (Stopford, 2008), thus making it convenient for shippers to operate even older and less efficient vessels, and the earnings are so high that bankers are more willing to offer credit. As a result, there is an increase in newbuilding orders, and the prices for secondhand vessels keep increasing as well. Depending on the enthusiasm of stakeholders, the plateau can be reached in some years, or even just in a few weeks (for instance, freight rates kept increasing in 2004-2008, but then they crashed suddenly and dramatically when the financial crisis hit).

After the plateau is reached, collapse follows. In fact, excessive enthusiasm and overconfidence lead to overcapacity, and freight rates crash down as a result. At this point, vessels go back to slow-steaming, and it becomes difficult for less efficient ships to compete (but it will take some time for shipowners to start scrapping their ships en

masse, since many shipowners cannot wrap their heads around the new lower price levels and instead decide to postpone scrapping, waiting for higher prices). In many cases, the negative effects of collapses in the shipping market are reinforced by downturns in the overall business cycle triggered by an economic shock (as happened during the oil crises in the 1970s, which led to tankers being mass-scrapped, or during the Asian crisis of 1997 or the 1929 Wall Street Crash).

In short, knowing that the economy of the world and of the shipping market move in cycles and that shippers cannot influence the demand for sea transport, during economic downturns the only way for shipping companies to support freight rates is to cut the supply of tonnage, either by keeping their vessels idled (berthed in ports or anchored in the open sea), or by sending them to scrapyards. For this reason, the ship recycling industry tends to boom during recessions and when freight rates are low (Sarraf et al., 2010), while it suffers during economic expansion, when freight rates are higher and shipowners try to hold onto vessels even if they are aging or already past their operational life expectancy.

1.2.1.2 *Operational costs*

Often ships are scrapped because they have become obsolete. However, a distinction should be made between technical and physical obsolescence.

Technical obsolescence depends mainly on the development of new technologies. For instance, in the late 1960s the phenomenon of containerization made multi-deckers technologically obsolete, and as a result, many vessels of this type were scrapped in the following years (Stopford, 2008). Machinery is also subject to technical obsolescence: for example, in the 1970s, when oil prices skyrocketed, many ships powered by steam turbines were scrapped because they were too inefficient (Stopford, 2008). In general, newer ships tend to be designed in a way which makes them more fuel efficient, and this is especially important when the freight market is low because, *ceteris paribus*, a less fuel-efficient vessel will need higher freight rates to break even compared to a more fuel-efficient one.

Physical obsolescence, on the other hand, is generally related to a ship's age. This is an important determinant of the probability of a vessel being demolished (Knapp et al., 2008; Merikas et al., 2015), because older ships tend to be less safe, less energy-efficient and

more technologically obsolete. Usually extensive dry-dock inspections are carried out at least every 5 years, so the fifth inspection generally takes place when a ship is 25 years old. The inspections generally become more thorough as a ship becomes older, especially when it comes to the hull (because, over the years, steel parts can be corroded, leading to decreased thickness in some areas). If inspections detect this type of issue, the shipowner will have to undertake very expensive dry-dock repairs to bring the hull back to standard thickness, because certificates of seaworthiness are released only after all defects have been remedied.

As a result, at this point many vessels are sent to scrapyards because they often require heavy repairs, which might not be worth undertaking considering the ship’s age. Over the years, once capital costs are covered, maintenance becomes an increasingly important cost in a ship’s cost structure, and therefore the frequency of inspections and the time spent in yards for repairs can become burdensome (Krause, 2005). In addition to increasing maintenance costs, insurance premiums also tend to increase as a vessel gets older, which further contributes to eroding the profitability of operating older vessels. Fuel consumption is another problem in older ships, both due to technical obsolescence (in terms of hull and propulsion design) and due to hull condition (because, no matter how well-maintained a ship is, over time scraping and repainting the hull will make it less smooth, thus increasing friction). As a result, when scrap prices are high, shipowners are more likely to choose dismantling rather than repairs (Sujauddin et al., 2015).

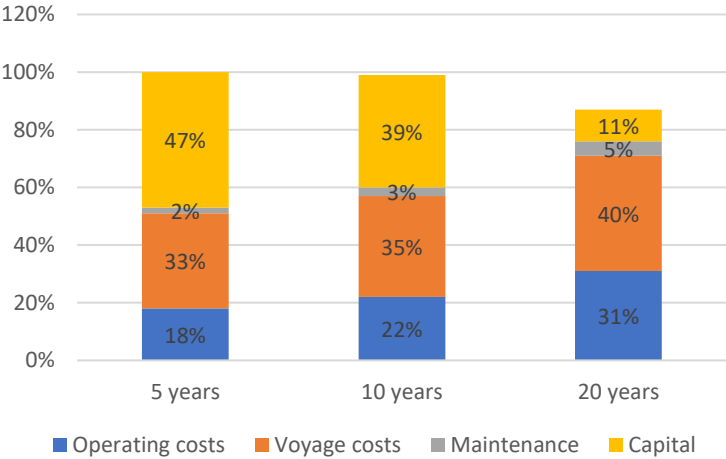


Figure 4: Capesize bulk carrier cost and age. Retrieved from Stopford (2008)

In order to make this clearer, Stopford (2008) made a comparison between a 5-year-old, a 10-year-old and a 20-year-old Capesize bulk carrier to show how age influences a

vessel's cost structure (see Figure 4). Overall, the oldest ship appears to be the cheapest one to operate, but a deeper analysis offers a different result. In fact, considering only operating and voyage costs, the newest ships are markedly cheaper to operate due to better fuel efficiency, lower manning costs, and less need for maintenance. As a result, newer vessels can operate profitably at lower freight rates compared to the 20-year-old one; in other words, when freight rates decrease to the point that the 20-year-old vessel breaks even (just covering operating and voyage costs, without any profit), the newer ships can run and still earn a profit. In such a scenario, a shipowner will lay-up the older vessel, or break it (depending on how he expects the freight market to evolve). The fundamental issue with obsolescence is that it increases operational costs, which are one of the main factors used by shipowners when they have to decide whether to keep a vessel in service or scrap it.

However, it should be remembered that operational costs are an important factor only when freight rates are low. In fact, if a shipowner is optimistic and believes that the recession will end soon and that a freight market boom will follow, he will probably decide to just wait: if his forecasts are correct, he will earn enough to cover operational costs and maintenance costs even for older ships. In such a scenario, it makes sense for a shipowner to incur some small operating losses, unless he is seriously strapped for cash. Conversely, if many ships are being sent to scrapyards in the same period, this means that shipowners as a whole are not optimistic about the future.

1.2.1.3 Regulations

Changes in environmental regulations can lead shipowners to scrap their vessels if they deem compliance too expensive to achieve. Usually, these regulations are formulated by the IMO and then they are implemented by flag States in their national legislation. IMO 2020 and the 2004 Ballast Water Management Convention¹ are two examples of environmental regulations which have been heavily criticized by shipowners because, while they are important for fighting environmental pollution and for protecting human health, they are expensive to comply with. Considering that the shipping industry is very

¹ <https://www.ics-shipping.org/current-issue/treating-ships-ballast-water-2020/>

cyclical and operates on tight margins, upgrading vessels while remaining competitive in terms of freight rates is not feasible according to many shipowners (Poulsen et al., 2016), to the point that some might be ‘forced’ to scrap their ships.

For instance, in 2018 the IMO amended Annex VI of the MARPOL International Convention for the Prevention of Pollution from Ships. The new amendment – also known as ‘IMO 2020’ – came into force on January 1, 2020 and limits the sulfur content of the fuel used by ships operating outside emission control areas; the new limit, 0.50% m/m (mass by mass), is significantly lower than the previous one (3.5% m/m). Ships operating inside IMO-designated emission control areas (namely the Baltic Sea, the North Sea, part of the North American east coast, and the area around Puerto Rico and the Virgin Islands)² were already compliant with the new limit, but they represented only a small share of the global fleet. Likewise, ships using alternative fuels (like biofuels or liquefied natural gas) were also exempted from IMO 2020 because they are inherently cleaner, but again, these ships do not represent a significant share of the global fleet. Actually, the Maritime Industry Decarbonisation Council estimated that 77% of ships were using heavy fuel oil before IMO 2020 came into force³.

IMO 2020 requires shipowners to either switch to very low sulfur fuel oil, or to retrofit their vessels with exhaust gas cleaning systems (also known as ‘scrubbers’). Both solutions have advantages, but they are also costly in different ways. On one hand, using very low sulfur fuel oil does not require huge upfront investments, but it is approximately 50% more expensive than regular heavy oil fuel (Poulsen et al., 2016; Kerriou, 2020), and therefore it increases operational costs. On the other hand, scrubbers allow shipowners to keep using cheaper heavy fuel oil, but installation can cost between \$1 million and \$10 million depending on engine power⁴. The point is that shipowners *had* to make a choice, because noncompliant ships risk high fines and even detention. It is difficult to tell exactly how much IMO 2020 contributed to scrapping because, firstly, it is still early and data is not complete, and secondly, data has been skewed by the pandemic. However, it is

² <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Sulphur-2020.aspx>

³ <https://midc.be/alternative-marine-fuels/>

⁴ <https://market-insights.upply.com/en/low-sulfur-regulations-the-impact-on-maritime-shipping-prices>

reasonable to assume that the high costs which shipowners are required to sustain for retrofitting could have had an impact on their decision to demolish their vessels (especially older ones).

Another important factor which could lead shipowners to scrap their ships at a relatively young age is the IMO 2004 Ballast Water Management Convention, which entered into force on September 8, 2017. The Convention was adopted to curb the introduction of invasive, non-native marine species during de-ballasting operations: for this reason, ships are required to be equipped with a ballast water treatment system to clean ballast water before releasing it into the sea, as to reduce potential damage to the marine ecosystem. However, according to the shipowners interviewed by Poulsen et al. (2016), retrofitting ships with ballast water treatment systems and implementing a ballast water management plan “will cost hundreds of thousands of dollars per ship”. The International Chamber of Shipping estimated a cost per ship between \$1 million and \$5 million, adding up to approximately \$80 billion for the whole industry⁵. According to the shipbrokers interviewed by Bartlett (2021b), the Convention could cause the demolition of more than 90 tankers in 2021. As a result, Gourdon (2019) estimates that, in the next seven years, the Ballast Water Management Convention could increase ship demolitions by an amount between one-third and two times the usual annual demolitions.

In general, many companies today are making an effort to make their whole value chains more sustainable. As a result, some cargo owners have been pressuring shipping companies to become more environmentally friendly, and some green rating schemes have emerged. Currently these green rating schemes are not mainstream yet and, according to most shipowners interviewed by Poulsen et al. (2016), generally price is still one of the main decision-making criteria used by cargo owners. However, it is not unthinkable to believe that, in the future, green shipping could become an important source of competitive advantage for shipping companies.

⁵ <https://www.ics-shipping.org/current-issue/treating-ships-ballast-water-2020/>

1.2.1.4 Other influencing factors

Scrapping is not the only possible outcome for a ship which cannot be operated profitably, or which is not seaworthy anymore due to noncompliance. In fact, shipowners can decide to use their ships for storage, and an important advantage of this solution is that contracts can last even just a couple months (so, at the end of the contract, the vessel will be available again for trading if shipping market conditions have improved). For instance, tankers can be used for oil storage both in ports and offshore; bulk carriers, on the other hand, can be employed for storing commodities such as grain or coal. In other words, floating storage contracts allow shipowners to extend the service life of their vessels even when market conditions make older ships unprofitable.

Some other possibilities are operating older vessels which do not comply with European regulations in non-EU waters (Krause, 2005), or selling them in the secondhand market. Understandably, if the value of a ship in the secondhand market is higher than in the scrapping market, then a shipowner will choose the first option. In particular, it was reported that, during the pandemic, when oil production decreased and demand for floating storage also went down, the number of tankers scrapped was lower than expected⁶. According to analysts, the reason was that some vessels, rather than being demolished, had been sold to operate in sanctioned trades⁷ (such as carrying oil from Venezuela and Iran).

Another factor which helps extend the useful life of a ship is flexibility. In fact, if a vessel is very specialized and the market for the goods it transports is suffering, then its owner might decide to scrap it; on the other hand, if it is more flexible with regard to the cargo it can carry, then its shipowner can deploy it to a more profitable market. Lack of flexibility also explains why, during the pandemic, some types of vessels were scrapped more frequently than others to be converted into cash. Cruise ships are a prime example of this⁸:

⁶ <https://loydlist.maritimeintelligence.informa.com/LL1131734/Lockdown-brings-Indian-subcontinent-ship-scrapping-to-a-halt>

⁷ <https://loydlist.maritimeintelligence.informa.com/LL1138350/Freight-bonanza-and-demand-for-secondhand-tonnage-stifle-demolition-market>

⁸ <https://www.bloomberg.com/news/articles/2020-10-29/the-messy-booming-business-of-recycling-cruise-ships-in-turkey>

in fact, during the pandemic many cruise ships had to be idled because they could not operate due to travel bans, and they could not be redirected towards more profitable uses. Actually, the high number of cruise ships lined up for dismantling was so high that, according to the CEO of cash buyer GMS, many yards offered as little as \$100 per ton for them⁹. Another example is car carriers, which were idled during the pandemic because, due to factory shutdowns in many countries, there was not any cargo for them to transport. For instance, in 2020 the CEO of Grimaldi Group stated in an interview that his company had to terminate some charter contracts and had decided to scrap two of their own car carriers due to low automotive sales¹⁰.

However, cruise ships and specialized carriers were not the only types of ships which were scrapped in large numbers during the pandemic. In fact, coronavirus and the related slowdown in the global economy forced many shipowners to retire their ships prematurely, as often happens during a recession, when the demand for goods and oil goes down. The same phenomenon could be observed in the years following the 2008 crisis (Rabbi and Rahman, 2017) or the 1970s oil crisis (Krause, 2005), when many vessels were scrapped despite being relatively new.

According to Sujauddin et al. (2015), even the size of a ship influences its probability of being scrapped. In fact, they found that bigger vessels tend to stay in service for a longer time compared to smaller ships because it takes a long time to build them, and therefore shipowners react more slowly when the economy slows down. In other words, if the economy is in a slump and freight rates are low, shipowners could dismantle large vessels, but they are aware that, eventually, the shipping market will pick up again, and that it will take a long time to readjust their fleet's size (usually between 18 months and 3 years, depending on the size of the newbuild orderbook).

Finally, it should be noted that, while many ships were indeed demolished during the coronavirus pandemic, delivering vessels to shipbreaking yards became extremely difficult during that time, since multiple countries banned seafarers from traveling to and

⁹ <https://www.wsj.com/articles/cargo-vessels-and-cruise-ships-line-up-for-scrapping-11605022881>

¹⁰ <https://www.wsj.com/articles/cargo-vessels-and-cruise-ships-line-up-for-scrapping-11605022881>

from India¹¹. In addition, some countries banned foreign vessels from entering territorial waters for shipbreaking purposes altogether: for instance, in March 2020 India temporarily halted the release of no objection certificates, which are necessary for legally importing end-of-life vessels in the country; in the same period Bangladesh and Pakistan too suspended ship imports and recycling activities¹². As a result, sales transactions for end-of-life vessels decreased, and shipbrokers reported that many shipowners were looking to sell their ships to increase liquidity, but only under ‘as-is’ conditions in order to avoid the responsibility of sending them to South Asia in a time of travel restrictions. However, these shipowners struggled to find willing buyers, since most cash buyers were experiencing poor cash flow and therefore could not afford to hold onto ships for weeks or even months, waiting for shipbreaking activities to pick up again.

1.2.2 Demand-side drivers

1.2.2.1 Demand for scrap steel and for other reclaimed items

The industrialization and rapid urbanization which are taking place in the Indian subcontinent translate into a high demand for steel. However, these countries are not naturally endowed with large iron ore deposits, and as a result, they must rely mainly on imports of finished and semifinished steel products. While shipbreaking will never be able to cover the entire demand, it is still valuable for the domestic steel industry because it is more cost-effective than importing, and it also generates employment. For instance, Illius (2020) estimated that, in 2019, about 40% of Bangladesh’s steel was produced using scrap steel recovered from end-of-life ships.

South Asia’s large demand for steel also helps explain why yards can offer such high prices for scrap vessels (Sarraf et al., 2010; Merikas et al., 2015). For example, Illius (2020) reported that during summer 2020, when many construction works in Bangladesh were resumed after lockdowns, the demand for steel grew so much that local scrapyards were

¹¹ <https://www.bloomberg.com/news/articles/2021-04-28/india-s-need-for-oxygen-is-hitting-demolition-of-old-ships>

¹² <https://lloydlist.maritimeintelligence.informa.com/LL1131734/Lockdown-brings-Indian-subcontinent-ship-scrapping-to-a-halt>

buying end-of-life vessels at record prices in order to feed such demand. In fact, ships are generally made of high-quality steel, and some types (such as tankers) are especially coveted by shipbreaking yards because steel accounts for a large share of their weight. This steel is often reused in the construction industry by heating it and rerolling it into rebars, which are used to reinforce buildings made of concrete.

However, the price of steel in the Indian subcontinent is not determined just by the local demand for steel: in fact, it can be influenced also by actions and policies carried out by other countries. A great example of this is China's 2015 steel dumping: in fact, since the Chinese construction industry and the Chinese economy as a whole were slowing down, China started to get rid of excess steel production by selling it at prices which were even lower than the prices for scrap steel¹³. As a result, the South Asian shipbreaking industry suffered, because imports of Chinese steel increased (since it was more competitive than locally sourced scrap steel), and therefore the prices which shipbreakers could offer for end-of-life vessels were not attractive enough for shipowners. Findings by Terao (2008) and by Merikas et al. (2015) confirm that international trends in the price of scrap metals have an important influence on the ship recycling industry.

60% to 85% of the weight of a ship is steel which can be recycled (Sarraff et al., 2010; Sujauddin et al., 2015), and some sources even talk about percentages as high as 90% or 95% (Paul, 2004; Memon and Zarar, 2016), depending on the type of ship: therefore, it is not surprising that most of the revenues of ship recycling facilities are generated by the sale of recovered scrap steel. Consequently, shipbreakers will be more willing to buy end-of-life vessels (and at higher prices) when the local demand (and therefore the price) for steel is high. Understandably, high scrap prices will encourage shipowners to sell old and/or unprofitable ships, but, as time goes on, the increased availability of scrap steel will cause the price of steel (and therefore also the price of scrap ships) to decrease, thus leading to depressed demand for recycling. This is especially evident during recessions, because increased breaking activity happens during a time when the demand for steel is

¹³ <https://www.reuters.com/article/china-steel-exports-idUSL3N0Z11QD20150618>

low as well.

However, selling scrap metal is not the only source of revenue for shipbreakers. In fact, unlike Europe, South Asia also has a high demand for recovered equipment and non-ferrous items, which bring the percentage of recycling up to 93%-97% of a ship's weight (Reddy and Manoharan, 2014; Sujauddin et al., 2015; Hoque and Emran, 2016). These objects are usually sold in shops close to the shipbreaking yards. The most common buyers of secondhand items retrieved from ships are (Sarraf et al., 2010; Sujauddin et al., 2015; Haque, 2016):

- Shipbreaking yards workers. They often buy personal protective equipment such as helmets, gloves and boots.
- Fishermen and shipping companies. Marine equipment is often retrieved to be sold as scrap parts for shipping companies and local fishermen because, compared to new spare parts, salvaged parts are immediately available and cheaper as well. Some examples of such items are diesel engines, deck cranes, compasses and life jackets.
- Businesses and factories. For instance, boilers are often bought to be used in rice mills or in the textile industry for washing garments, while engines and generators are often used in the textile industry to power machines, and textiles and kitchen equipment can be reused in hotels and restaurants.
- Households. Villagers often buy items such as sinks, toilets, sofas, beds and tv sets because they are a lot cheaper compared to new pieces of furniture.

Clearly, the cost of refurbishing salvaged items and less demanding technical standards also help explain why the secondhand market in South Asia is much stronger than in developed countries (Stopford, 2008). Furthermore, the possibility of selling even non-ferrous items is another reason why South Asian ship recycling yards can offer higher prices for end-of-life vessels.

1.2.2.2 *Breaking costs and regulations*

Breaking costs influence the demand for vessels to scrap because, the higher these costs are, the lower will be scrappers' willingness to pay. These costs vary a lot across countries, since they are determined by local factors such as (Stuer-Lauridsen et al., 2003; Sarraf et

al., 2010; Merikas et al., 2015):

- Labor costs. In South Asia, shipbreaking is a labor-intensive activity because high unemployment rates and a large population help keeping labor costs low. Widespread poverty also means that there are many workers who are willing to engage in this extremely dangerous activity.
- Regulatory costs and waste disposal costs. These are lower in South Asia (compared to developed countries) because safety, health and environmental regulations are generally more relaxed, and therefore compliance is less expensive. Another relevant factor is that these regulations are rarely enforced. However, it is worth mentioning that there are some differences in regulatory costs even among South Asian countries. For instance, Pakistan is the only country in the Indian subcontinent which does not require a gas-free certificate for tankers; as a result, Pakistani yards are the ones which break the most tankers, often in very dangerous conditions which are exacerbated by poor workers' safety regulations.
- Capital costs. These are determined mainly by the type and level of infrastructure present in a yard. Considering that most yards in South Asia use the beaching method, they have low capital costs (especially compared to scrapyards in developed countries, which are capital-intensive because they are endowed with concrete infrastructures, and activities are mostly mechanized). While there is a tradeoff between capital costs and productivity, the shipbreaking industry is so volatile that investing in advanced infrastructure is often seen as uneconomical.
- Import duties and taxes. A high tax rate can negatively affect the dismantled volume. For instance, in 2011 Bangladesh passed a 3% increase in import duties for end-of-life vessels, and this news was not well-received by stakeholders in the shipbreaking industry, who estimated that, due to this tax increase, the price offered for end-of-life ships could go down by as much as \$30/LDT¹⁴, thus decreasing the competitiveness of Bangladeshi yards compared to Indian, Pakistani and Chinese ones. Similarly, in 2017 India attempted to introduce a 15%

¹⁴ <https://lloydlist.maritimeintelligence.informa.com/LL010790/Bangladesh-import-tax-rise-to-stifle-scrap-rates>

VAT on ships imported for breaking¹⁵, but the Bangladesh Ship Breakers and Recyclers Association managed to convince the finance ministry to postpone the tax for 2 years. On the other hand, in 2015 Pakistan decided to introduce a 15% tax on imports of steel¹⁶ to sustain the price for end-of-life vessels, which had been decreasing due to the market being flooded with cheap Chinese steel. This decision was met with the approval of shipowners and cash buyers because it made Pakistan a good destination for scrapping at a time when scrap prices were low in every other country. Similarly, subsidies can also increase the relative competitiveness of a country because they allow yards to offer more for scrap ships without damaging their own profitability.

- Exchange rates. They are important because, while breaking costs are paid in the local currency, vessels are usually paid in US dollars.

In order to determine the scrap price he is willing to pay, the scrapper will have to estimate all these costs and compare them with how much he expects to earn from the sale of scrap steel and other reusable items and materials. It is therefore clear why ship recycling is seldom carried out in developed countries: breaking costs are higher due to stricter regulations, and there is not much demand for scrap steel and salvaged items; as a result, these yards are unable to offer rates as high as South Asian yards.

Regulations are closely linked to breaking costs, because the latter are increased by stricter regulations. However, as stated previously, regulations only have a limited effect on shipbreaking activities in the Indian subcontinent, because law enforcement matters as well. The issue of law enforcement is not easy to solve, since building institutional capacity requires time and considerable financial resources. Sometimes in the past (when they have not turned a blind eye), local governments have tried to make rules stricter, but these efforts have been nullified through lobbying activities carried out by yard owners and cash buyers. The series of tanker accidents which took place in Pakistan in 2016 explain why yard owners do not need to worry much about regulations: the worst thing

¹⁵ <https://www.offshore-energy.biz/gms-bangladeshi-scrapping-tax-likely-to-be-postponed/>

¹⁶ <https://lloydlist.maritimeintelligence.informa.com/LL015413/Prospect-of-Pakistan-tax-on-steel-imports-lifts-demolition-sector>

that can happen is a temporary closure, and lobbying is very effective in obstructing any advancement in terms of environmental protection and occupational health and safety.

1.2.2.3 Other influencing factors

The provision of shipbreaking services can experience disruptions due to multiple causes, such as:

- Religious and public holidays. Every year demolition activity tends to pick up right before scrapyards close for Eid and Ramadan¹⁷. Eid, in particular, is soon followed by the monsoon season, thus marking the beginning of a long slowdown in demolitions.
- Monsoon season. Every year, between June and September, shipbreaking activities have to slow down or even stop altogether because the rains can flood the yards and make it difficult to use torches for cutting¹⁸.
- Coronavirus. The pandemic has also caused serious disruptions in ship recycling activities, first of all because many South Asian countries announced multiple lockdowns in an attempt to slow down the spread of coronavirus; as a result, since shipbreaking was not considered an essential activity, many yards had to close down for weeks at a time¹⁹. In addition, many countries experienced serious oxygen shortages in hospitals and therefore resorted to diverting oxygen tanks from non-essential industries towards medical facilities. Consequently, many yards could not carry out cutting activities because they could not operate acetylene torches without oxygen tanks. GMS estimated that lack of oxygen caused a drop of 80% in shipbreaking activities²⁰.

¹⁷ <https://lloydlist.maritimeintelligence.informa.com/LL047887/Brokers-report-a-flurry-of-demolition-sales-before-the-holidays>

¹⁸ <https://www.bloomberg.com/news/articles/2021-04-28/india-s-need-for-oxygen-is-hitting-demolition-of-old-ships>

¹⁹ <https://lloydlist.maritimeintelligence.informa.com/LL1131734/Lockdown-brings-Indian-subcontinent-ship-scrapping-to-a-halt>

²⁰ <https://www.bloomberg.com/news/articles/2021-04-28/india-s-need-for-oxygen-is-hitting-demolition-of-old-ships>

1.2.3 Price formation in the ship demolition market

Generally, the value of a ship is determined just by looking at the ship's type and size, which offers an estimate of the amount of steel which can be retrieved. At this stage, it is very useful for estimation purposes to have a list of all the materials present on board the vessel (because, for instance, if large quantities of asbestos are present, then waste disposal costs for the yard will be very high, thus seriously affecting the level of profitability). Another two reasons why it is important to have an inventory of hazardous materials (IHM) are to prepare a ship-specific recycling plan, and to comply with the Hong Kong Convention and the EU Ship Recycling Regulation.

In order to evaluate the approximate value of a ship, first of all it is important to know the weight of the ship (its lightweight tonnage, which is the amount of water it displaces) and the current price of scrap steel. Then, it is simply a matter of multiplying the weight of the ship for its weight. However, there are also some other factors which can affect end buyers' willingness to pay (Stuer-Lauridsen et al., 2003; Krause, 2005; Merikas et al., 2015):

- Demand and supply of end-of-life vessels. This is a basic condition, and it means that, when there are many available ships for demolition, the price offered by shipbreaking yards will be low; conversely, when there are not many ships to break, yards will compete against each other to stay in business, and therefore they will offer higher prices to convince shipowners and/or cash buyers to choose one yard instead of another.
- Demand for steel. Demand for steel is an important factor because it affects the price of steel. As a general rule, when the price of steel is high, the prices offered by yards for end-of-life vessels will also be high because the yards know that they can sell scrap steel at a price which allows them to cover all breaking costs while also making a profit. The problem with steel prices, though, is that they are extremely volatile. For instance, in 2008 yards in South Asia were sitting on a large number of ships which were waiting to be scrapped due to lack of breaking capacity, but shipbreaking yards were not too worried about this, since the price for steel was high and they were optimistic about the future. However, once the 2008 crisis broke out, they ended up losing millions, because they had bought those vessels for prices as high as \$700/LDT, but now the price of scrap metals was

several hundred dollars lower (Sarraff et al., 2010).

- Geographical position of the ship and its conditions. Sometimes end-of-life vessels are sold 'as is' and 'where is'; this means that the end buyer will have to arrange transportation to the demolition yard. The reason why these conditions lower end buyers' willingness to pay is that these vessels must be provided with a crew, and there will be fuel and other operational costs for the final voyage (which can be very high if the ship is located far away from the yard, or if it must be towed), all of which must be paid by the end buyer himself.
- Complexity and size of the ship. For example, the CEO of cash buyer GMS reported that many yards are not very interested in Panamax vessels²¹; the main reason is that, due to their draughts, they must be beached further away from the coast compared to smaller ships. In order to be dismantled, these ships have to be brought closer to the shore, which is expensive and time-consuming for the yards.

1.3 Geographical distribution of shipbreaking activities

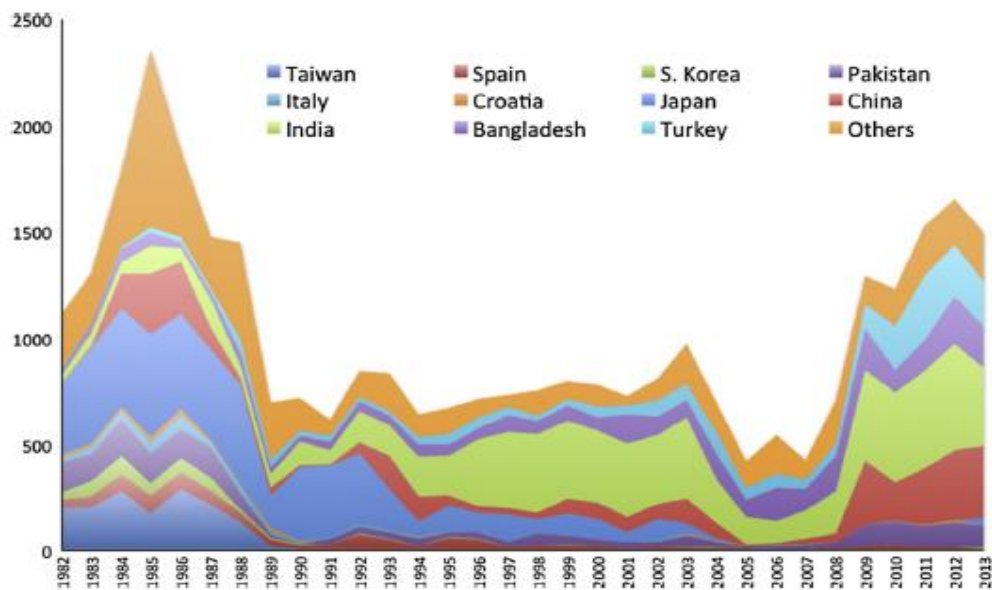


Figure 5: Total historical breaking volumes by region and year (expressed in number of demolished vessels). Retrieved from Alcaide et al. (2016)

Figure 5 shows clearly how, over time, the main locations of shipbreaking activities gradually moved away from high-income Western countries – first towards middle-

²¹ <https://www.tradewindsnews.com/ship-sales/panamax-boxships-for-demolition-pile-up/1-1-772897>

income East Asian countries in the 1970s and, in the 1980s, to low-income South Asian countries. This also seems to suggest that there is quite a strong correlation between a country’s economic development and the state of its shipbreaking industry. As a consequence of these geographical shifts and of the different factor endowments of each region, ship recycling activities also went from being capital-intensive to being labor-intensive. The initial move to East Asia was triggered mainly by high labor costs and environmental concerns (Misra, 2009b), but later other aspects became relevant as well (such as permissive environmental protection laws and poor workers’ rights), turning it into a race to the bottom.

Recent data from 2020 (see Figure 6) shows that, to this day, India, Bangladesh and Pakistan alone account for about 71% of all ships dismantled globally. Considering gross tonnage, the percentage is even higher (see Figure 7): India, Bangladesh and Pakistan account for about 87% of all gross tonnage dismantled in 2020, showing that not only these countries scrap many ships, but they also scrap large ones.

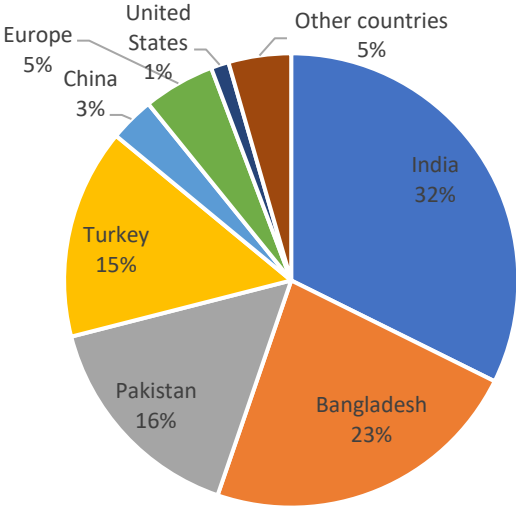


Figure 7: Number of ships dismantled by location in 2020. Data retrieved from NGO Shipbreaking Platform

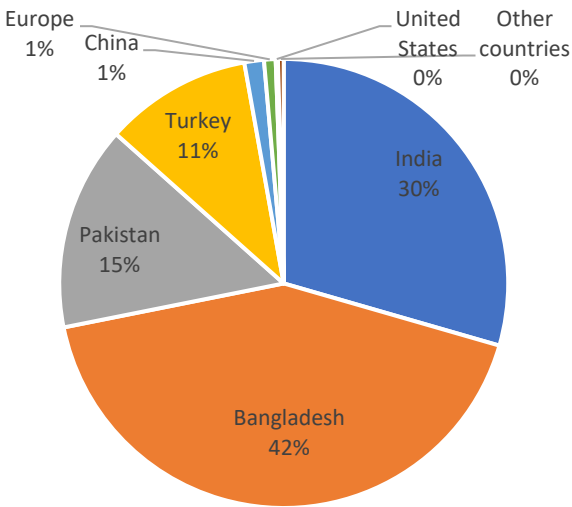


Figure 6: Gross tonnage dismantled by location in 2020. Data retrieved from NGO Shipbreaking Platform

1.3.1 Shipbreaking in Western developed countries

Until the late 1970s, most ship recycling activities took place in Western Europe and in North America (Samiotis et al., 2013). The process was highly mechanized, and it was carried out in dry-dock facilities, in respect of environmental and safety regulations. However, by the 1980s increasingly stringent regulations had increased shipbreaking costs, thus leading shipowners to look elsewhere for more cheaper locations. Soon, first

East Asia (China, Taiwan, South Korea), and later South Asia, became the new global ship recycling centers.

Until 1945, the UK used to have a flourishing shipbreaking industry; however, after the post-WWII ship surplus was corrected, the industry disappeared almost completely, aided also by a reduction in the size of the British merchant navy (Galley, 2014). Today, continental Europe hosts only a couple dozen shipbreaking yards, located mostly in the Baltic Sea and along the Atlantic coast (see Figure 8). Yards in these countries break all types of ships, but they are an especially convenient option for the demolition of fishing vessels: in fact, the Baltic Sea and the North Sea are major fishing areas, and since the ships used for fishing tend to be small, often it is not economically convenient to bring them to far-away yards in Turkey or in Asia.



Figure 9: Shipbreaking yards in Rotterdam, the Netherlands.
Retrieved from <https://www.google.it/maps>

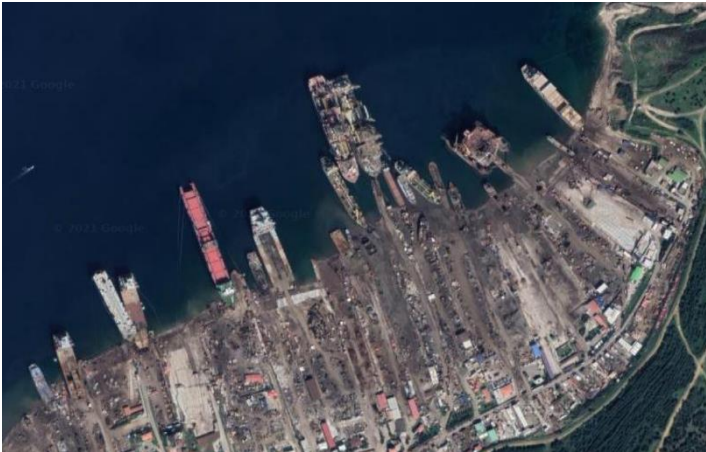


Figure 8: Shipbreaking yards in Aliaga, Turkey.
Retrieved from <https://www.google.it/maps>

The most important shipbreaking location in the Mediterranean Sea is Aliaga, in Western Turkey (see Figure 9); in 2017, the yards in Aliaga were the 5th biggest global providers

of shipbreaking and ship recycling services (Abdullah & Başer, 2017). Informal ship recycling activities in Turkey started between the 1950s and the 1960s but, due to severe environmental damage, all activities were suspended in the early 1970s. Finally, in 1976 the Turkish government established Aliaga as an authorized ship recycling area, and 10 years later, in 1986, the government issued the first industry-specific regulations (Galley, 2014). Today, the Turkish shipbreaking industry employs about 2,000-2,800 workers (Taylan, 2013). Shipbreaking in Turkey is carried out in a safe and environmentally friendly way, as testified by the fact that multiple yards in the area have been included in the European List of Ship Recycling Facilities: this means that these facilities comply both with the 2009 Hong Kong Convention and with the stricter 2013 European Ship Recycling Regulation.

Yards both in Europe and in Turkey are quite small, with 10-100 employees each, and they specialize in demolishing small vessels, high-value ships such as warships (Stopford, 2008), or in very sensitive projects (see the case of Costa Concordia); similarly, in the US as well the local shipbreaking industry demolishes almost exclusively vessels belonging to the US Navy and to the US Maritime Administration (Galley, 2014). The reason why yards in developed Western countries are specialized in demolishing these types of vessels is that, in these regions, labor costs are high, and health, safety and environmental regulations are very strict: as a result, breaking costs in these countries are much higher than in Asia, hence why, in order to operate profitably, these yards cannot offer high prices for end-of-life vessels. Moreover, the demand for scrap steel is also much lower in Europe (compared to South Asia), because the quality of recycled steel is not consistent over time and across batches, hence why its use in civil engineering is not allowed (Terao, 2011). In addition, in developed countries the local market for salvaged furniture and secondhand equipment is virtually nonexistent. For these reasons, it is unlikely that the shipbreaking market will ever move back to Western developed countries, although European lawmakers are making an effort to divert some tonnage to modern and safe yards.

1.3.2 Shipbreaking in East Asia

Compared to the past, today East Asian countries are not very relevant anymore in the global ship recycling industry. Until recently, China used to be among the top 5 shipbreaking countries, but its decision to ban the import of foreign-flagged end-of-life

vessels from 2019 onwards dramatically resized its contribution to global shipbreaking. However, as stated previously, there was a time when East Asia was an undiscussed world leader: in fact, once regulations became too stringent and high costs made it too uneconomical to demolish ships in Western countries, in the 1980s the global center of the shipbreaking industry moved towards East Asia. East Asia became so competitive because countries such as China and Taiwan were undergoing a rapid industrialization process, and as a result of this, they had a large demand for steel, which allowed them to offer higher prices for end-of-life vessels.

East Asian countries, however, did not dominate the shipbreaking market all at the same time. Initially the East Asian industry was located mainly in Japan which, in the mid-1960s, was a global leader in shipbreaking (Mathew, 2021). This is not surprising, considering that Japan was the most industrialized country in the Pacific region at the time, and that the Japanese government was strongly supporting the development of the local maritime industry (Stopford, 2008).

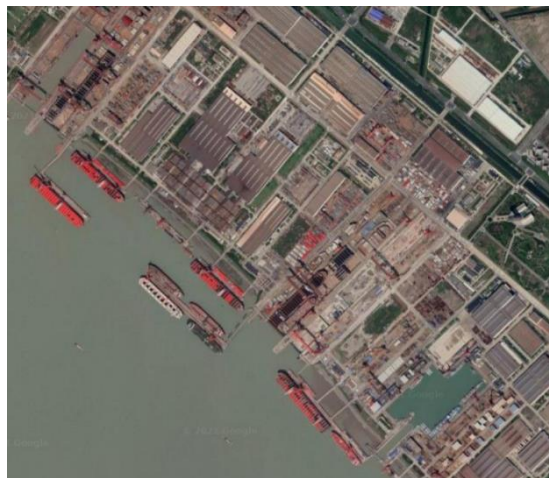
Japan lost its global leadership in ship recycling in the late 1960s; Taiwan took its position and held it all throughout the 1970s and the 1980s (Terao, 2011). While the Taiwanese shipbreaking industry had been existing for many years, it gained actual traction only in the 1970s, when the Taiwanese government started actively supporting ship recycling activities (for instance, in 1973 the Taiwanese Central Bank began to subsidize the purchase of foreign ships for shipbreaking purposes). Moreover, in the 1970s and in the 1980s Taiwan also experienced strong industrialization and a boom in the demand for cheap construction materials (which could be partly satisfied with recycled metals sourced through shipbreaking). It is estimated that, at its peak, the Taiwanese ship recycling industry was employing up to 50,000 people across 117 yards (Terao, 2011), located mostly in Kaohsiung. However, in the late 1980s profits started to decrease, mainly due to a wage increase resulting from an improvement of Taiwan's economic condition; additionally, China had become a serious competitor for shipbreaking activities.

South Korea used to be another major shipbreaking country: in fact, in the 1970s it underwent a rapid industrialization process, and the fast growth of its domestic heavy industries (automotive and shipbuilding in particular) translated into a high demand for

steel. In the 1980s, South Korea was ranked as the third largest shipbreaking country, demolishing 13% of world tonnage (Stopford, 2008). However, by the end of the 1980s, again costs increased (labor costs in particular); as South Korea became a less attractive destination for ship recycling, many yards closed.

Stopford (2008) estimates that, in the 1980s, China, Taiwan and South Korea alone accounted for almost three-quarters of total dismantled tonnage. However, 10 years later, only China remained as a major shipbreaking country, since the industry had died down in the rest of the region. There are multiple reasons for this. First of all, breaking costs had increased to the point that East Asian yards were not the cheapest ones anymore; in particular, labor costs had gone up considerably (International Law and Policy Institute, 2016), and the ever-increasing size of ships forced yards to invest heavily in concrete structures and equipment (Mathew, 2021). Finally, in those years the economies of Taiwan, South Korea and Japan matured, moving towards capital-intensive activities and thus leading to a decreased demand for scrapped steel.

1.3.2.1 *The Chinese shipbreaking industry*



*Figure 10: Shipbreaking yards in the Yangtze River delta area, China.
Retrieved from <https://www.google.it/maps>*

Shipbreaking activities in China are concentrated around the deltas of the Pearl River and of the Yangtze River (see Figure 10). The Chinese shipbreaking industry achieved a substantial size from the 1980s onwards, when China started opening up to the West and the Chinese government adopted several instruments to support the ship recycling industry, such as lower taxes and 6-10-month exemptions from the payment of interests for recycling companies, depending on the size of the ships they were scrapping (Shen & Xing, 2017). As a result of governmental support to shipbreaking activities, the industry

in China grew until, in 1993, it was scrapping half of the world's ships.

However, soon after it reached its historical peak, the Chinese ship recycling industry started to suffer seriously both from the competition of South Asian yards and from high freight rates. As a result, in 2004-2008, many smaller Chinese yards closed down because they did not receive enough ships to make it worthwhile to maintain their expensive infrastructure²², and because they could not offer as much as South Asian yards for end-of-life vessels. The fact is that, since the early 2000s, Chinese recyclers had been investing heavily to modernize their yards, train their personnel and employ state-of-the-art techniques, because they expected environmental regulations to become tighter in the following years. This forecast was correct, but at the end it did not work in favor of China: in fact, Chinese yards kept on being 'ignored' by shipowners in favor of South Asian ones, even after the 2009 Hong Kong Convention (which has not entered into force yet). But then the 2008 crisis happened, and it was a godsend for Chinese yards, to the point that, in 2010, the China Daily called the Chinese shipbreaking industry "a sure money maker", comparing it to "striking gold"²³. However, the China Daily was probably too optimistic: in fact, the bonanza for Chinese yards did not last long.

In an attempt to support the national shipbreaking industry, in 2013 China launched a subsidy program that would pay an additional \$200/ton to Chinese shipowners who chose Chinese yards²⁴. Another benefit of this program was that, since China expected its demand for steel to grow in the following years, encouraging Chinese shipowners to break their ships domestically would promote self-sufficiency, especially considering that China was (and still is) a top shipowning country. This policy was somewhat successful, but it did not offer a long-term solution: in fact, when the rebate program was discontinued in December 2017, many Chinese shipowners went back to choosing South Asian yards.

Today Chinese shipbreaking yards are comparable to Western ones in terms of safety, dismantling practices and waste disposal standards, as confirmed by the fact that many

²² <https://www.ship-technology.com/features/featuremarket-analysis-ship-recycling-in-china-4647125/>

²³ <https://www.ship-technology.com/features/featureis-chinas-shipbreaking-industry-close-to-breaking-point-5654499/>

²⁴ <https://www.ship-technology.com/features/featuremarket-analysis-ship-recycling-in-china-4647125/>

Chinese yards were included in the European List of Ship Recycling Facilities. For this reason, China's decision to ban the import of foreign-flagged vessels starting from January 2019 was heavily criticized by the International Ship Recycling Association (ISRA), which claimed that this decision to "close some of the best recycling facilities in the world" would be "challenging for the ship recycling industry as a whole"²⁵. In fact, many European shipowners had been selling their ships to Chinese yards because, even though they were not as well-paying as South Asian ones, they still offered better rates than European yards for environmentally friendly recycling. Shipowners' associations had already been complaining for years that there were not enough approved green recycling facilities, but now that China has added end-of-life vessels to the list of prohibited imports due to environmental reasons, their worries are even more serious, since many HKC-compliant and EUSRR-compliant facilities are not available anymore.

1.3.3 Shipbreaking in South Asia

From the 1980s onwards, East Asian countries started losing their leadership in shipbreaking, and the global center of the industry moved to South Asia, where it still is to this day. The following factors help explain why (Stopford, 2008; Sarraf et al., 2010; Terao, 2011; Samiotis et al., 2013; Hossain, 2015; International Law and Policy Institute, 2016; Srinivras, 2020):

- Favorable natural conditions such as high tides, long coasts with a gentle slope, and a mild climate.
- Cheap labor due to a large population and a high youth unemployment rate (and this is especially important considering how, unlike ship recycling in the West and in East Asia, shipbreaking in South Asia is a very labor-intensive activity).
- Lax regulatory framework for shipbreaking, protection of the environment and occupational health and safety.
- High demand for steel and for recycled goods in general. Recycling helps reduce the demand for imports (and thus also the need for foreign currency).

²⁵ <https://www.isranetwork.com/nieuws/press-release-isra-statement-recent-development-to-review-the-import-of-to-be-recycled-ships-in-the-peoples-republic-of-china/>

- Closeness to the main trade routes.

The contribution of shipbreaking activities to the economic growth of South Asian countries is significant in terms of employment, tax revenues, and domestic steel production (Srinivras, 2020); this is especially true for the coastal communities where ship recycling takes place.

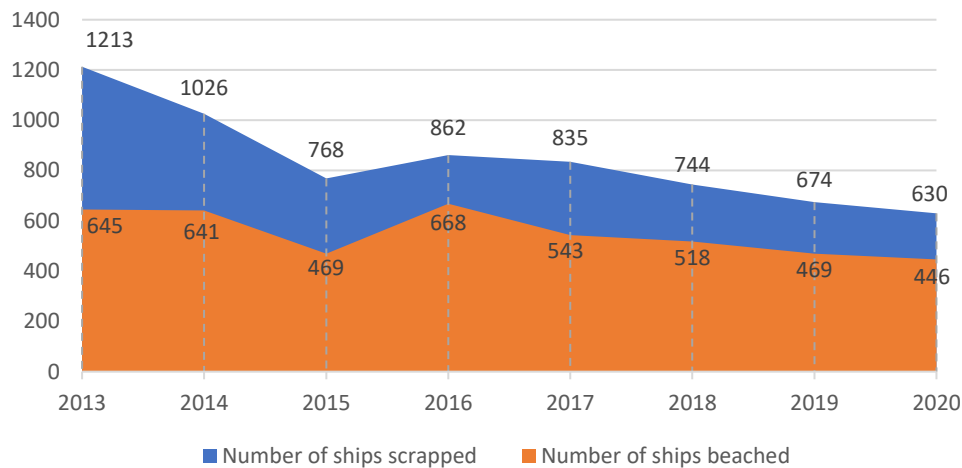


Figure 11: Number of ships beached and/or scrapped in 2013-2020.
Data retrieved from <https://www.offthebeach.org/>

According to NGO Shipbreaking Platform, in 2020 630 ocean-going ships and offshore units were sold to shipbreaking yards; 446 of them were sent to South Asia, amounting to almost 90% of dismantled tonnage²⁶. However, it should be noted that, while South Asia's supremacy in ship recycling is probably not in danger, many South Asian yards have been suffering in the past years (see Figure 11): for instance, in 2015 there was a noticeable drop in the number of ships beached in the Indian subcontinent; some yard owners and recyclers' associations interviewed by Das and Wallis (2015) even said that it was the worst year for shipbreaking in the last 30 years. In that case, most stakeholders thought that the decrease in activity was due to the international market being flooded by cheap Chinese steel, and this explanation makes sense, considering that in 2015 China experienced its slowest growth rate in 25 years (6.9%)²⁷. Slow growth, coupled with a slowdown of the construction industry, generated an oversupply of steel and led China to

²⁶ <https://shipbreakingplatform.org/platform-publishes-list-2020/>

²⁷ <https://www.bbc.com/news/business-35349576>

increase its exports, even selling it to a price which was below the price of recycled steel. As a result, many of the interviewed yard owners claimed that they were getting \$3.6 million less for their ships compared to previous years.

But, besides the slowdown in recycling activities in 2015, it is clear that, in the past years, the number of ships beached in South Asia has been slowly but constantly decreasing. This is generally attributed to the increasingly stringent regulations imposed by the European Union, which are driving many shipowners to choose modern yards in Europe and in Turkey.

1.3.3.1 *The Indian shipbreaking industry*



*Figure 12: Shipbreaking yards in Alang-Sosiya, India.
Retrieved from <https://www.google.it/maps>*

Today ship recycling activities are carried out in various locations along the coast of India, with the most important center being located in Alang-Sosiya (see Figure 12), in the Gujarat Province. The first recorded shipbreaking activities in India started in 1912 in Kolkata and Mumbai (Kumar, 2009), but actual commercial ship recycling began in the 1980s with the breaking of the MV Kota Tenjong (Misra, 2009b). Soon, the pace picked up: starting from only 5 ships broken in Alang in 1982-1983, the numbers reached 51 ships in 1983-1984 and 601 ships in 1991-1992. It must be said, however, that the number of ships broken until the late 1990s on Indian coasts was a lot smaller compared to today (see Figure 13), because China was still a popular destination for shipbreaking.

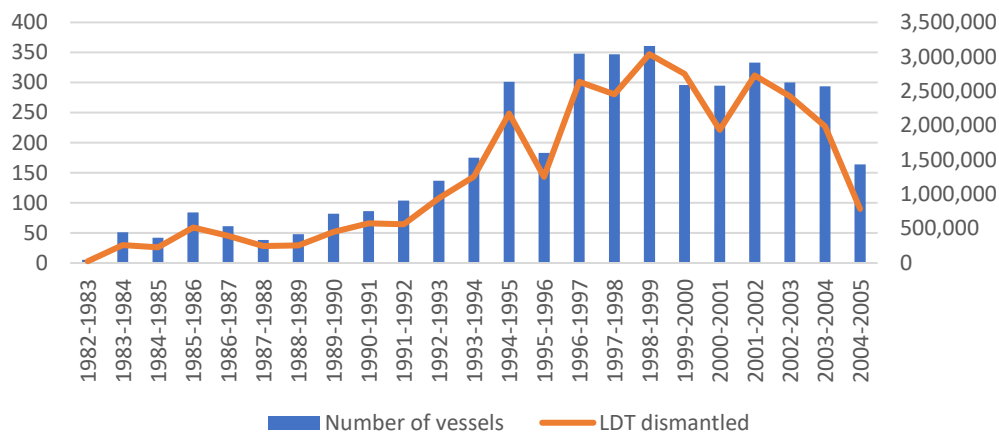


Figure 13: Historical data for ships broken in Alang (India).
Data retrieved from Misra (2009b)

India entered the ship recycling market in the 1980s, and spiked in the late 1990s, when alone it accounted for more than 60% of global dismantled deadweight tonnage. However, soon after that, India started losing market share to Bangladesh and Pakistan, which were more aggressive bidders (Reddy and Manoharan, 2014). In addition, in 2003 the Indian Supreme Court released some guidelines on shipbreaking which increased environmental regulations compared to Pakistan and Bangladesh, which further contributed to undermining India’s leadership position in the South Asian shipbreaking industry.

Shipbreaking in India is monitored and regulated mainly by the Gujarat Maritime Board (GMB), which also owns and leases the plots used for ship recycling activities. Today Alang alone employs 25,000-35,000 out of the 40,000 people directly employed in the whole Indian shipbreaking industry; then, it is estimated that an additional 100,000-300,000 workers are engaged in activities linked to shipbreaking (Reddy and Manoharan, 2014). The Indian ship recycling industry is clearly very important in terms of employment, but also in terms of state revenues and contribution to India’s steel demand: in fact, it is estimated that shipbreaking activities supply up to 7% of such demand²⁸.

In 2021 the Indian Finance Minister and the Ports, Shipping and Waterways Minister announced plans to double India’s ship recycling capacity by 2024, bringing its share in the global shipbreaking market to 50%²⁹. They also claimed that this would create

²⁸ <https://www.sdir.no/en/shipping/vessels/environment/scrapping-of-ships/>

²⁹ <https://economictimes.indiatimes.com/industry/transportation/shipping-/-transport/ship-recycling->

150,000 new jobs, and that the aim of this plan is to ‘capture’ more ships from Europe and Japan. While this is a very ambitious plan, it will not be an easy one to achieve: in fact, the Indian Government is relying mainly on the fact that India has been a member of the Hong Kong Convention since 2019, that it has already implemented the HKC nationally with the 2019 Recycling of Ships Act, and that about 90 Indian yards so far have been certified as HKC-compliant by independent certification bodies. However, the reason why this plan might fail to produce the expected results is that, from 2018 onwards, European shipowners are required to demolish their ships only in yards included in EU-approved yards...but so far, there are no Indian yards on the European List of Ship Recycling Facilities. Considering this, Indian yards are unlikely to attract many European ships, unless they step up to the standards imposed by the European Ship Recycling Regulation (which are more stringent than the ones set by the HKC). Starting from 2016, there have been some lobbying efforts from cash buyers, shipbreakers’ associations and shipowners’ associations to ‘convince’ the EU to include at least some Indian yards in the EU List, but at the moment the relevant European authorities appear determined not to lower their requirements for issuing EUSRR statements of compliance.

1.3.3.2 The Bangladeshi shipbreaking industry



Figure 14: Shipbreaking yards in Chittagong, Bangladesh.
Retrieved from <https://www.google.it/maps>

Shipbreaking activities in Bangladesh are located mainly in the coastal strip between

Sitakunda and Chittagong (see Figure 14). The local shipbreaking industry was born in the early 1960s when, after a violent storm, the Greek cargo ship MD Alpine got stranded in front of Chittagong (Rabbi and Rahman, 2017). After multiple failed attempts to save it, it was sold to the Chittagong Steel House and scrapped on a beach nearby. But a single ship alone was not enough to kickstart the shipbreaking industry in Bangladesh: another important event was the 1971 war between West and East Pakistan (which became modern-day Bangladesh) because, during the war many ships were damaged and abandoned in the waters of the Bay of Bengal and, since they were blocking access to the port of Chittagong, they had to be broken on the local beaches. Finally, when in the 1980s China started adopting stricter health and safety controls, this led many shipowners to look for a new, more convenient location. As a result, over the years ship recycling transformed from a volatile earning opportunity for some businessmen into an actual industry employing tens of thousands of workers.

Shipbreaking is an important source of steel and other metals for Bangladesh, which is poor in iron sources and has a large demand for steel (which can be partly satisfied by feeding re-rolling mills and steel factories with scrap metal salvaged from end-of-life vessels). Scrap metal obtained through shipbreaking is used almost entirely by the domestic construction industry (Sarraf et al., 2010). There is uncertainty about the percentage of Bangladesh's demand for steel covered by shipbreaking, which is thought to range from 50% to 80% depending on sources (Sujauddin et al., 2015; Rabbi and Rahman, 2017; Rizvi and Adekola, 2020). However, even a share as 'low' as 50% is of vital importance: for instance, Hoque and Emran (2016) estimated that, if Bangladesh had to import all the steel it needs, the expense (about \$1.3 billion) would amount to 25% of Bangladesh's 2015 development budget.

Today, the shipbreaking industry is the second most important one in terms of revenues for the Chittagong Division: in fact, this industry alone pays about \$120-\$150 million in taxes, import duties and other fees (Rabbi and Rahman, 2017). However, the ship recycling industry in Bangladesh offers an important contribution also in terms of job creation, because it is estimated to employ around 25,000-30,000 people directly, plus another 250,000 indirectly for recycling and reselling activities (Hoque and Emran, 2016; Norwegian Maritime Authority, 2021). According to the International Law and Policy Institute (2016) and to Rabbi and Rahman (2017), the number of people directly

employed in the shipbreaking industry is even higher – between 40,000 and 50,000 – across 100 registered yards operating in the Sitakunda area. Almost all of these yards are organized in the Bangladesh Ship Breakers and Recyclers Association.

Over the years Chittagong has become one of the major shipbreaking sites, also thanks to the Government of Bangladesh, which designed it as a special economic zone to foster industrialization (Dewan, 2020). Moreover, the Bangladeshi ship recycling industry benefits from the fact that it has lower import customs duties compared to India and Pakistan (Kumar, 2009). However, as both Kutub et al. (2017) and Dewan (2020) noted, the local scrapping industry has been developing too fast and in a chaotic way, and as a result, institutional capacity to monitor and regulate the industry has not been able to increase at the same pace.

1.3.3.3 The Pakistani shipbreaking industry

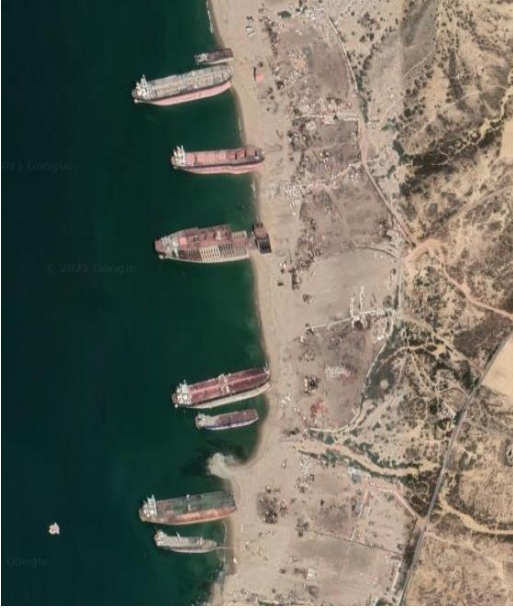


Figure 15: Shipbreaking yards in Gadani, Pakistan. Retrieved from <https://www.google.it/maps>

Ship recycling activities in Pakistan are located mainly on a 12-km-long stretch of coast near the city of Gadani, in the Balochistan Province (see Figure 15). Until the early 1950s, when the first efforts to establish shipbreaking as a steady industry began, Balochistan used to be a sparsely inhabited backcountry area; at the time, most recycling involved small vessels such as barges and fishing boats. The efforts made by a group of local companies worked, and as a result, by the late 1960s the shipbreaking area in Gadani was rapidly expanding. However, the biggest spurt in the industry’s growth took place in the

early 1970s when, after the 1971 Liberation War, Pakistan stopped receiving steel and iron from newly formed Bangladesh; this, coupled with a depreciated local currency, led Pakistan to look for alternative sources of metals to feed its growing domestic demand. Finally, in 1978 the Pakistani Government put in place a set of measures and policies aimed at supporting the national shipbreaking industry: for instance, Gadani beach was recognized as a harbor, import duties were reduced, and efforts were made to improve connectivity between the coast of Gadani and the inland areas (Memon and Zarar, 2016). As a result, by the 1980s Gadani had become the world's largest shipbreaking area, employing more than 30,000 workers and scrapping 1 million tons a year (Kumar, 2009).

According to Kumar (2009), in 2009 the yards in Gadani were employing directly about 5,000 workers, much less than their counterparts in India and Bangladesh, and much less than the 30,000 workers which were employed in the 1980s, at the peak of the Pakistani shipbreaking industry (Sarraf et al., 2010). He attributed this difference to the fact that, compared to the rest of the Indian subcontinent, Pakistan has much higher customs duties, which end up balancing out lower labor costs. For instance, in the early 1990s a 45% customs duty was introduced for end-of-life vessels (Sarraf et al., 2010), and as a result, by the early 2000s the ship recycling industry in Pakistan had almost completely disappeared. Later, lobbying activities carried out by the Pakistan Ship Breakers Association managed to obtain a reduction on taxes and duties, and the industry moderately recovered, but it was already too late: Pakistan has not been able to catch up to India and Bangladesh yet. The fact that Pakistan also experiences frequent power outages due to poor infrastructure is another variable which lowers the productivity of Pakistani scrapyards.

In any case, shipbreaking still remains the largest industry in the Balochistan Province, employing many locals and giving an important contribution through tax revenues to the economic development of the region. According to Memon and Zarar (2016), in Gadani there are about 40 operational plots; most of them are under private ownership, while the rest is owned and operated by the Balochistan Development Authority (Iqbal and Heidegger, 2013).

Chapter 2 – Issues related to shipbreaking activities in the Indian subcontinent

2.1 Pollution and its effects on the environment and the local population

Ships contain many different substances, the disposal of which can take place at different stages of the demolition process (Demaria, 2010):

- Before the vessel is exported. In this case, the procedure is organized by the shipowner, which orders the removal of as many hazardous materials as possible without affecting the ship's seaworthiness. However, while this is the safest solution, it is not common practice, because hazardous waste removal and disposal is very expensive in developed countries.
- Immediately after beaching. The 2009 Hong Kong Convention considers this a happy medium, as long as dismantling takes place in a safe, HKC-compliant yard which has proper facilities for handling and disposing of hazardous materials.
- Dumping. This is the worst option, because hazardous materials are released into the environment without any precaution (for instance, contaminated water is released in the sea, and other dangerous materials are either burnt, stacked somewhere or even buried underground).

The reason why it is so important for yards to enforce a proper waste management system is that ships contain lots of substances which can endanger the health of workers and affect soil composition, marine life, and water and air quality. Some examples of such dangerous chemicals and materials are (Reddy et al., 2006; Basha et al., 2007; Misra, 2009b; Samiotis et al., 2013; Rabbi and Rahman, 2017; Qayum and Zhu, 2018; Yan et al., 2018; Uddin and Islam, 2019; Ferdous et al., 2020; Hasan et al., 2020; Kakar et al., 2020):

- Polycyclic aromatic carbons (PAHs), which are present in oil and gasoline. They are often released when fuel tanks are cleaned and contaminated water is poured back into the sea without any prior treatment. PAHs are highly toxic for birds and sea life, and they are dangerous for workers as well if touched or inhaled, since they can cause eye and airways irritation, blood and liver abnormalities, and

cancer.

- Polychlorinated biphenyls (PCBs), which can be found inside old electrical transformers and paints. Due to their chemical properties, they can persist in soil, air and water for a long time. They increase cancer risk in humans, and they can also damage the nervous, endocrine, reproductive and immune system of animals. Exposure happens not only through breathing and direct contact during recycling operations, but also from eating contaminated fish, crops and animal products.
- Tributyltin (TBT), which is usually found in anti-fouling paints because, since it is a biocide, it stops marine organisms from sticking to the hull (which can lead to increased friction and thus higher fuel consumption). Paints are a major source of pollution because either they are removed prior to cutting with chemical solvents and/or with abrasive methods (which generate dust and particular matter), or because they are left untouched (and generate toxic fumes when they come into contact with acetylene torches during the cutting phase).
- Plastics and microplastics, which are usually present in the form of nylon, polyurethane and polystyrene (inter alia). Ship demolition can cause plastic fragments to accumulate in the sand in the intertidal zones where scrapping operations take place; high tides then will carry these fragments in the open sea, and they will enter into the food chain through marine animals.
- Asbestos, which is frequently used onboard ships as insulation material in engine rooms and inside partition walls (plus inside floor tiles and cables). When shipbreaking workers start dismantling a ship, carcinogenic asbestos fibers can be inhaled by the workers and even stick to their clothes. Since safe asbestos disposal is expensive and requires yards to have appropriate facilities and follow strict procedures, often yards simply grind manually asbestos recovered from ships into a fine powder which is then resold in the secondhand shops close to the yard to be used for insulating cold storage and for air conditioning systems (Muralidhar et al., 2017; Rabbi and Rahman, 2017).
- Various types of oils and sludges can be found in fuel tanks, in hydraulic systems and in pipes all over ships. If not handled properly, they can spill into the sea and endanger fish, marine microorganisms, plants and birds.
- Bacteria and other exotic microorganisms can be found in bilge water and in ballast water, so releasing it in the sea without prior treatments can damage

marine biodiversity and introduce invasive species. Bilge water in particular often contains piping leaks as well, and therefore it can be contaminated with PCBs, solvents and other dangerous substances.

- Heavy metals (mercury, arsenic, lead, chrome, copper, zinc, etc.) can also deposit on the sand and on other surfaces and either be carried away by the tide to the sea, or be resuspended in the air and carried away by the wind, thus causing air pollution both in the yards and in the neighboring villages. Unsurprisingly, a study by Hasan et al. (2020) found high metal concentrations in various foods and agricultural crops consumed by local villagers.

One reason explaining why so many ships arrive in South Asian yards still filled with hazardous substances is that most of them are beached under their own power (Andersen, 2001), rather than being towed. Basically, in order to be able to run the ship aground, the ship must reach the yard while still functional, but, if it has to remain functional, then many hazardous substances and materials onboard cannot be removed without impairing its seaworthiness. All of this is possible also because the 1989 Basel Convention is difficult to be enforced with regard to shipbreaking, and the more stringent 1995 Basel Ban Amendment has not entered into force yet due to a low ratification rate.

Nowadays some of the aforementioned substances and compounds have been banned thanks to scientific research and a higher level of environmental consciousness. However, most of the ships which are being demolished now are at least 20 years old, so they are quite safe. Furthermore, the problem with many pollutants is that, in some cases, traces can be found even after a long time (heavy metals, in particular, are non-degradable). As a result, the local environment and the animals and the people living close to the yards suffer from the effects of pollution generated by shipbreaking activities.

For instance, the intertidal zone of Alang-Sosiya used to be covered in mangroves, but they have disappeared a long time ago due to the pollution generated by ship recycling activities (Muhibbullah et al., 2014). The expansion of the shipbreaking industry in the Indian subcontinent has also brought on deforestation: for example, in 1989 yards in Sitakunda (Bangladesh) covered an area of 367 hectares, but by 2010 they had expanded to 1,133 hectares, covering 12.78 km of beach (compared to 3.45 km in 1989). Today the Sitakunda recycling area stretches across 19 km of coast: much of this expansion took

place at the expense of agricultural land and forests (Qayum and Zhu, 2018). As a result of deforestation, many animal species in South Asian coastal areas are endangered or have already disappeared (Muhibbullah et al., 2014).

Marine life as well has been affected by shipbreaking activities: in fact, many local fishers reported that the quantity of fish has decreased, as well as their size and variety (Muhibbullah et al., 2014; Kutub et al., 2017; Dewan, 2020), to the point that some fishers had to emigrate. Fishing is important not only for the economic livelihood of coastal villages: people are also eating seafood which comes from highly contaminated areas. In fact, when toxic chemicals and materials are released in the water, they can bioaccumulate in microorganisms and marine animals through diet exposure and contact exposure; their predators are also affected, and in this way, pollutants travel up the food chain until they reach humans (Kakar et al., 2020).

Moreover, Sahu (2019) found out that 45% of shipbreaking workers did not have access to toilets in the yards where they worked. While the Gujarat Maritime Board has built 7 toilets in the yards in Alang-Sosiya, they are clearly not enough for all the workers employed in the local yards. As a result of lack of adequate sanitation facilities for workers, biological waste and the bacteria in it have made both the water and the surrounding land unsafe due to pathogenic and non-pathogenic bacteria (Ahamad et al., 2021). Besides seawater, groundwater is also heavily contaminated due to ship recycling activities and poor waste management: for instance, local villagers reported that they had to abandon some wells because they were too polluted or because they had run dry due to overexploitation of water by the yards (Kutub et al., 2017; Dewan, 2020). Water pollution and high salinity also help explain an increase in the incidence of kidney diseases among local villagers (Demaria, 2010).

Cutting ships' steel plates generates dust and smoke, which contribute both to marine pollution and to atmospheric pollution. Additionally, sometimes yards burn hazardous substances and, as a result, many villagers suffer from skin and respiratory issues due to low air quality (Muhibbullah et al., 2014). Also, when salvaged steel is taken to re-rolling mills to be melted and recycled, often it still bears traces of paints; these make furnace emissions toxic (Sarraf et al., 2010), they can cause acid rains and, when the dust deposits on crops, it poisons them (Dewan, 2020).

Shipbreaking generates soil pollution as well: for example, when pieces of steel are too heavy to be carried by the workers, winches are used, which means that contaminated steel is dragged over the intertidal zone and the beach. Soil pollution is a problem even outside the yards, though: in fact, farmers from villages close to the yards reported that waste is often dumped in fields used for farming, and that the quantity and size of crops has decreased (Muhibbullah et al., 2014). Some locals also claimed that their cattle had died after eating waste which had been dumped on land used for grazing (Demaria, 2010).

India carries out regular environmental monitoring activities through the Central Pollution Control Board, but Bangladesh, for example, does not have a sampling program for testing the soil, the air and the water (Dewan, 2020), and therefore it is difficult to identify and track changes. India is slightly more advanced in terms of waste management as well: in fact, starting from 2005-2006, the Gujarat Maritime Board (which supervises activities in Alang) has built multiple landfills, which have been assigned to various approved waste management operators. According to a 2019 report by the European Community Shipowners' Association (ECSA), some state-of-the-art yards in Alang have even built their own asbestos-handling rooms; all the remaining yards visited by the ECSA used the waste management facilities provided by the Gujarat Maritime Board. The point is that the recycling facilities surveyed by the ECSA do not accurately represent the average Indian yard. In fact, even though – as already stated – the situation in India is slightly better compared to Pakistan and Bangladesh, the ECSA only visited HKC-compliant yards; these are, by definition, the most advanced ones, and even the ECSA recognized it. In other words, there are many more other yards which really do not operate at the same standard as the ones checked by the ECSA. Unsurprisingly, Singh et al. (2017) found out that it is not unusual for yards to dispose of asbestos and glass wool by just discarding them in the surrounding areas.

Back in 2016 the ECSA had published another report, which NGO Shipbreaking Platform heavily criticized, calling it “a promotion brochure for the Indian beaching yards”³⁰ and

³⁰ <https://shipbreakingplatform.org/platform-news-ecsa-alang-report-turns-a-blind-eye-on-problems-of-beaching-method/>

stating that the ECSA was simply attempting to 'greenwash' beaching because it was the most convenient practice for shipowners. The same could probably be said for the 2019 report. It is also telling that the ECSA report is based only on information provided by yard owners (workers and trade unions were not interviewed), that the yards have been selected carefully (only HKC-compliant yards were visited), and that the surveys were conducted by an organization which has a clear interest in defending the status quo.

For instance, the 2019 ECSA report claims that "safe and environmentally sound recycling operations can take place sustainably in intertidal zones", but this ignores multiple facts: oil spills cannot be contained if breaking does not occur in an enclosed area, contact of steel plates with seawater and sand can be avoided only by not letting the plates fall (but this is expensive because it requires many cranes and concrete structures which are not present in most yards), and cutting generates debris and dust which eventually will still mix with the sand and the seawater.

2.2 Violations of workers' rights

First of all, it should be noted that basic rights are laid out in the Constitution and/or in the national laws of India, Pakistan and Bangladesh. However, reality is quite different. Workers' rights violations are often hard to identify and quantify, since a lot of workers are not formally tied to any shipyard through a valid, legal contract; the fact that 93% of workers are temporary (Bhuiyan and Hassan, 2018) does not help. This also means that it is extremely difficult for workers to claim their rights, because they have no proof of employment (IndustriAll, 2013; Dewan, 2020). Overall, shipbreaking workers' bargaining power is very low and workers who join trade unions are not protected enough from discrimination: as a result, working conditions in South Asian scrapyards have not improved much in the past 10-15 years.

Most yard workers come from remote rural areas, where they used to live in poverty; many of them are also illiterate (Sahu, 2014; Kutub et al., 2017). Even though the shipbreaking industry is known to be extremely dangerous, these farmers were attracted to it because they could earn a lot more compared to agricultural work, and because getting a job in ship recycling is easy even without any qualification or previous experience. However, this does not mean that the job is well-paid: in fact, most shipbreaking yard workers in Bangladesh earn between \$3 and \$5 a day (Sahu, 2014;

Chowdhury, 2019), often with no overtime allowance (Rabbi and Rahman, 2017). This data is supported by a survey by Ahamad et al. (2021), who found that most Bangladeshi shipbreaking workers earn between \$832 and \$951 a year. Similar results were found by Memon and Zarar (2016), showing that even in Pakistan most shipbreakers are not paid a living wage.

In 2018 Bangladesh established a minimum monthly wage for shipbreaking workers of at least 16,000 takas (about \$186)³¹, but, according to many workers and trade unions, yard owners are reluctant to implement it: in fact, yard owners rely on the lack of strong trade union movements, on the slowness of the Bangladeshi legal system and on the fact that, so far, no yard owner has been imprisoned due to noncompliance with national labor laws. The Bangladesh Ship Breakers and Recyclers Association explained the point of view of yard owners by claiming that, since most yards are active only temporarily, it would be impossible for all the yards to implement a minimum wage. While this criticism is not entirely invalid, it glosses over the fact that, since most yard workers are temporary anyway and are hired only when there is a ship to dismantle, yard owners would have to pay them only when they are actively working.

Most workers in Bangladesh have to get their own accommodation; as a consequence of their low wages, they often end up living in shared dormitories near the yards which are crowded and lack basic features such as running water or electricity (Muhibbullah et al., 2014; Kutub et al., 2017). The situation is slightly better in Pakistan, where most workers live in accommodations provided by the yard owners; however, lack of potable water and sanitation facilities remain a problem (Memon and Zarar, 2016). In India, the Supreme Court ordered yard owners to provide accommodation to their employees, but according to Sahu (2019), in 2018 the residential facilities provided by the yard owners could house up to 1,000 workers, which is clearly not enough for all the shipbreaking workers in the Alang-Sosiya area. In 2019 the ECSA reported that housing facilities were being built in Alang, and that they would be able to accommodate up to 6,000 workers (ECSA, 2019).

³¹ <https://www.dhakatribune.com/business/2019/12/25/ship-breaking-industry-minimum-wage-still-a-far-cry>

Considering that yards in Alang-Sosiya are estimated to employ at least 25,000 workers and that most of them are migrants, many more residential facilities will have to be built in order to provide every employee with housing as required by domestic laws.

The working conditions inside shipbreaking yards are not only poor, because often they are also noncompliant with respect to national regulations: for instance, the Bangladesh Labour Code states that workers are not allowed to work more than 8 hours a day and that they are entitled to one rest day a week (plus paid leave and holidays), but most shipbreakers work at least 10-12 hours a day (Ahamad et al., 2021) and have only half a day of unpaid rest on Friday afternoon. Shipbreaking yard workers cannot enjoy paid leaves ('no work no pay') and, if for some reason they do not show up to work for a couple days, in the absence of a written contract, yard owners can lay them off and replace them with a new recruit (Misra, 2009a; Muralidhar et al., 2017).

Despite the dangerousness of the ship recycling industry (or perhaps because of it), most workers are uninsured against work-related accidents (Sahu, 2014; Dewan, 2020). The situation in India appears to be slightly better: for instance, shipbreaking workers in Alang are insured, as required by the GMB (Kumar, 2009), but still, it can be difficult for them to claim their insurance payouts (especially because many workers are not aware of their own rights). The treatment received in case of accident depends on yard management: some yards provide initial emergency medical support, while other yards only offer transport to the nearest hospital. In some cases, yard owners pay for up to 50% of the treatment, while in other cases workers have to pay entirely for the treatment of work-related injuries. According to Sahu (2019), only 30% of interviewed workers were paid when on leave due to injuries; another 53% did not receive any money at all (neither wages nor compensation), and the remaining 17% went back to work immediately because they were afraid of losing their job and they absolutely needed money. In case of serious, debilitating injuries, workers are usually laid off after the accident and sent back to their village home (Kutub et al., 2017; Chowdhury, 2019), where their families are left to deal with the consequences. In some cases, families manage to receive a small compensation after involving the local media and NGOs, but it is usually not enough to provide for the injured worker and his family, and sometimes the compensation is not enough even to cover medical expenses, thus leading the families of injured workers deep in debt.

In case of fatal accidents, compensation to the families of deceased workers is not always granted (Misra, 2009a; Rabbi and Rahman, 2017; Dewan, 2020), because often yards try to cover up accidents by not reporting them, by telling families that the deceased worker was not working there, or by simply recording some workers as ‘disappeared’ (Greenpeace & FIDH, 2005). Again, sometimes involving the media and NGOs helps families get some sort of compensation, but not everyone has the resources or the knowledge to do this: it should not be necessary to go to such lengths in order to receive compensation for the death of a family member. The point is that, in the eyes of the yard owners who should be paying for these accidents, the *workers* are the ones at fault. As one yard owner in Chittagong (Bangladesh) said in an interview: “They have accidents because of their own stupidity. Sometimes they have minor injuries, and we have to pay for it”³².

Over the years there have been some attempts at unionization, but with limited results. For instance, in 2009 shipbreaking workers in Gadani (Pakistan) formed a union and even managed to obtain a 40% wage increase and overall better working conditions. However, it has also been reported that later a rival union was created by workers loyal to the yard owners to impede any effective action from the ‘legitimate’ trade union (Sarraf et al., 2010). In general, while workers of India, Pakistan and Bangladesh theoretically have the right to form and join unions, multiple complaints have been filed over the years to the ILO regarding anti-union violence and discrimination. In general, many shipbreaking workers have stated that there is no real freedom of association and that unions do not really care about their problems and protect the interests of yard owners instead (Sahu, 2014; Chowdhury, 2019).

The risks for shipbreaking workers are not only physical, though: many of them also suffer psychologically due to long working hours, stress, poverty and hostile atmosphere on the job (Samiotis et al., 2013). Long working hours, poor health and poverty also make it difficult for workers to enjoy leisure time. The poor working conditions inside shipbreaking yards are especially hard on children, who are even more vulnerable to

³² <https://opinion.bdnews24.com/2010/01/06/a-two-day-visa/>

accidents and illnesses due to their lack of physical strength and young age. And, just like adult workers, even children are subject to harassment and threats: for instance, many of the children interviewed by Chowdhury (2019) stated that they had not been paid or that they had been beaten by their supervisors when they were unable to work at the same pace as adult workers.

Bangladesh's 2006 Labour Act prohibits the employment of children and adolescents (Paragraph 34), unless they are at least 12 years old and the work is light enough not to interfere with their health, development and education. In addition, Bangladesh, India and Pakistan have all ratified the 1999 ILO Worst Forms of Child Labour Convention: shipbreaking can clearly be considered as one of the worst forms of child labor under Article 3 ("Work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children"). However, field investigations over the years revealed that, even though the situation has improved, child labor is still a reality in many yards.

The first field investigations on child labor were conducted by FIDH in 2000, 2002 and 2005. In a 2008 investigation, FIDH found out that up to 25% of the workforce in shipbreaking yards was made of children as young as 10; since these children were too young to work legally, they did not have a labor contract and, as a result, they had even less rights compared to adult workers (even in terms of salary). FIDH interviewed more than 50 children, but most of the adults involved in the ship recycling industry they spoke with either ignored or straight-out denied the use of child labor.

Later, in 2018, Bhuiyan and Hassan (2018) conducted a new field study, during which they found out that 20% of workers were below 18 years of age; however, they did not provide any specific age range. New studies undertaken in 2019 by Chowdhury showed that, even though child labor is still an issue, the situation has improved: in fact, most young workers were aged 15-17, and none of them was younger than 15. Overall, it is believed that, thanks to media reporting and NGO awareness-raising activities, governmental agencies started monitoring shipbreaking yards more closely, while yard owners became more worried about reputational damage and possible litigations. In 2018 the Bangladesh Ship Breakers Association also stepped in, asking its members not to employ children and adolescents; after this event, many yards reportedly started

asking new employees to submit their ID card or a birth registration certificate to prove their age. However, the overall percentage of child laborers is still around 13%, and an alarming trend was identified (Chowdhury, 2019): while in 2008 almost no children worked during nightshifts, in 2019 the percentage of children had risen to 20% of the workforce (compared to 6% during the day). This suggests that yard owners might employ children at night to circumvent inspections (which usually take place during the day).

The reason why child labor is still relatively common in Bangladesh is that, due to poverty, it is 'socially accepted' by many families who cannot support their children unless they work (for example because they are heavily indebted, or because they lost a family member, or they lost their belongings in a natural disaster). Bangladesh has a Compulsory Primary Education Program, but sending children to school is still very expensive for families living in rural areas (for instance, transportation and uniforms are not covered by the Program), hence why it is not enough to eradicate child labor. This is further confirmed by the fact that, in 2019, more than 70% of the adolescent yard workers interviewed had not gone beyond 5th grade (Chowdhury, 2019). It is not surprising to learn that workers' rights violations are so common, though: in fact, according to data collected by Bhuiyan and Hassan (2018), 61% of the shipyard workers interviewed had never witnessed any government inspector at their workplace, and even those who had actually encountered them claimed that inspections were quite infrequent.

2.3 Safety on the job

According to the International Labour Organization, shipbreaking is one of the most hazardous occupations (ILO, 2004). A survey study by Ahamad et al. (2021) found that about 60% of the workers interviewed had been injured at least once; Sahu (2019) reported similar results (52% of the workers interviewed had been injured in 2018-2019). According to another field study of ship recycling yards in the Sitakunda area conducted in 2011-2012 by Muhibbullah et al. (2014), a very high percentage of respondents (between 70% and 87%, depending on the yard) felt that shipbreaking had a serious impact on their health.

One major reason behind all these accidents occurring in yards is poor training. In fact, in many cases the workers do not receive any formal training, and they are just taught the

basics by more experienced workers (Sahu, 2014; Muralidhar et al., 2017; Uddin and Islam, 2019); this holds true even for jobs which would normally require a certificate, such as welding and operating heavy machinery. Lack of training also means that most workers do not fully understand how dangerous their job is. Unfortunately, lack of training remains an issue even in those yards which do actually offer training: in fact, usually the yard owners choose which workers can participate in training courses and, as expected, they almost exclusively choose permanent, skilled workers (Gunbeyaz et al., 2019), which are only a small minority of the total workforce employed in shipbreaking yards. Additionally, most training is one-off, so refreshing courses and continuing education are not offered. On the other hand, it should be noted that in India, where the situation is admittedly better compared to Bangladesh and Pakistan, in 2005 the GMB opened a training center in Alang. The basic compulsory course lasts 12 days and covers issues such as hazard identification, use of PPE, safe handling of equipment and materials, firefighting, first aid, and so on. A 3-day refresher course on safety is also available³³, but it is not compulsory.

The rudimentary techniques and equipment used for dismantling ships contribute to increasing the dangerousness of shipbreaking. For instance, the lack of concrete surfaces in many yards hinders the use of cranes for lifting heavy objects; therefore, workers often have to lift and carry these items barehanded, and they suffer from articular issues as a result (Ahamad et al., 2021). Additionally, the problem with scrapping in intertidal zones rather than on solid surfaces is that sand can shift under the weight of the ships, thus causing crushing accidents. Moreover, in many cases lifting and cutting equipment is not tested regularly, and often workers use chains, ropes and other equipment they salvaged from ships (Uddin & Islam, 2019), which might not be in mint condition.

Shipbreaking is a dangerous activity in itself, but often shipbreakers even start working on a ship without a prior plan (Uddin and Islam, 2019), and this makes things worse due to a lack of coordination among teams working on the same vessel. As a result, often steel plates are dropped from the ship without any warning, thus leading to frequent injuries.

³³ https://www.gmsinc.net/gms_new/index.php/blog-details?rowId=82

According to Ferdous et al. (2020), impact due to the fall of heavy objects is the most frequent cause of accidents in the shipbreaking industry.

When it comes to personal protective equipment (PPE), there are differences across shipyards. For example, Ahamad et al. (2021) interviewed workers in two different yards in Bangladesh and found that about 40% of them did not wear any type of PPE. On the other hand, some yards provide only reconditioned gloves, boots and helmets, which however is still not enough for most ship recycling activities (Kutub et al., 2017; Dewan, 2020); moreover, workers are rarely trained on how to use and wear PPE (Gunbeyaz et al., 2019). More hazard-specific equipment must be bought by the workers themselves, but they cannot always afford it (for instance, many workers reportedly spent the first weeks working in regular clothes and bought protective equipment only after they got their first salary). PPE is often sold in shops near the yards, because it comes straight from the ships dismantled there. Yard owners could distribute that equipment to their own workers for free, but many decide to sell it instead, so they can earn money from it (Dao, 2008). Some yard owners even go as far as distributing protective equipment to workers only before inspections, asking them to give the equipment back at the end of the visits (Sahu, 2014; Chowdhury, 2019).

Even in Indian yards, where workers have received at least some basic training and it is mandatory for yards owners to provide PPE, many workers were not wearing PPE because they complained that it was too hot and humid to use (Kumar, 2009). In fact, shipbreakers work all day in high temperatures and under the sun, and many of them do not even have access to safe drinking water (IndustriAll, 2013; Kutub et al., 2017). Moreover, low salaries mean that most workers can afford to eat only rice and vegetables, so many of them are malnourished (Ahamad et al., 2021) and therefore more exposed to occupational diseases and accidents. Poor hygienic conditions inside shipbreaking yards then contribute to spreading infectious diseases such as tuberculosis, malaria and hepatitis (Samiotis et al., 2013).

Ensuring that all workers are provided with appropriate PPE would improve the safety and wellbeing of workers in multiple ways, because:

- The flames of gas torches and the iron sparks generated during cutting operations can irritate the eyes of workers and damage their vision (Haque, 2016), unless

appropriate goggles are used.

- Ear protectors and earplugs would reduce the damage caused by prolonged exposure to loud noises (Uddin and Islam, 2019).
- Gloves and protective suits would help reduce the incidence of skin diseases by preventing skin contact with toxic, irritating substances. According to Sikder et al. (2016), 47.8% of shipbreaking workers suffer from at least one form of skin disease, with contact dermatitis and accidental cuts and burns being the most frequent ones (19.4% and 15.8% of workers respectively). Surveys conducted by Memon and Zarar (2016) and by Ahamad et al. (2021) confirmed that skin problems are quite common among shipbreaking workers.
- Solid foam is used in the hull of ships because it is lightweight and insulating at the same time. However, since it bonds very closely with the steel, the only way to remove it from a ship is to flame cut it away. This operation causes workers to breathe in multiple toxic substances such as formaldehyde and hydrogen cyanide (Yan et al., 2018). Cutting operations in general expose the workers to toxic fumes, dust and potentially carcinogenic PAHs, which are released when fire enters into contact with paint-coated steel plates (Samiotis et al., 2013). Using masks and breathing apparatuses would help prevent breathing issues, nausea, headache, cough and many other ailments (Misra, 2009a; Uddin and Islam, 2019).

Asbestos is especially dangerous if it is not disposed of properly, because its fibers can remain suspended in the air for a long time and they can stick to the clothes of workers, thus endangering even the people who come into contact with them. Since asbestos is present in large quantities aboard ships due to its insulating and fire-resistant properties, shipyard workers are very susceptible to illnesses caused by the inhalation of asbestos fibers, such as lung cancer, asbestosis and mesothelioma (Rabbi and Rahman, 2017; Qayum and Zhu, 2018; Singh et al., 2020). This is further confirmed by data collected from Muralidhar et al. (2017): 35% of the workers who had been tested were suffering from asbestosis. The risk would definitely be lower if all workers had access to proper face masks and asbestos suits.

Proper storage of the asbestos retrieved from ships would help as well: in fact, according to a field study in Alang shipbreaking yards by Singh et al. (2017), most asbestos and glass wool are stored unpackaged and unlabeled (which is the complete opposite of

environmentally sound waste management). The ‘right way’ to remove asbestos would be to use the ‘wrap and cut method’ while keeping the fibers wet at all times to minimize their release, and then bagging the removed asbestos and disposing of it in authorized landfills with dampened cells or trenches (Gregson et al., 2010); the techniques used in most South Asian yards are not sophisticated enough to grant a safe disposal, though.

As explained in Chapter 2.1, ships also contain many other toxic elements such as lead, mercury, asbestos, PCBs, TBTs and other heavy metals and chemicals. As a result, shipbreaking workers have been found to have a higher-than-average risk of mortality from all types of cancer and liver cirrhosis, especially if they spent more than 7 years in the industry and if they worked as flame cutters (Wu et al., 2013).

According to Ferdous et al. (2020), slip and trip hazards are the second most common type of accident, because often workers operate on slippery surfaces and in poorly lit areas; then, fire hazards are the third most common type of accident. Over the years there have been multiple fatal explosions because workers started flame cutting ships which had not been cleaned properly or which had not been aired out well enough (Haque, 2016; Uddin and Islam, 2019). An infamous example is an accident which took place in Gadani, Pakistan, in November 2016. Workers were dismantling the tanker Aces, which had not been pre-cleaned thoroughly; it is estimated that the resulting explosion killed 31 workers and injured another 58³⁴. Shipbreaking workers and the Pakistan National Trade Union Federation went on strike and organized some rallies to raise awareness of poor working conditions in the local yards. However, after a temporary halt on ship recycling activities to inspect the yards, the Pakistani government was pressured by yard owners’ associations to allow them to resume activities³⁵. So, one year after the accident, workers went back to working on the Aces; however, the ship had not been cleaned from oil residues in the meantime, and another fire broke out. This accident clearly shows the poor

³⁴ <https://shipbreakingplatform.org/press-release-one-year-later-and-no-lessons-learned-at-gadani-as-aces-is-set-aflame-again/>

³⁵

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiK9tO6gLT0AhWCCuwKHxK_DkkQFnoECAoQAQ&url=https%3A%2F%2Fwww.gmsinc.net%2Fgms_net%2Fassets%2Fpdf%2F2017-02-20zYw_org.pdf&usg=AOvVaw3v2xqsGALV4DP1SD3BASsa

regard that yard owners have for their employees, but it also exemplifies why Pakistan is the most popular destination for scrapping tankers (Knapp et al., 2008; Iqbal and Heidegger, 2013): if even the Pakistani government does not take workers’ safety seriously, it would be ‘absurd’ to expect yards to do so.

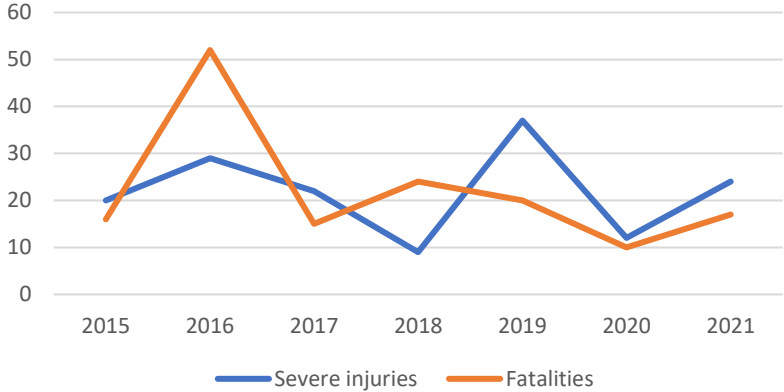


Figure 16: Fatalities and serious injuries in South Asian shipbreaking yards in 2015-2021. Data retrieved from NGO Shipbreaking Platform’s annual and quarterly updates

Official statistics on fatalities and injuries in the shipbreaking industry have not been made public by any major shipbreaking country. NGO Shipbreaking Platform does report this kind of information, but it is not entirely reliable, since it is gathered from multiple non-governmental sources (such as local media, trade unions, etc.); therefore, in its quarterly and annual updates, NGO Shipbreaking Platform tends to err on the cautious side (see Figure 16). However, NGO Shipbreaking Platform’s less conservative estimates report that 407 workers died in South Asian shipbreaking yards since 2009; these larger estimates also consider the fact that many accidents are not reported because the workers involved did not have an actual employment contract. On the other hand, the Bangladeshi NGO Young Power in Social Action (YPSA) estimated 216 fatalities in Bangladeshi yards for the period 2005-2020³⁶. Kutub et al. (2017) agreed that it is difficult to get an accurate picture of accidents in shipbreaking yards, because many yards do not keep any official statistics on deaths and accidents and do not report them to the government.

According to findings by Sahu (2019), in India 60% of shipbreaking workers were aware of the presence of first-aid, functional equipment in their yard; however, an alarming 11%

³⁶ <https://ypsa.org/2020/12/on-world-human-rights-day-2020-ypsa-appealed-for-safety-in-all-ship-breaking-yards/>

of workers said that, while their yard had a first-aid box, it was only for show. As for medical facilities, usually the ones close to the yards (if present at all) have low capacity and are unable to treat serious injuries (Rabbi and Rahman, 2017). In multiple cases, it has been reported that, while medical facilities were present on site, there were not any doctors on duty (IndustriAll, 2013; Bhuiyan and Hassan, 2018). This despite the fact that major hospitals often are far away from the yards: for example, it can take up to an hour for an ambulance to reach Alang-Sosiya (ECSA, 2019), and the closest fully equipped hospital to the Gadani yards is 50 kilometers away (IndustriAll, 2013). The inability to receive appropriate medical treatment quickly often makes injuries worse and can even cause injured workers to die. A visit made by the ECSA in Alang-Sosiya in 2019 found that two yards had even bought their own ambulances, but more ambulances would be needed to cover all the yards in the area.

As for occupational diseases, most yards in Bangladesh and Pakistan do not have any screening program in place to check the health of workers (Singh et al., 2020). However, there has been some progress in India: in fact, the Indian Red Cross is operating a mobile health unit for driving yard workers to medical facilities for monthly health check-ups (Sahu, 2019), which are mandatory according to Indian labor law.

2.4 The role of flags of convenience

According to the United Nations Convention on the Law of the Sea (UNCLOS), every ship must have a nationality (Article 91); this nationality is acquired through registration in the flag State's register, according to conditions which are fixed by the flag State itself. Moreover, according to Article 94 of the UNCLOS, every flag State has a duty to "effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag". Some examples of such activities are maintaining a register of ships, inspecting ships to verify their seaworthiness, checking the certifications and knowledge of crews, and all the other activities needed to ensure the protection of the environment and of the safety of seafarers.

Since ships fall under the regulatory control of their flag State, shipowners choose countries of registration very carefully. In fact, while the UNCLOS imposes a general duty on flag States to enforce all the applicable international standards and laws, not all flag States are the same in terms of rights and obligations. Indeed, there are actual lists of flag

States which are known to implement international regulations poorly. Based on factors such as requirements for registration, law enforcement performance and applicable laws, ship registers can be grouped into three categories:

- Closed registers, also known as ‘traditional registers’ or ‘national registers’.
- Open registers, also known as ‘international registers’ or ‘flags of convenience’ (FOCs).
- Second registers, also known as ‘offshore registers’ or ‘quasi-national flags’.

Closed registers are usually operated directly by the maritime administration of traditional maritime nations (such as the United Kingdom, Italy, the Netherlands, or Norway) and by some developing countries (for example Ghana, the Maldives, Papua New Guinea, or Nicaragua). Traditional flag States are also called ‘national flag States’ because they have strict requirements for ship registration: usually, they will at least require shipowners to be nationals of that State and to manage the ship through a company legally based and active in that State. Then, some traditional flag States even require a certain percentage of senior officers and/or of the crew to be a national (Mansell, 2009).

However, for shipowners, registration under their own country’s flag is not an obvious choice. The main reason is that traditional flag States usually have ratified a large number of international conventions and have strict national environmental laws and labor laws; also, all traditional flag States appear in the Paris Memorandum of Understanding (Memorandum of Understanding) on Port State Control’s whitelist³⁷, meaning that they have a good law enforcement performance. Complying with strict requirements is expensive for shipowners, but, if they are registered under a closed register, compliance is not a choice: in fact, whitelisted countries under the Paris Memorandum of Understanding carry out frequent inspections and take action against below-standard vessels (for example by refusing entrance into their country’s ports, or by detaining them). In many cases, flying flags of convenience is a lot more economically advantageous for shipowners, both during the service life of ships and at the time of disposal. Despite

³⁷ <https://www.parismou.org/detentions-banning/white-grey-and-black-list>

this, some shipowners still prefer to keep at least part of their fleet registered under a closed register: usually trade routes have a large impact on this decision, but many shipowners also consider the reputational risk of being outed as a company involved in shady practices.

Bergstrand (1983) offers one of the most complete definitions of FOCs: “A flag of a state whose government sees registration not as a procedure necessary in order to impose sovereignty and hence control over its shipping, but as a service which can be sold to foreign ship owners wishing to escape the fiscal or other consequences of registration under their own flags”. In other words, FOC States are simply selling the right to use their flag, as shown by the fact that, unlike closed registers, many open registers are not operated by a national authority, but rather by third parties all over the world which share profits with the actual flag States. For example, lately Mongolia is becoming an increasingly popular choice, also because its main office is not in Mongolia, but in Singapore (Heidegger et al., 2015), a global shipping hub.

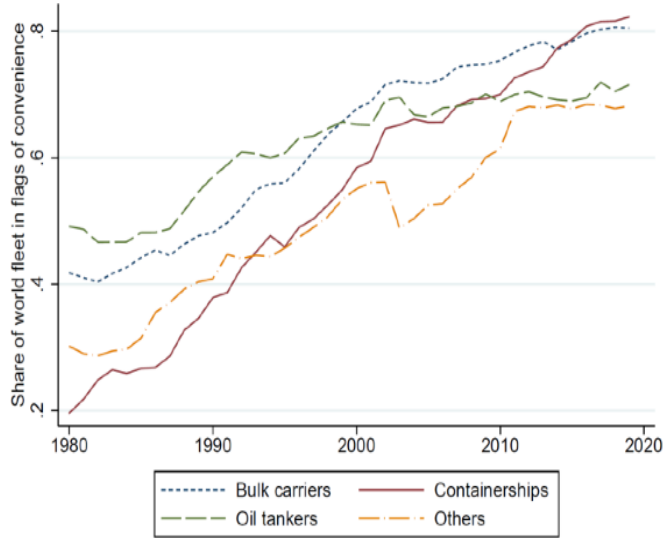


Figure 17: The growth of flags of convenience. Retrieved from Vuillemeij (2020)

The widespread use of FOCs is a phenomenon which grew mainly after World War II (see Figure 17), although some earlier examples can also be found: for instance, from 1916 onwards, increasing numbers of American shipowners started flying Panamanian or Honduran flags in order to benefit from lower labor costs and taxes (Galley, 2013). Liberia, one of the most popular flag States, opened its register in 1949. In 1950, 71% of the global fleet was flying a European or American flag (Stopford, 2008) but, starting from the 1980s, FOCs became increasingly widespread until, in 2015, 71.3% of global tonnage

was registered under an open register (Alcaide et al., 2016). Recent data by Vuillemeey (2020) report an even higher share: 82.3% of global tonnage.

Besides not having ratified any significant international conventions, FOCs usually are grey- or black-listed under the Paris Memorandum of Understanding (meaning that their law enforcement performance is low). Poor law enforcement performance is often caused by a lack of resources (financial, labor, etc.) and of adequate legal and administrative infrastructure: as a result, it is difficult for authorities in these countries to inspect all the ships registered under their flag and to enforce regulations. But it is also a matter of interests: in fact, it is relatively easy and inexpensive for shipowners to hop from one flag to the next, in case flying a certain flag becomes too burdensome. As a result, FOCs are not incentivized to enforce regulations, because they know that, if they did so, many ‘customers’ would simply switch to a different FOC.

Generally, the payment of registration fees (plus annual tonnage fees) is quite important for the economy of small States, and this generates high competition among FOCs. Many flag States attract foreign shipowners with permissive labor and environmental regulations, thus allowing shipowners to circumvent international regulation both during the service life of ships and also at the end of their life. Labor costs in particular are an important driver of flagging-out (Mansell, 2009), because closed registers limit the number of foreigners who can be hired aboard ships flying their flag; on the contrary, most open registers have no limitations on crew composition, thus allowing shipowners and charterers to hire mostly workers from third-world countries. As a result, Stopford (2008) estimated that crewing costs for European-flagged vessels can be even 50% higher compared to vessels flying a FOC. Many FOCs also resort to financial benefits and offer generous taxation and cheap registration fees; to this regard, it is important to mention that 6 out of the top 10 flag States for 2020 have been classified as tax havens in the EU List or by organizations like Oxfam, FATF and the IMF³⁸.

Another way in which FOCs attract foreign shipowners is through low registration

³⁸ <https://www.worlddata.info/tax-havens.php>

requirements. In fact, open registers do not require vessels to have the same nationality as their owners; rather, they accept even the existence of a mere shell company as a proof of linkage of the ship to that State. Unsurprisingly, almost all ships registered under open registers are recorded as belonging to a shell company which was created expressly for establishing some sort of link with the flag State and for concealing ownership. In some cases the situation is even more convoluted, because the shell company belongs to a subsidiary of the shipowning company, and this subsidiary is usually based in a third-party country which also offers the advantage of lax legislation (Galley, 2013). However, whereas a high level of financial secrecy is attractive for shipowners, it also creates issues for flag States, to the point that they often are unable to hold shipowners liable and make them pay for their violations due to lack of jurisdiction.

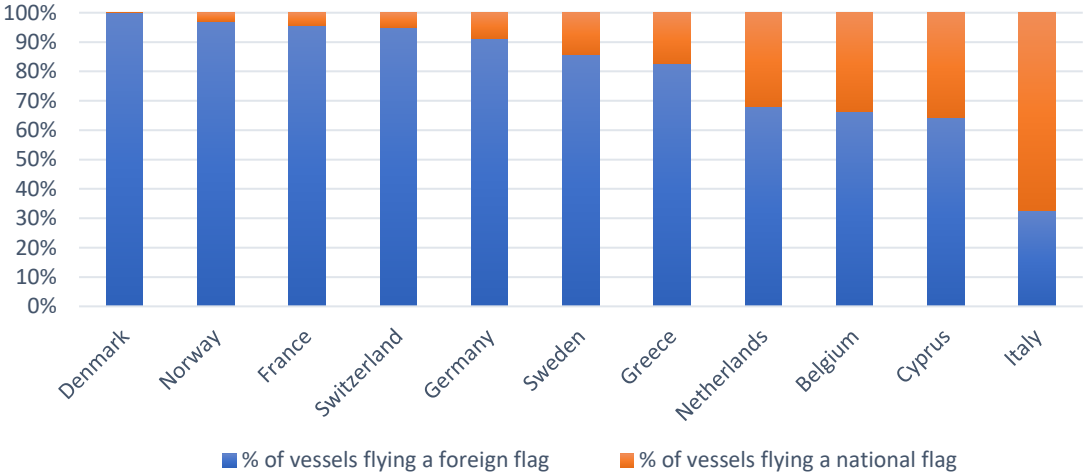


Figure 18: Share of foreign-flagged vessels owned by top European-area shipowning countries. Data retrieved from UNCTAD Review of Maritime Transport 2019

Because of all these reasons, FOCs are very popular even among European shipowners (see Figure 18). In an attempt to become more attractive to shipowning nationals and to reduce flag-outs towards open registers, some traditional flag States have been opening so-called ‘second registers’ or ‘offshore registers’: these are halfway between closed registers and FOCs, because they have lower taxes compared to traditional closed registers and they have looser crewing requirements, but they maintain a good law enforcement performance. In 1987 Norway was the first country to open a second register (Galley, 2013), and it was followed by multiple other European countries (such as Denmark, Germany and Italy) and, later, by countries such as Turkey and Brazil. It should be noted, though, that most of these second registers are not particularly relevant in terms of deadweight tonnage or number of ships, compared to open registers (Mansell,

2009).

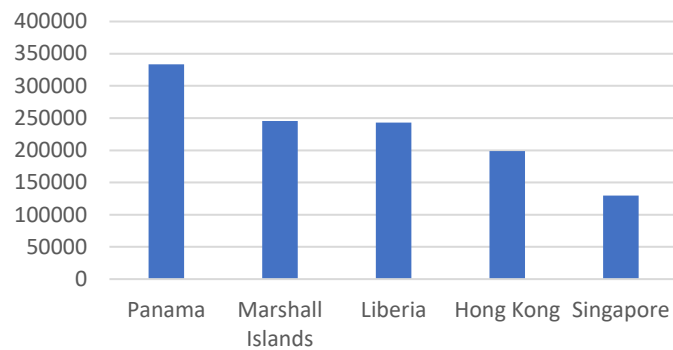


Figure 19: Top 5 flag States in terms of deadweight tonnage.
Data retrieved from UNCTAD Review of Maritime Transport 2019

Looking at the global situation, in 2020 the top 10 flag States in terms of tonnage were Panama, Liberia, Marshall Islands, Hong Kong, Singapore, Malta, Bahamas, China, Greece, and Japan³⁹; many of these countries operate open registers. These results are similar to data gathered in 2019 by UNCTAD (see Figure 19), which also found that the first 5 flag States in terms of deadweight tonnage accounted for about 58% of the total world tonnage.

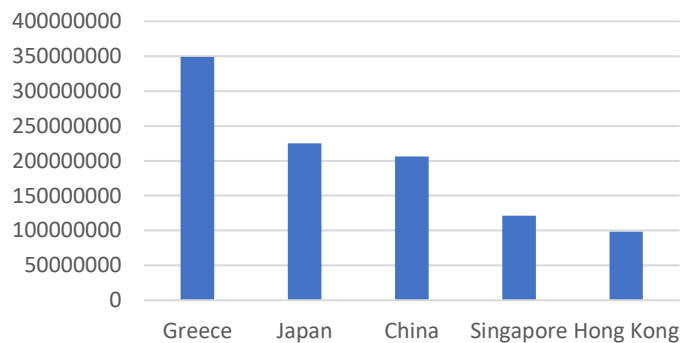


Figure 20: Top 5 shipowning states in terms of deadweight tonnage.
Data retrieved from UNCTAD Review of Maritime Transport 2019

However, looking at the share of world fleet ownership, results are quite different (see Figure 20): in fact, among the top 5 shipowning countries (which account for 51% of world tonnage), only Singapore and Hong Kong also appeared among top flag States. This is explained by the fact that, unlike Greece, Japan and China, about two-thirds of Singaporean and Hong Kong shipowners register their ships under their own country's

³⁹ <https://loydslist.maritimeintelligence.informa.com/LL1134965/Top-10-flag-states-2020>

flag (UNCTAD, 2019).

This discrepancy between flag States and shipowning States gives rise to problematic distortions in the International Maritime Organization's decision-making process. In fact, the most ships a country has (in terms of deadweight tonnage), the most weight it will pull in decisions: for instance, all IMO conventions are adopted only after they are ratified by at least X countries representing at least Y% of the global fleet. Considering that 58% of global tonnage is registered under 5 flag States, the result is that a small number of otherwise irrelevant countries like Panama, the Marshall Islands and Liberia have an inordinate amount of decisive power. This also explains why, so far, there has not been much progress in regulating ship nationality and registration: in fact, these FOCs have little incentive to change the status quo, thus perpetuating issues like lack of accountability and poor transparency in the shipping industry.

2.4.1 The need for a 'genuine link'

The first appearance of the 'genuine link' requirement dates back to 1958, when it was included in Article 5 of the United Nations Convention on the High Seas. Later, this provision would become part of Article 91 and Article 94 of the UNCLOS. Article 91 of the UNCLOS states that "there must exist a genuine link between the State and the ship"; however, there is debate about the meaning of 'genuine link', which is not explicitly defined by the UNCLOS. For instance, Whitlow (2003) believes that Article 94 and Article 217 of the UNCLOS point to the need for an 'economic link' between the ship and the flag State, in the sense that there should be a legal entity based in the flag State which could be held responsible for the actions of the ship, and which would be the target for any penalty. Therefore, according to Whitlow's interpretation, if a flag State is unable to levy the payment of penalties and to exercise effective control over the ships flying its flag (as is often the case for vessels owned by letterbox companies), then there is no 'genuine link'.

In 1986, an attempt to settle the question was made. The United Nations Convention on Conditions for Registration of Ships explicitly described the conditions under which a 'genuine link' between the ship and the flag State is recognized: either "a satisfactory part of the complement consisting of officers and crew of ships flying its flag be nationals or persons domiciled or lawfully in permanent residence in that State" (Article 9), or the State of registration "shall ensure that the shipowning company or a subsidiary

shipowning company is established and/or has its principal place of business within its territory” (Article 10(1)); alternatively, if most of the crew is not a national and the shipowner conducts business mainly in states different from the flag State, Article 10(2) still allows registration of a ship as long as the shipowning company has “a representative or management person who shall be a national of the flag State, or be domiciled therein”. However, the 1986 United Nations Convention on Conditions for Registration of Ships is still far from entering into force: so far, it has been signed by only 15 Parties out of the 40 needed for coming into force, and none of them are traditional maritime countries or important flag States.

2.4.2 Last-voyage flags



Figure 21: the growth of last-voyage flags. Retrieved from Vuillemeey (2020)

Last-voyage flags are a relatively recent phenomenon (see Figure 21): while in the early 2000s they were relatively insignificant, in 2019 they represented 55.2% of all end-of-life vessels⁴⁰. Last-voyage flags are a subset of open registers, in the sense that they have the same advantages, but they target especially shipowners looking to circumvent regulations on transboundary movements of waste and on safe and environmentally sound recycling. Last-voyage flags are usually offered by some specialized registers, often with even lower nationality requirements (in some cases, shipowners do not even need to set up a shell company in the flag State), because their primary purpose is to raise funds through

⁴⁰ <https://voxeu.org/article/corporate-irresponsibility-shipping-industry>

registration fees (Wan et al., 2021). Since these packages are made expressly for the purpose of scrapping, usually they are valid only for a short time (for example, 3 months in the case of Tanzania), and they tend to be low-cost compared to normal registration: for instance, registration in the St Kitts and Nevis’s register costs \$0.60/gross ton for regular ships, but only \$0.15/gross ton for end-of-life vessels (Heidegger et al., 2015).

According to a study from Alcaide et al. (2016), in 2014 about 20% of end-of-life vessels underwent reflagging shortly before dismantling, and the share increased to around 40% for ships dismantled with the beaching method. Reflagging usually took place from 180 to 30 days before the ship arrived at a shipbreaking yard. In addition, they found that most of the ships were bearing the flag of States which are known to have a disproportionate percentage of dismantled vessels in their registers (usually also grey- or black-listed in the Paris Memorandum of Understanding); one example is the Comoros register, 84% of which was composed of end-of-life vessels.

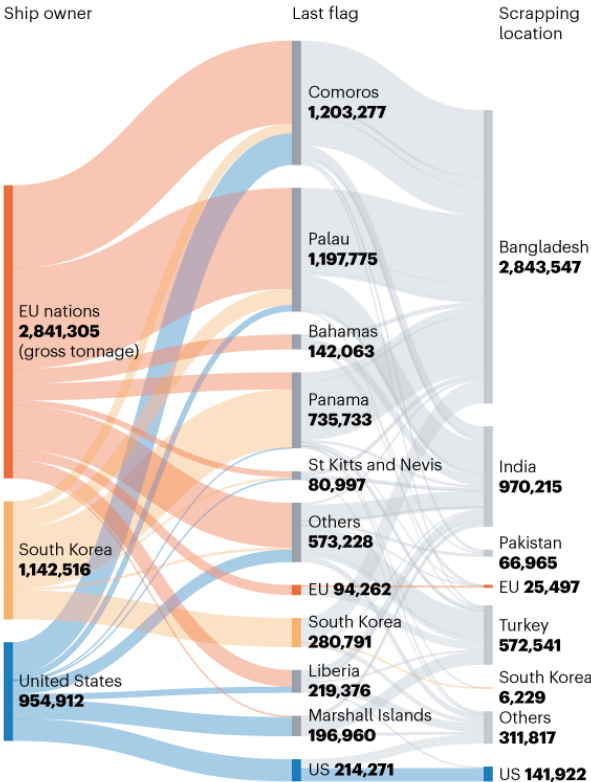


Figure 22: Common end-of-life flags. Retrieved from Schiermeier (2021)

Comoros, together with St Kitts and Nevis and Tuvalu, is one of the most represented flags for end-of-life vessels (see Figure 22), but their flags are born by less than 0.5% of the world’s operational merchant fleet (Heidegger et al., 2015), compared to traditional flags like Panama (which are common both during a ship’s operational life and at the time of

disposal). The fact that St Kitts and Nevis, Comoros and Tuvalu are not typical flags is further confirmed by the number of scrapped ships present in these countries' registers. In 2014, while Panama dismantled about 2% of its vessels, the numbers for these last-voyage flags were (Heidegger et al., 2015):

- 69 ships out of the 272 included in the St Kitts and Nevis register were dismantled (25%).
- 43 ships out of the 153 included in the Comoros register were dismantled (28%).
- 24 ships out of the 168 included in the Tuvalu register were dismantled (14%).

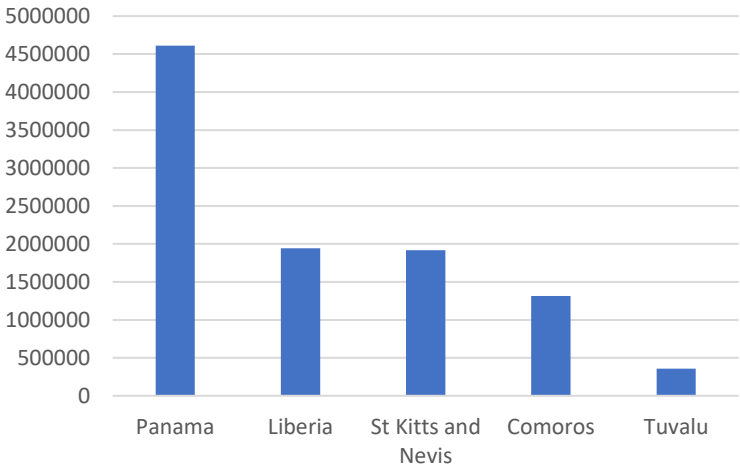


Figure 23: Top flags (in terms of deadweight tons) found on ships scrapped in South Asia in 2014. Data retrieved from Heidegger et al. (2015)

It is also telling that 93% of St Kitts and Nevis-, 91% of Comoros- and 100% of Tuvalu-flagged vessels were later scrapped on South Asian beaches. Accordingly (see Figure 23), these were also some of the most popular flags found in South Asian shipbreaking yards (Heidegger et al., 2015).

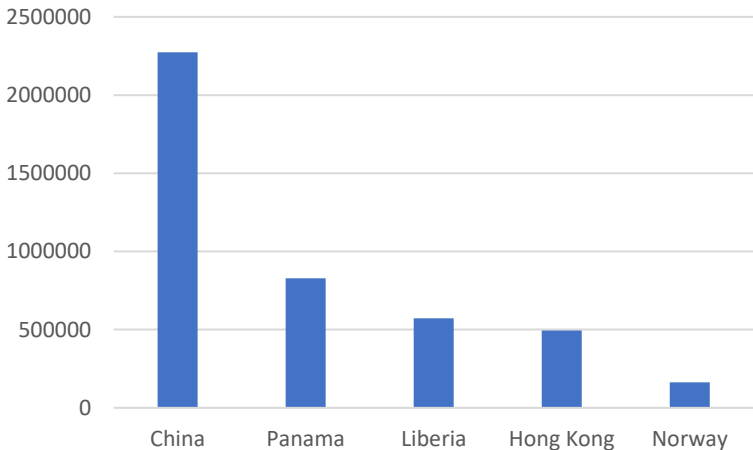


Figure 24: Top flags (in terms of deadweight tons) found on ships dismantled in Turkey, China and the EU in 2014. Data retrieved from Heidegger et al. (2015)

In comparison, all of these last-voyage flags were almost nonexistent among ships scrapped in Turkish, Chinese and European facilities (see Figure 24). The only FOC here is Panama but, as already stated, it is not unusual, considering that it is a popular and relatively reputable open register. Paradoxically, the growth of last-voyage open registers with a poor reputation has even led some 'historical' open registers to introduce stricter requirements as a way to distance themselves from disreputable FOCs: for instance, Liberia does not accept ships older than 20 years, and Bahamas registers ships older than 12 years only if they successfully pass a special inspection (Galley, 2013).

Chapter 3 – National and international regulatory instruments

3.1 Human rights legislation

The following paragraphs illustrate in chronological order the main treaties and declarations on the protection of human rights, both in and out of the workplace. While these conventions constitute the basis of international human rights law, they are legally binding only for the States which have ratified them.

3.1.1 Treaty of Versailles (1919)

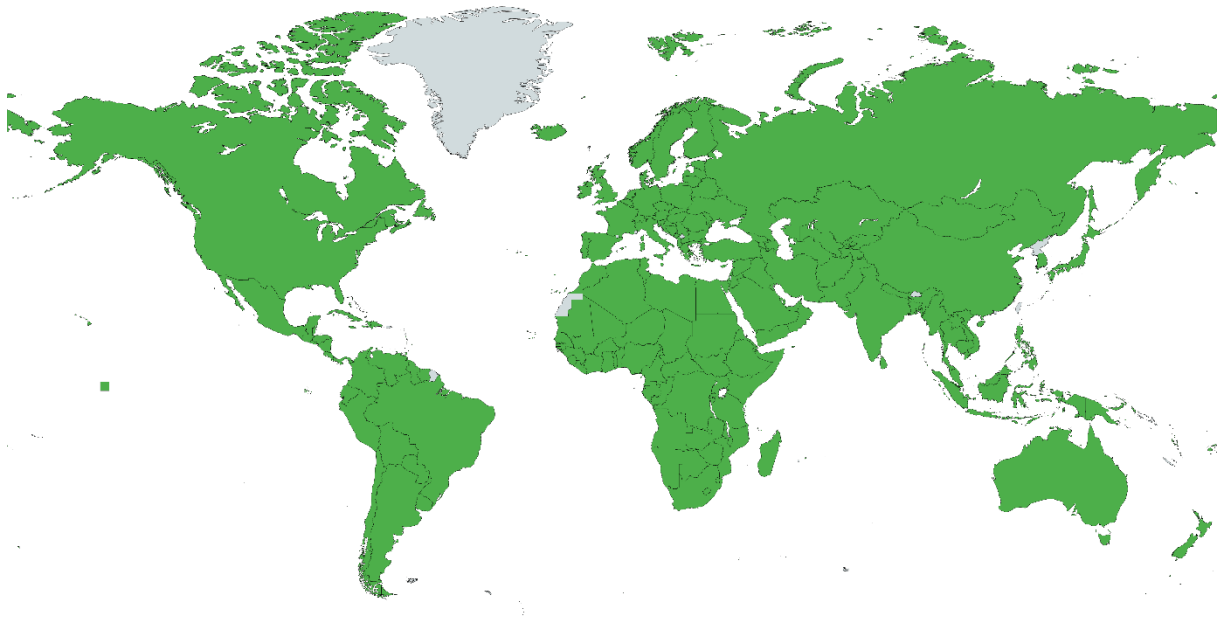


Figure 25: Member States of the ILO.

Data retrieved from <https://www.ilo.org/global/about-the-ilo/how-the-ilo-works/member-states/lang--en/index.htm>

The International Labour Organization (ILO) was founded in October 1919 by the League of Nations and later became a United Nations agency in 1946. The objectives of the ILO are expressed in Part XIII ('Labour') of the Treaty of Versailles; this was not just an ordinary peace treaty for the end of World War I, but it also set provisions which the League of Nations hoped would help prevent another war. Among such provisions, the League of Nations listed international labor standards as a way to promote social justice and sustainable social and economic development, thus creating a link between peace and social justice ("Universal and lasting peace can be established only if it based upon social justice [...] Whereas conditions of labor exist involving such injustice, hardship and privation to large numbers of people as to produce unrest so great that the peace and harmony of the world are imperiled"). Today the ILO has 187 Member States (see Figure 25), and their Governments, workers and employers are represented across three

different bodies: the International Labour Conference, the Governing Body and the International Labour Office (hence why the ILO is said to have a one-of-a-kind tripartite structure).

As stated previously, Part XIII of the Treaty of Versailles is considered to be the ILO's Constitution because, in its Preamble, it explains the aims of the Organization, such as "the regulation of the hours of work, including the establishment of a maximum working day and week, the regulation of the labor supply, the prevention of unemployment, the protection of children, young persons and women, provision for old age and injury, protection of the interests of workers when employed in countries other than their own, recognition of the principle of equal remuneration for work of equal value, recognition of the principle of freedom of association, the organization of vocational and technical education and other measures".

Interestingly, the Preamble to the ILO's Constitution also brings up economic interdependence, stating that "the failure of any nation to adopt humane conditions of labor is an obstacle in the way of other nations which desire to improve the conditions in their own countries". Today, this remains a relevant issue, because over the past 60-something years, there has been a race to the bottom, with activities being delocalized from developed to developing countries, where they can be carried out more cheaply. Shipbreaking activities in South Asian countries are a good example of this, because poor domestic law enforcement and insufficient health, safety and environmental protection (among other reasons) caused a strong imbalance in the competitiveness of yards in developed countries and in South Asia. Furthermore, the regulations put in place as an attempt to 'correct' this issue could lead to competitive imbalances even among South Asian countries, unless they all ratify the Hong Kong Convention (see 3.2.6.1 'Pros and cons of the Hong Kong Convention'). The Preamble is followed by 41 Articles (387-427 in the Treaty of Versailles), divided across two sections ('Principles of Labour' and 'General Principles'). The main provisions, which are all contained in Article 427, state that:

- Labor must not be treated as a mere commodity.
- Employees and employers have a right to associate for lawful purposes.
- Wages must allow workers to "maintain a reasonable standard of life as this is understood in their time and country".

- An upper limit of 8 hours of work per day (or 48 hours per week) should be adopted, with at least 24 hours of rest each week.
- Child labor must be abolished, and young persons must be granted conditions which “permit the continuation of their education and assure their proper physical development”.

Finally, Article 427 of the Treaty of Versailles takes into account “differences of climate, habits and customs, of economic opportunity and industrial tradition”, stating that, while they will impede the uniform application of international labor standards, they should not be a reason to unjustifiably deny improvements of domestic working conditions.

3.1.2 ILO Declaration of Philadelphia (1944)

The ILO’s Constitution was later amended by the 1944 Declaration of Philadelphia. The Declaration of Philadelphia reaffirmed the basic ideals and aims of the ILO’s Constitution, but they were expressed in broader terms; in this way, these objectives can never be spent because, since there is not a specific goal (such as an 8-hour workday), continuous improvement is expected.

Article 1 of the Declaration of Philadelphia reasserts principles such as the essentiality of freedom of expression and freedom of association for progress, and states that the common welfare can be promoted only through “continuous and concerted international effort in which the representatives of workers and employers, enjoying equal status with those of governments, join them in free discussion and democratic decision” (which recalls the ILO’s tripartite structure).

Article 2 of the Declaration of Philadelphia reaffirms one of the main tenets of the ILO Constitution – that “all human beings [...] have the right to pursue both their material and well-being and their spiritual development in conditions of freedom and dignity, of economic security and equal opportunity”, no matter their race, religion or sex.

Article 3 lists the goals which, according to the ILO, would improve labor conditions and fuel social and economic progress. Some examples are “full employment and raising the standards of living”, “the provision [...] of facilities for training and the transfer of labor”, working conditions that allow everyone to “share the fruits of progress”, the

establishment of a minimum living wage, social security and access to medical care, and “adequate nutrition, housing and facilities for recreation and culture”.

Finally, Article 5 of the Declaration of Philadelphia recognizes that it is impossible to achieve the same results everywhere, hence why “the manner of their application [of the principles contained in the Declaration] must be determined with due regard to the stage and social development reached by each people”.

Over the following years, the ILO issued multiple Conventions and Recommendations which were based on the principles set forth in the 1919 Treaty of Versailles and in the 1944 Declaration of Philadelphia. Here is a list of the main ILO Recommendations:

- **1944 Income Security Recommendation (R067).** Members are advised to set up income security schemes which allow people who are unable to work (due to sickness, injuries or old age) and families who lost their breadwinner to restore their income to a reasonable level (Paragraph 1). In order to make this possible, the ILO suggests Members to implement a compulsory social insurance system (Paragraph 2) and to offer social assistance when needed (Paragraph 3).
- **1953 Protection of Workers’ Health Recommendation (R097).** Employers should be required to maintain adequate conditions in the workplace in order to protect the health of their employees. Some recommendations which could be relevant for the shipbreaking industry are to provide sufficient sanitary facilities and clean drinking water, and to store hazardous waste in a way which minimizes accidental contact or inhalation (Paragraph 2). Establishments should also take all practicable measures to protect workers by substituting dangerous techniques with safer ones (for instance, using cranes rather than forcing workers to carry heavy loads), by controlling spills of dangerous substances, by providing appropriate ventilation and protection from harmful fumes and dusts, and by providing PPE and instructing workers on how to wear it (Paragraph 3(1)). Furthermore, R097 requires PPE to be supplied, cleaned and maintained by the employer (Paragraph 3(2)). Paragraph 8(1) suggests that national laws should require frequent medical examinations for workers engaged in activities which are particularly dangerous for their health (as in the case of shipbreaking); these should be free of charge for the workers themselves, and in case medical

examinations identify cases of occupational diseases, they should be reported to the competent authorities. Finally, Paragraph 18 states that workplaces should be equipped with first aid and emergency facilities.

- **1956 Welfare Facilities Recommendation (R102).** It recommends establishments to set up canteens and to offer appropriate meals to employees if practicable (Paragraph 4), or at least to provide buffets or trolleys with packaged snacks and drinks (Paragraph 10(1)), or even mess rooms where workers can make their own food (Paragraph 11(1)). Paragraph 21(1) also suggests public authorities to provide recreation facilities for workers near their workplace.
- **1961 Workers' Housing Recommendation (R115).** According to Paragraph 2, national policy should promote the construction of adequate and affordable accommodations for workers and their families.
- **1962 Reduction of Hours of Work Recommendation (R116).** It suggests Members' national policies to promote the adoption of a 40-hour work week where possible, and without any wage cuts.
- **1970 Minimum Wage Fixing Recommendation (R135).** Paragraph 1 states that fixing a minimum wage "should constitute one element in a policy designed to overcome poverty and to ensure the satisfaction of the needs of all workers and their families". According to Paragraph 3, minimum wage levels should be determined by taking into consideration factors such as a country's cost of living, average national wages, social security benefits, productivity, and so on.
- **1971 Workers' Representatives Recommendation (R143).** Trade union representatives and elected workers' representatives should be protected from prejudicial acts against them (Paragraph 5), and they should receive enough time off from work in order to be able to effectively undertake union-related activities without losing pay or benefits (Paragraph 10).
- **1974 Occupational Cancer Recommendation (R147).** According to Paragraph 4, employers should take all appropriate measures to reduce workers' exposure to carcinogenic substances and to store such substances in a safe way. Workers should do their part as well and use PPE (Paragraph 5). Additionally, workers who are exposed to carcinogenic substances should undergo frequent medical examinations to keep their health in check (Paragraph 11), continuing even after they stopped taking part in such hazardous activities (Paragraph 12); the results

of medical examinations should be shared with the competent authorities (Paragraph 15). Finally, exposure-prone workers should be informed by employers of the health risks caused by their activities (Paragraph 20), and competent authorities are suggested to distribute pamphlets and guides for raising awareness (Paragraph 17).

- **1977 Working Environment (Air Pollution, Noise and Vibration) Recommendation (R156).** It requires employers to monitor air pollution, noise and vibration in the workplace (Paragraph 2). Competent authorities are also advised to set up procedures to approve PPE which offers adequate protection from air pollution, noise and vibration (Paragraph 12). Workers exposed to dangerous levels of air pollution, noise and vibrations should receive frequent medical examinations (Paragraph 16) even after they are no longer exposed; then, the results of these examinations should be shared with the competent authorities (Paragraph 17) so that they can evaluate the situation and, if needed, issue appropriate regulations. Finally, the competent authorities, employers and workers' representatives are encouraged to cooperate towards raising awareness among workers about the health risks related to exposure to air pollution, noise and vibration (Paragraphs 21, 22 and 23).
- **1981 Occupational Health and Safety Recommendation (R164).** It states that attention must be paid to eliminating workplace hazards in areas such as machinery inspection and maintenance, prevention of physically and mentally stressful conditions, handling of heavy loads, protection from air pollution, noise and vibration, use and maintenance of PPE, provision of first-aid treatment, and so on (Paragraph 3). In this sense, national competent authorities should issue adequate regulations, research workplace hazards, advise employers and workers, and cooperate with the ILO (Paragraph 4). On the other hand, according to Paragraph 10, employers are required to “provide and maintain workplaces, machinery and equipment, and use work methods, which are as safe and without risk to health as is reasonably practicable”, to train employees, to provide workers with appropriate PPE, and overall to “take all reasonably practicable measures with a view to eliminating excessive physical and mental fatigue”.
- **1985 Occupational Health Services Recommendation (R171).** It starts by claiming that occupational health services should play an “essentially preventive”

role (Paragraph 3), and that they should be 'tailored' to an industry's specific occupational hazards (Paragraph 4). Prevention starts with surveillance of environmental factors which could affect the health of workers, of PPE, of sources of exposure to hazardous agents, and of control systems aiming to prevent or reduce such exposure (Paragraph 5). Then Paragraph 8 lists some examples of what occupational health services can do to protect workers' health, such as supervising the installation of facilities for workers (canteens, housing, sanitary facilities, etc.), monitoring the health of workers and giving advice on how to preserve it, and creating or promoting training programs (Paragraph 19).

- **1986 Asbestos Recommendation (R172).** Paragraph 2 defines the main activities which can expose workers to asbestos, such as "demolition or repair of plant or structure containing asbestos" and "transportation, storage and handling of asbestos or materials containing asbestos" (which are carried out during shipbreaking). Paragraph 14 claims that demolition activities carried out on plants or structures containing asbestos must receive prior authorization from the designated competent authorities, and that the employer should make a plan explaining all stages of demolition and what measures will be taken in order to minimize workers' exposure to asbestos. Paragraph 25 states that the employer should also be required to provide workers with appropriate respiratory protective equipment and clothing at no cost to the workers. Workers who may come into contact with asbestos should receive free-of-charge work clothes which they must not wear outside the workplace (Paragraph 26) and, in case they bring home these clothes in order to wash them, they should be made aware of the health risks in doing so. Finally, the health of workers who are exposed to asbestos must be monitored frequently (Paragraph 31), and the workers themselves should be informed about the results of such examinations and be offered appropriate advice (Paragraph 32) and training (Paragraph 40).
- **1990 Chemicals Recommendation (R177).** Employers should commit themselves to reducing workers' exposure to hazardous chemicals, to monitoring the concentration of such chemicals in the workplace, and to keeping records on this data which must be accessible to competent authorities, to workers and to their representatives (Paragraph 11). Moreover, employers must offer frequent medical examinations to workers who are exposed to hazardous chemicals

(Paragraph 18) and keep records of the results of these examinations, which should be available for the competent authorities, workers and their representatives and physicians. Finally, under Paragraph 25 workers have the right to remove themselves from situations they believe could expose them to dangerous chemicals, and to receive adequate medical treatment and compensation for injuries caused by such chemicals.

The next paragraphs will list the most relevant ILO Conventions for the shipbreaking industry.

ILO Labour Inspection Convention (1947)

The 1947 Labour Inspection Convention (C081) entered into force on April 7, 1950 and has been ratified by all three major shipbreaking countries. According to Article 3(1), all Members must set up a system of labor inspection to verify and enforce the application of domestic labor and health and safety laws. Article 6 highlights that it is important to ensure that labor inspectors enjoy stable employment and adequate remuneration in order to limit external influences which may prejudice their impartiality.

Under Article 12(1), labor inspectors are empowered to visit workplace at any time of the day or night “to carry out any examination, test or enquiry which they may consider necessary in order to satisfy themselves that the legal provisions are being strictly observed”: for instance, they are encouraged to review legally prescribed registers and documents, and to interrogate employers and employees.

Article 14 states that establishments must inform the labor inspectorate of any accident or occupational disease. This is important for assessing an industry’s or an establishment’s level of hazard: in fact, Article 16 suggests that inspection frequency and thoroughness should depend on these factors (among others). Also, according to Article 20, all this information must be forwarded by labor inspectors to the central inspection authority, which must publish annual reports for its activities.

According to Article 13, labor inspectors can order establishments to remedy any observed defect “which they may have reasonable cause to believe constitute a threat to the health or safety of the workers” within a time limit which is appropriate for the level of danger. Finally, Article 18 requires ratifying countries to adopt laws or regulations

which define “adequate penalties” for any violation observed by labor inspectors.

ILO Freedom of Association and Protection of the Right to Organise Convention (1948) and Right to Organise and Collective Bargaining Convention (1949)

The 1948 Freedom of Association and Protection of the Right to Organise Convention (C087) entered into force on July 4, 1950. So far, among the major South Asian shipbreaking countries, India is the only one which has not ratified it yet. Article 2(1) of this Convention sets forth the right of workers and employers to freely establish and join organizations aimed at “furthering and defending the interests of workers or of employers” (Article 10). In this sense, under Article 11 ratifying countries must defend this right through appropriate measures.

This Convention is strictly linked to the 1949 Right to Organise and Collective Bargaining Convention (C098), which entered into force on July 18, 1951 (and which has also not been ratified by India). Article 1 of C098 states that “workers shall enjoy adequate protection under acts of anti-union discrimination in respect of their employment”, meaning that employers must not discriminate against workers who are members of trade unions both at the time of hiring and during the employment period. Also, under Article 2 workers’ organizations and employers’ organizations must be adequately protected from any interference against each other’s members, and workers’ organizations in particular should not be “under the domination of employers or employers’ organizations [...] with the object of placing such organizations under the control of employers or employers’ organizations”.

ILO Minimum Age Convention (1973) and Worst Forms of Child Labour Convention (1999)

The 1973 Minimum Age Convention (C138) entered into force on June 19, 1976. So far, it has been ratified by India and Pakistan, but not by Bangladesh. Article 2 states that the minimum age for employment must be equal or higher than the age of completion of compulsory education, but not lower than 15 years of age. The only exception to this rule is that minimum age can be lowered to 14 years if a country’s “economy and educational facilities are insufficiently developed”, but only after consultations with workers’ and employers’ organizations.

In any case, this limit should not apply to ship recycling, since Article 3(1) raises the minimum age to 18 years for “work which by its nature or the circumstances in which it is carried out is likely to jeopardize the health, safety or morals of young persons”. Article 3(2), however, simply states that the types of work to which Article 3(1) applies are decided by the competent authority or by national laws; in this case, it would probably be advisable for the ILO to provide at least a basic list of activities (which Members can further restrict). However, as explained in the next paragraphs on C182, there is a more ‘relevant’ Convention for shipbreaking activities. Also, it is actually possible to lower the minimum age for hazardous activities down to 16 years, but under the condition that “the health, safety and morals of the young persons concerned are fully protected and that the young persons have received adequate specific instruction or vocational training in the relevant branch of activity”.

Finally, Article 9 requires Members to define appropriate penalties for any violation of national laws on the minimum age for employment, and to demand employers to keep registers or documents which list the names and age (or date of birth) of all their employees, especially if younger than 18.

The 1999 Worst Forms of Child Labour Convention (C182), which entered into force on November 19, 2000, explains more clearly than C138 the conditions which characterize hazardous work for young persons (and it focuses on the types of work where it is especially urgent to eliminate child labor). C182 considers to be a child every person younger than 18 (Article 2) and, similarly to C138, it claims that – inter alia – “work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children” is one of the worst forms of child labor (Article 3). Again, similarly to C138, Article 4 of C182 states that the types of work which can be considered worst forms of child labor must be decided by the competent authorities or by domestic regulations, but it also claims that Paragraphs 3 and 4 of the 1999 Worst Forms of Child Labour Recommendation should be used as a guideline.

Article 3 of the Worst Forms of Child Labour Recommendation enumerates multiple characteristics which are compatible with shipbreaking activities, such as “work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads”, “work in an unhealthy environment which may, for example,

expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging to their health”, and “work under particularly difficult conditions such as work for long hours or during the night”.

Similarly to Article 3(3) of C138, Article 4 of the Worst Forms of Child Labour Recommendation allows the minimum age for such activities to be lowered to 16 years if children are “fully protected” and on the condition they receive appropriate vocational training. But again, the issue here is that informality in the shipbreaking industry is high, which means that many workers fly under the radar and that, as a result, it is difficult to enforce regulations and to identify violations. Finally, Articles 6(1) and 7(2) encourage Members to prioritize the creation of programs which will eliminate the worst forms of child labor and to focus on universal free basic education and to assist and rehabilitate children engaged in the worst forms of child labor.

3.1.3 UN Universal Declaration of Human Rights (1948)

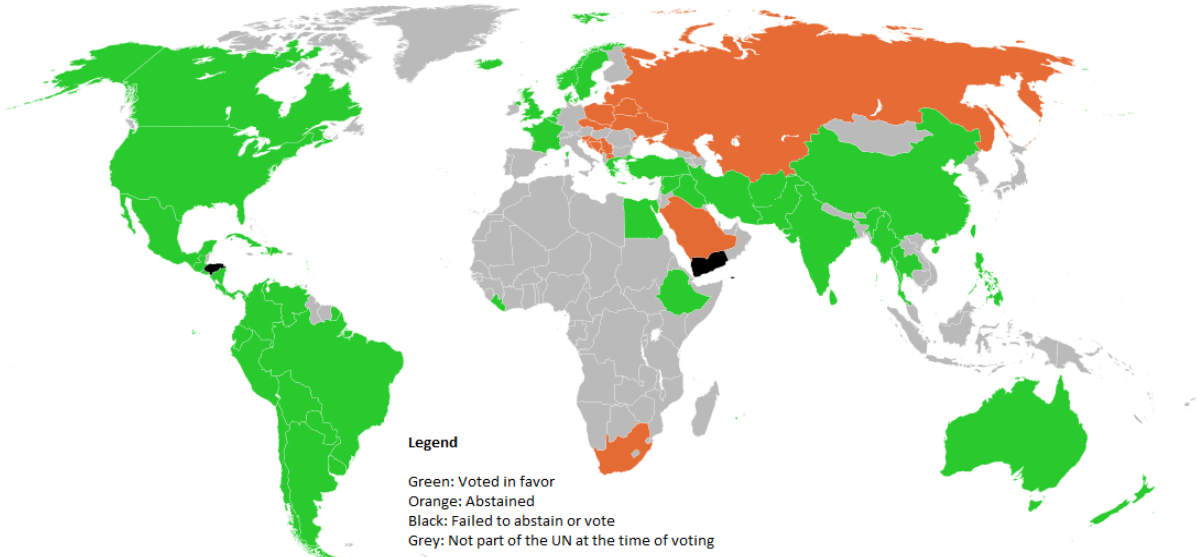


Figure 26: Map of Signatories of the Universal Declaration of Human Rights. Retrieved from https://en.wikipedia.org/wiki/Universal_Declaration_of_Human_Rights

The Universal Declaration of Human Rights (UDHR) is a document which enumerates 30 basic human rights “determined to promote social progress and better standards of life” and to which everyone is entitled. The UDHR was drafted by the United Nations General Assembly and was adopted on 10 December 1948 (see Figure 26). The roots of the UDHR can be found in World War II: its atrocities had “outraged the conscience of mankind”, revealing how frail human rights actually were, even those which had already been defined as inalienable in multiple bills and codes. In this sense, the UDHR is a reaffirmation

of the United Nations' "faith in fundamental human rights". Today the UDHR is considered a milestone document, since it constitutes the foundation of international human rights law, having inspired many national and international laws, resolutions and treaties.

The adjective 'universal' sets the tone of the UDHR as an apolitical document setting standards which should transcend a person's "race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status" (Article 2). The UDHR enumerates rights covering civil and political rights (universal suffrage, freedom from slavery, equality before the law, etc.), and economic, social and cultural rights (right to favorable remuneration, right to education, right to the free and full development of one's personality, etc.). All 30 rights are inalienable, meaning that, no matter the circumstances, they cannot be taken away or renounced. These rights are indivisible as well, in the sense that they are all equally important and that Governments must put the same effort into promoting and defending them.

Being a declaration (as opposed to a treaty), the UDHR in itself is not legally binding, but the national and international laws derived from it are binding because, when Parties ratify the UDHR, they take upon themselves the duty to issue and enforce national human rights law. The part about enforcement is particularly important, because a State's duty is not finished once it has issued a law to protect human rights: in fact, actual improvements can take place only if human rights violations are taken seriously, investigated and punished. States should also keep in mind that human rights violations often go unreported because the people who suffer from these violations are not aware of their rights and/or, like in the case of shipbreaking, they are afraid of losing their job (and only source of income) if they speak up. Therefore, it is important to offer to informants adequate protection from any consequence that may arise after they filed a complaint (such as violence, unemployment, discrimination, etc.).

The most evident violations of the UDHR's principle in the shipbreaking industry regard:

- The right to social security and to the economic, social and cultural rights which are needed for the dignity and free development of one's personality (Article 22).
- The right to free choice of employment, to favorable working conditions and to protection against unemployment (Article 23(1)).
- The right to "just and favorable" remuneration to ensure a dignified existence to

workers and their families (Article 23(3)). This is strictly linked to Article 25(1), which states that everyone has a right to a standard of living which ensures the health and the wellbeing of both the worker and his family (in terms of housing, access to healthcare, support in case of unemployment, protection from the consequences of sickness or disability, etc.).

- The right to rest time and leisure time, to paid holidays and to a reasonable amount of working hours (Article 24).

3.1.4 ILO Declaration on Fundamental Principles and Rights at Work (1998)

The ILO Declaration on Fundamental Principles and Rights at Work was adopted on 18 June 1998 by the ILO, and it sets forth the duty of every ILO Member State to promote and respect rights in the following 4 categories:

- Freedom of association and right to collective bargaining.
- Elimination of forced labor.
- Elimination of child labor.
- Elimination of discrimination with relation to employment and occupation.

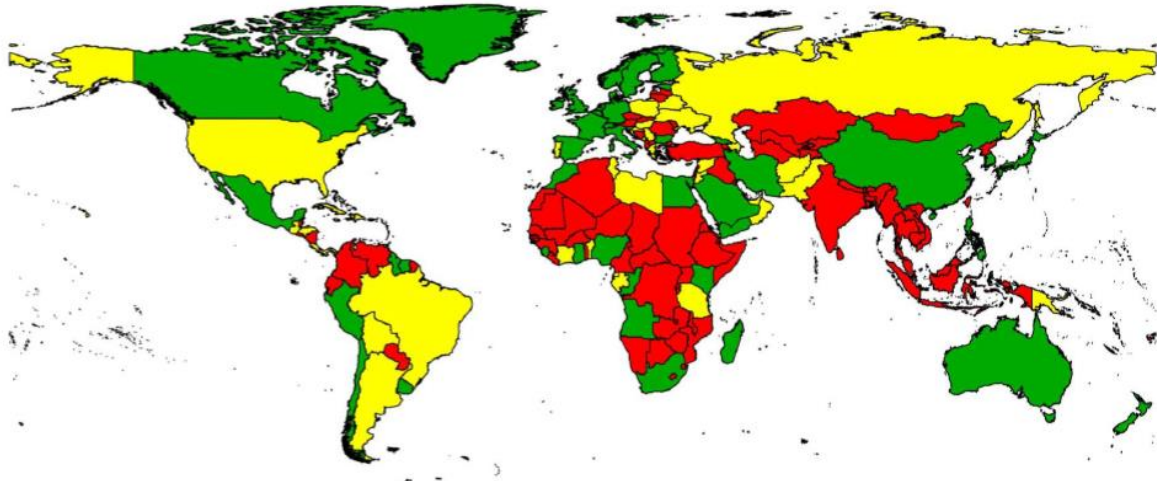
The need for such a Declaration became especially strong in the early 1990s: in that period, globalization accelerated and generated economic growth in many developing countries, but it soon became evident that economic growth alone was not enough to end poverty, eliminate injustices and fuel social progress.

One of the most important points is that this Declaration sets an obligation to respect these basic rights even for countries which have not yet ratified the relevant 8 fundamental Conventions. For instance, while India, Pakistan and Bangladesh all are ILO Members, India has not ratified the 1948 Freedom of Association and Protection of the Right to Organise Convention and the 1949 Right to Organise and Collective Bargaining Convention, whereas Bangladesh has not ratified the 1973 Minimum Age Convention; as a result, every year India and Bangladesh are required to submit a report on the status of freedom of association and child labor respectively, and on what they are doing to improve the situation (as required by Annex Part II, 'Annual follow-up concerning non-ratified fundamental Conventions').

3.2 Industry-specific international regulations

The following paragraphs illustrate the main regulations applicable to shipbreaking in chronological order. The first ones are not specifically about ship recycling, because they focus mostly on the protection of the marine environment from man-made pollution; however, they were included in this discussion because they served as a base for later regulations on shipbreaking (hence why there is some overlapping). It should also be noted that the lack of specific regulations on ship recycling until the late 1990s and early 2000s could be due to the fact that, back then, shipbreaking still took place under somewhat acceptable conditions.

3.2.1 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (1972) and Protocol (1996)



Legend

Green: Protocol Parties
Yellow: Convention Parties
Red: Non-Parties

Figure 27: Map of Parties to the London Convention/Protocol.

Retrieved from <https://www.imo.org/en/OurWork/Environment/Pages/London-Convention-Protocol.aspx>

The 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (or London Convention) was one of the first international agreements made “to improve protection of the marine environment” from the pollution caused by human activities. The 1972 London Convention has been in force since 1975 and has been signed by 87 Parties (see Figure 27). Currently the 1996 London Protocol has been signed by 53 Parties; among the main shipbreaking countries, however, only Pakistan is a Contracting Party.

The London Convention prohibits the dumping of wastes which are not generated during

a ship's normal operations (Article 4(1)(a)). The complete list of materials is presented in Annex I, and it covers substances such as heavy metals, plastics, oils, radioactive waste, and so on. The only possible exceptions to the application of the London Convention are the release of a special permit for dumping (Article 4(1)(b), list of substances in Annex II, requirements in Annex III) and emergencies "posing unacceptable risk relating to human health and admitting no other feasible solution" (Article 5(2)).

The London Convention measures must be enforced by the Contracting Parties on all the vessels and aircraft which either fly a Contracting Party's flag, on all the vessels and aircraft which load in a Contracting Party matter for dumping purposes, or on all the vessels and aircraft which are believed to engage in dumping (Article 7(1)); in this sense, collaboration between Contracting Parties is strongly encouraged (Article 8). Other responsibilities of the Contracting Parties are:

- To establish facilities for monitoring pollution (Article 9).
- To establish facilities for the treatment and disposal of waste, in order to prevent its dumping (Article 9).
- To adopt measures to protect the marine environment from the pollution caused by hydrocarbons, radioactive matter, waste generated during a ship's normal activities and dumped waste (Article 12).

In 1996 the London Convention was replaced by the London Protocol, which introduced two important new features as illustrated in Article 3(1) and Article 3(2):

- The precautionary approach. While the 1972 Convention listed the substances and materials which *could not* be dumped, the 1996 Protocol lists only those which *can* be dumped (hence why it has also been called 'reverse list approach').
- The 'polluter pays' principle. This means that, while dumping of certain substances can still be authorized, the Contracting Party which issued such authorization shall burden those who receive the authorization with the cost of preventing and controlling the pollution they cause. However, due to the widespread use of flags of convenience, implementing the 'polluter pays' principle is quite difficult in practice.

The London Protocol also remarks that the protection of the marine environment must

not happen at the expense of another environment (Article 3(3)). For this reason, both incineration at sea (Article 5) and the export of waste for the purpose of dumping or incinerating at sea (Article 6) have been prohibited. In addition, Annex II of the London Protocol introduced a waste prevention audit for the waste which is not covered by Annex I but which can still be authorized for dumping with a special permission. The goal of this audit is to evaluate the characteristics of the waste and to try to find a feasible alternative to dumping and/or ways to reduce and prevent the production of such waste.

It must be mentioned, though, that the application of the London Convention and Protocol to the shipbreaking industry is debated (Galley, 2014): in fact, they both mention the “deliberate disposal at sea of vessels” (Article 1(a)), but there are no explicit mentions of ship recycling, and it is questioned whether beaching should be considered to be the same as disposal at sea.

3.2.2 International Convention for the Prevention of Pollution from Ships (1973) and Protocol (1978)

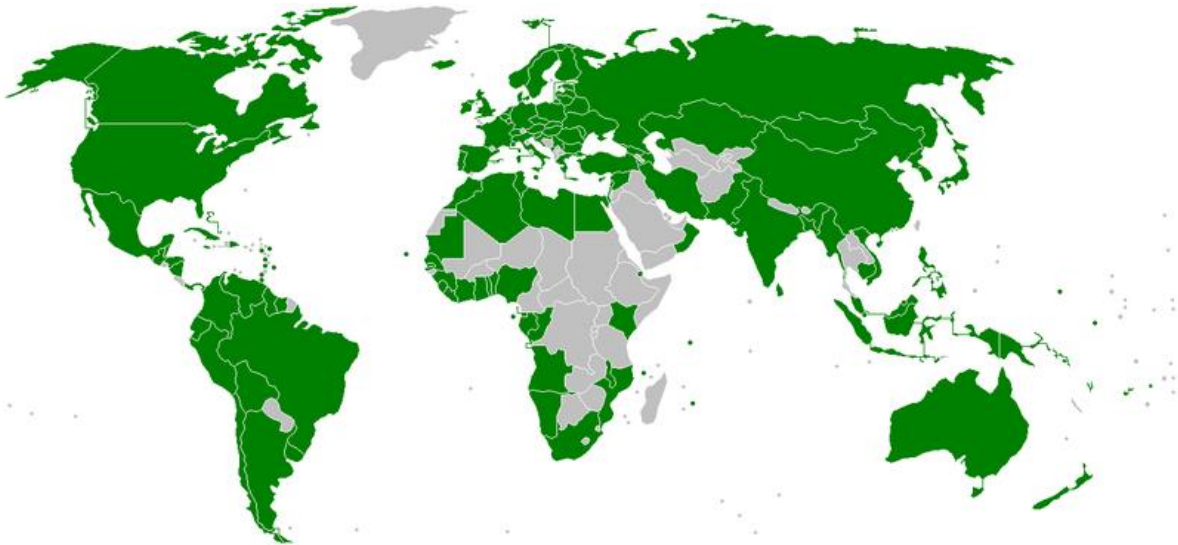


Figure 28: Map of Parties to the MARPOL Protocol.
Retrieved from https://en.wikipedia.org/wiki/MARPOL_73/78

The IMO developed the 1973 International Convention for the Prevention of Pollution from Ships (also known as MARPOL Convention, see Figure 28) “to achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharge of such substances”. The MARPOL Convention covers both waste generated during the normal operations of a ship and waste produced by accidents, thus integrating the 1972 London Convention (which

was applicable only to deliberate disposal by dumping).

The need for such a Convention became especially evident in 1967, after the supertanker SS Torrey Canyon caused the worst oil spill in the UK's history (Galley, 2014), amounting to more than 120,000 tons of crude oil. The accident was handled poorly by British authorities, which caused the oil spill to spread even further, reaching the coast of France and killing thousands of sea birds and marine animals. To add insult to injury, according to maritime law, the shipowner's liability was limited to the value of the ship and its cargo (which, after the accident, was estimated to be worth \$50). However, the United Kingdom was the only country (besides the United States) which did not admit the principle of limitation of liability: it took four months for the British Government to finally be able to serve a writ against the SS Torrey Canyon shipowner.

The main provisions of the 1973 MARPOL Convention state that:

- The discharge into the sea of oil or oily mixtures is prohibited (Annex I, Regulation 9(1)), except in some very specific conditions. In the case of shipbreaking, the spills take place when the ship is less than 12 nautical miles from the nearest land and when the ship is not en route; therefore, spills happening during recycling are not allowed. In this case, the oil residues should be retained on board and disposed of through appropriate reception facilities (Annex I, Regulation 9(6)).
- The discharge into the sea of hazardous substances "which if discharged into the sea from tank cleaning or deballasting operations would present a hazard to either marine resources or human health" is prohibited. Even the residues of tank washing must be discharged into appropriate facilities if they contain such substances (Annex II, Regulation 5(1)). There are exceptions to this rule (Annex II, Regulation 5(2)), but the requirements are not compatible with shipbreaking activities (for example, one of the conditions is being en route at a speed of more than 7 knots).

The MARPOL Convention also advises Contracting Parties to adopt severe penalties to discourage violations (Article 4); in other words, polluters are liable to pay for remedying the pollution generated by their ships. However, these penalties were never applied: in fact, by 1976 the MARPOL Convention had been ratified by only Jordan, Kenya and Tunisia, which represented less than 1% of the world's merchant fleet. In order to enter

into force, the Convention had to be ratified by at least 15 countries, representing at least 50% of the world's merchant fleet.

However, a series of tanker accidents in 1976-1977 prompted the IMO to organize a conference for reviewing safety guidelines regarding tanker design and operation (IMO, 1998). These new provisions were included in the 1978 MARPOL Protocol, which effectively amended and replaced the 1973 Convention. The 1978 Protocol achieved bigger success among the international community: in fact, unlike the 1973 Convention, it allowed the Contracting Parties to start by implementing just Annex I (oil); then they had three years to reach compliance under Annex II (chemicals). As a result, the 1973 MARPOL Protocol entered into force in 1983, and at present it has been ratified by 193 countries, representing more than 99% of the world's merchant fleet.

Some have argued that the MARPOL sets up too many limits for discharging waste; this, coupled with the fact that many ports do not provide adequate facilities for waste disposal as required, could lead ships to dispose of waste illegally (IMO, 1998). Another controversial point of the MARPOL Convention and Protocol is the lack of explicit references to shipbreaking: in fact, it would appear that the Convention applies to vessels which are still intact and operational (however, it could also be argued that some spills take place at a stage of dismantling in which the ship could still be operational).

3.2.3 United Nations Convention on the Law of the Sea (1982)

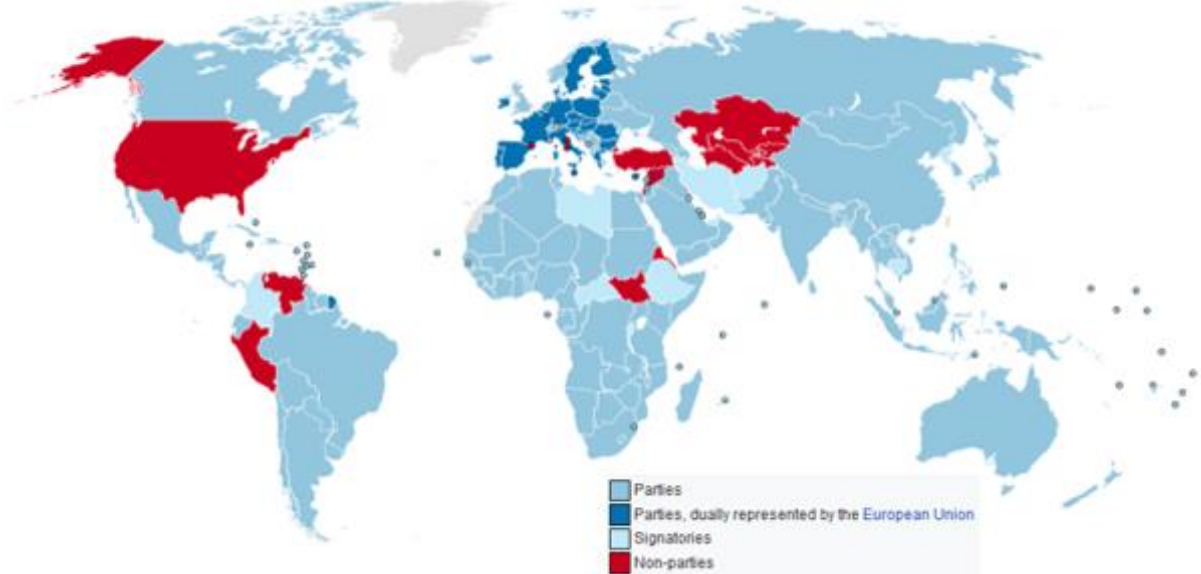


Figure 29: Map of Parties to the UNCLOS. Retrieved from https://en.wikipedia.org/wiki/United_Nations_Convention_on_the_Law_of_the_Sea

The 1982 United Nations Convention on the Law of the Sea (or UNCLOS) is a

comprehensive set of laws which cover a wide range of areas such as right of passage, the limits of territorial sea, the right of access to the sea for landlocked States, the nationality of ships, pollution prevention, the exploitation and conservation of marine resources, marine research, and so on. The UNCLOS currently has 167 Contracting Parties, including all the major shipbreaking countries except Turkey (see Figure 29).

The UNCLOS was an important step towards a more unified, commonly accepted regulation on all matters related to the sea. In fact, at the time marine activities were governed by the 17th-century principle of ‘freedom of the seas’: basically, all waters located more than 3 nautical miles away from the coast were international waters; as such, they did not belong to anyone and were free for all. However, at the beginning of the 20th century, some countries had started to push for an extension of their territorial waters so that they could exploit mineral resources and fishing resources free from competition with other nations. As a result, starting with the US in 1945, between the 1940s and the 1960s most world countries extended their claims over a distance between 12 and 200 nautical miles from the coast. However, the expansion of the national borders in the sea was unregulated, and as such it caused disputes between neighboring countries attempting to claim the same area. Therefore, the UNCLOS reaffirmed the principle of freedom of the high seas (Article 87), but it also set a universal limit for territorial waters of 12 nautical miles from the coast (Article 3) and established the creation of exclusive economic zones up to 200 nautical miles from the coast (Article 57), thus settling all disputes of this kind. This was followed by many other provisions, some of which can even be applied to shipbreaking:

- Article 23 states that, while end-of-life vessels are entitled to crossing foreign territorial waters, they are required by coastal States to “carry documents and observe special precautionary measures established for such ships by international agreements” if they are carrying “inherently dangerous or noxious substances”. According to some stricter interpretations (Samiotis et al., 2013; Galley, 2014), the passage of a foreign ship carrying hazardous substances through territorial waters for the purpose of scrapping could even fall under the conditions of non-innocent passage: in fact, according to Article 19(2), being engaged in “any act of wilful and serious pollution” is one of such preconditions. According to this interpretation, passage could then be refused by coastal States because it would

represent a potential threat (Article 25).

- The UNCLOS sets out the duties of flag States (Article 94(1)) by claiming that every State “shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag”. In the context of shipbreaking, this means that flag States are in charge of enforcing international regulations over vessels flying their flags, for example by making sure that a ship en route to a scrapyard has been pre-cleaned of any hazardous materials and that it is equipped with all the documents and clearances required by international laws.
- States have a duty to protect the marine environment (Article 192) by taking “all measures [...] that are necessary to prevent, reduce and control pollution of the marine environment from any source” (Article 194(1)). Article 216 specifies that this duty applies both to flag States, to port states and to coastal States. Moreover, according to Article 235, States are liable to pay adequate compensation for any damage caused by their inability to fulfil their obligation to protect the marine environment. Clearly, the application of these provisions is lacking: in fact, all major shipbreaking countries have promulgated laws in this regard (see Chapter 3.3, ‘Main national regulations’), but they are not enforcing them effectively, while many flag States have built their reputation on weak law enforcement, even using it as a way to incentivize registrations.

It should be noted, though, that the point at which a ship becomes waste according to the UNCLOS is a subject of debate: in fact, the Convention sets forth the duty of States to prevent and control pollution derived from dumping at sea and from a ship’s activities during its operation, but it does not explicitly state when a ship is not a ship anymore. In this regard, Galley (2014) suggests the following interpretation: a ship becomes waste when it ceases to operate as a ship; depending on the way in which the vessel reaches the shipbreaking yard, this can happen either when the ship is towed from the port to the yard, or when it is run aground at the yard ‘personally’ by the shipowner/cash buyer.

3.2.4 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989) and Basel Ban Amendment (1995)

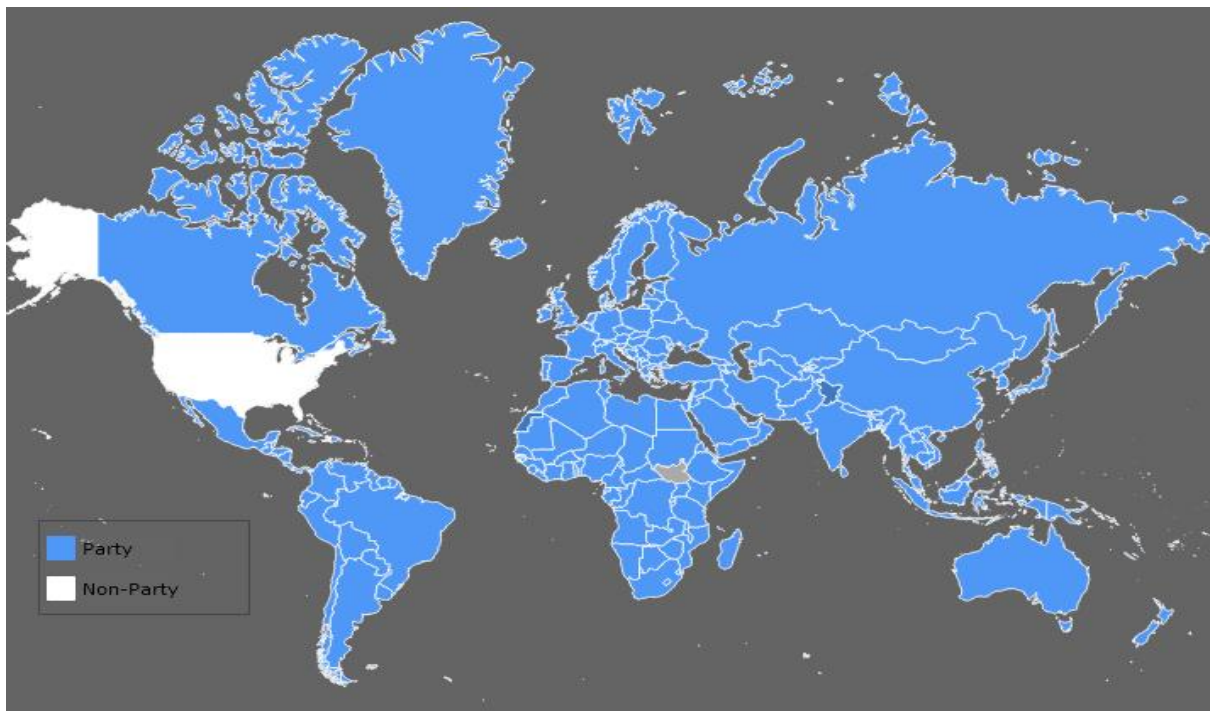


Figure 30: Map of Parties to the Basel Convention.

Retrieved from

<http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/4499/Default.aspx#enote1>

Between the 1970s and the 1980s, due to increasingly stringent environmental regulation and due to the rise of the NIMBY (Not In My Back Yard) movement, disposing of hazardous waste in developed countries became extremely expensive: for instance in the US, due to more stringent regulations, the cost for the disposal of one ton of hazardous waste went from \$15 in 1980 to \$250 in 1989 (Paul, 2004). As a result, many companies started to secretly export hazardous wastes to Eastern Europe and to other developing countries, which accepted the waste in exchange for money, but did not handle it properly (Demaria, 2010; Qayum and Zhu, 2018). Once this practice became public, it caused such an international public outrage that developed countries could not just look away: as a result, the works for the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal began. In 1992 the Basel Convention finally entered into force. It currently has 187 parties (see Figure 30), which makes it one of the most far-reaching agreements on the subject.

Just a year earlier, in 1991, Lawrence Summers (who at the time was the Chief Economist of the World Bank) had written in an internal memo which was later leaked to the press:

“Between you and me, shouldn’t the World Bank be encouraging MORE migration of the dirty industries to the LDCs [Least Developed Countries]?”⁴¹. Summers understood that toxic waste had consequences on the surrounding people and environment, but he also thought that, since this waste had to be disposed of somehow, it would be better to send it somewhere “vastly UNDER-polluted” and where people were poor and already plagued by high mortality rates. In his own words, “the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable and we should face up to that”.

The Basel Convention was designed exactly to prevent situations of that kind, “to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes and other wastes”. In order to achieve this goal, under the Basel Convention:

- A Party shall not export hazardous wastes and other wastes to another Party which has prohibited the import of such wastes (Article 4(1)(b)). In any case, export can legally take place only if the State of import and the States of transit have consented in writing (PIC, ‘prior informed consent’) to that specific import (Article 4(1)(c)). However, there is also a general duty to reduce transboundary movements of hazardous wastes to a minimum (Article 4(2)(d)).
- Both the State of export and the State of import must ensure the availability of adequate facilities for the environmentally sound disposal of waste at the place of their disposal (Article 4(2)(b)). Both Parties are also in charge of verifying that the persons involved with the management of hazardous wastes are taking all necessary steps to prevent pollution (Article 4(2)(c)). Unfortunately this is only wishful thinking, seeing how environmentally sound management of waste is not a reality in many yards, and considering how local authorities are not doing much to monitor and improve the situation in order to reach compliance in every yard.
- The State of export shall prohibit the export of hazardous wastes “if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner”, with special attention to developing countries (Article 4(2)(e)).

⁴¹ https://en.wikipedia.org/wiki/Summers_memo

This is sound advice, but unfortunately it does not take into consideration the fact that many ships which are en route to 'bad' scrapyards avoid notifying the competent authorities before their departure; moreover, the State of export often does not correspond with the flag State, and therefore it might not have the resources or even the interest to inspect all the ships anchored in its ports (plus the fact that it is often difficult to tell if a shipowner has decided to scrap a ship). Article 4(2)(g) reverses this obligation by claiming that the State of import must forbid the import of hazardous waste if it has reason to believe that the waste will be managed improperly (but again, there are cases of illegal, unauthorized beaching, and local authorities do not inspect shipbreaking yards and enforce regulations as effectively as they should).

- According to Article 4(4), each Party shall take appropriate measures to implement and enforce the Convention, including measures to punish violations (keeping in mind that, under Article 4(3), illegal traffic in hazardous wastes is a criminal offence). This should be taken for granted, but cases like the Blue Lady/SS France's show that sometimes even State authorities and legislators become complicit in violations of the Basel Convention by not punishing the perpetrators. The fact that the Basel Convention relies so much on the Contracting Parties to adopt and enforce legislation inspired to the Convention's provisions is clearly a weak point.
- Each party shall require that hazardous wastes be accompanied by documents which describe in detail the type of waste, the quantity and the point of disposal, among other information (Article 4(7)).
- The Parties shall allow the export of hazardous wastes only if "the State of export does not have the technical capacity and the necessary facilities, capacity or suitable disposal sites in order to dispose of the wastes in question in an environmentally sound and efficient manner", or if the "wastes are required as a raw material for recycling or recovery industries in the State of import" (Article 9). The first point definitely does not apply, since many movements start from countries which are well-equipped to dismantle a ship and to manage its waste in an efficient and environmentally sound way (actually, shipowners based in developed countries go out of their way to send their end-of-life vessels to South Asia, when American, European or East Asian shipbreaking yards are a lot closer).

However, the second point is a reason to allow transboundary movements of waste since, as stated in Chapter 1, India, Bangladesh and Pakistan heavily rely on the steel and on the other items recovered from end-of-life vessels.

- In order to track and authorize transboundary movements of waste efficiently and effectively, all Parties are required to establish one or more competent authorities (Article 5). The competent authority of the State of export (or the generator, or the exporter) will have to notify in writing the competent authority of the State of import, and the competent authority of the State of import will then have to respond in writing to consent to the movement, to deny permission, or to request additional information (Article 6). The movement cannot be commenced until the State of export/generator/exporter has received the State of import's written consent and "confirmation of the existence of a contract between the exporter and the importer specifying environmentally sound management of the wastes in question" (Article 6(3)).
- If a transboundary movement of hazardous waste takes place without prior authorization, it is deemed to be illegal traffic (Article 9) for the purpose of the Basel Convention. Article 9 also sets out the procedures to be adopted in case of illegal traffic. If the traffic is illegal due to the conduct of the exporter or generator, the State of export will have to arrange the recovery of the hazardous waste or, if it is impracticable, it will have to dispose of it safely at the intended place of disposal. On the other contrary, if the illegal traffic happened due to the conduct of the importer, the State of import will have to ensure the safe disposal of the waste (carried out by the importer/disposer or, if necessary, by other authorities designated by the State itself). Finally, if it is not possible to assign precisely the responsibility for the illegal traffic to the generator/exporter or to the importer/disposer, the State of export and the State of import will have to cooperate in order to ensure safe disposal.

The types of wastes covered by the Basel Convention are listed in Annex I; many of them (like PCBs, hydrocarbons, asbestos and heavy metals) are commonly found inside vessels, hence why the export of ships for the purpose of disposal falls under the Basel Convention. Annex II also requires special consideration for plastic materials like polypropylene and polystyrene (which are abundant inside ships).

Since Article 1 of the Basel Convention sets out some exceptions to the definition of hazardous waste, Annex III is a list of hazardous characteristics to help Parties understand the level of care and the procedures needed for each type of waste. Basically, wastes listed in Annex I which do not present any of the characteristics listed in Annex III are not considered to be hazardous. However, in the case of shipbreaking, the quantity of flammable, poisonous, toxic and ecotoxic substances is enough to safely include end-of-life vessels in the category of hazardous waste. Actually, the Basel Convention does not even set a minimum threshold to make a distinction between hazardous and non-hazardous waste: as a result, if a ship contains even small amounts of hazardous materials, it still falls under the Basel Convention.

Finally, Annex IV describes which disposal operations do not fall under the category of recycling: deposit into or onto land, release into the sea, and incinerations on land are some of them. The content of this Annex is actually quite important: in fact, according to Article 9 of the Basel Convention, transboundary movements of hazardous wastes are allowed only if it is not possible to handle that waste in the State of export or if the State of import will recycle that waste. As already stated, the first point does not stand, since developed countries are better equipped than South Asian countries to handle hazardous wastes safely. Consequently, if hazardous materials are exported, they must be either recycled or at least disposed of safely in the State of import. However, it has been reported that yards often dispose of hazardous wastes by burying them in fields or by burning them (or, in the case of sludges, oil and other liquids, by releasing them into the sea): this further confirms that all the hazardous waste which is not going to be recycled or handled properly by the shipbreaking company must be pre-cleaned before the ship departs on its final voyage.

The Basel Convention received a lot of criticism from shippers and shipowners with regard to the following points:

- The transboundary movement must be notified to and approved by the State of import and by all the States of transit within 60 days (Article 6(4)). However, many stakeholders in the shipping industry claimed that 60 days is a very long time for keeping an ocean-going ship anchored (Ahmed, 2020a); the fact that, under the Basel Convention, a ship becomes waste when its shipowner decides to dispose of

it also means that, during the 60-day waiting time, the ship cannot be operated (and, as a consequence of its idleness, it only generates costs for its owner).

- Even if only one transit State denies permission to transit through its territorial waters, the final voyage would have to be rerouted (with higher costs for the shipowner). If rerouting is not possible, then the shipowner will have to look for another recycler and repeat the whole PIC procedure. Overall, the need for permission from transit States as well can have serious implications for shipowners, especially considering that, due to increasing environmental awareness, some transit States could oppose to the transit of an old (and likely polluting and unsafe) vessel.
- There is no consensus on the moment in which a ship becomes waste. As previously stated, according to the Basel Convention a ship becomes waste when its owner decides to dispose of it. However, many members of the shipping industry agreed that a ship could not be considered waste while “under its own power” (Moncayo, 2016). The point is that the shipowners’ definition does not take into account that ships can be scrapped also for economic reasons, and not only because they are old or they are not seaworthy anymore; a perfectly functional vessel being scrapped due to an economic downturn does not contain fewer toxic materials than one which is being scrapped due to its age, so they should receive the same treatment. Furthermore, according to this definition, if a ship ran aground in front of a yard, since it did so under its own power, then it could potentially avoid PIC procedures since it could not be considered as waste before that moment. This is clearly a biased definition, tailored to the interests of shipowners, cash buyers and shipbreaking companies.

On the other hand, some stakeholders deemed the protection offered by the Basel Convention as insufficient. In fact, although the Basel Convention had been created as a response of the international community to ‘toxic trade’ towards developing countries, the original text of the Convention explicitly prohibited only transboundary movements directed towards Antarctica (Article 4(6)). This led some Parties to call the Basel Convention a legitimization of ‘waste colonialism’ (Paul, 2004) because, for all other destinations, there were no specific requirements except for PIC. PIC was not a bad idea in itself, but the whole consent process was so long and convoluted that some called it a

'paperwork regime'. In addition, Article 9 was easily manipulable by exporters, who used recycling as a justification even in cases where recycling was not reasonably feasible.

The lack of improvement regarding 'toxic trade' even led the Organisation of African Unity to come up with its own ban on transboundary movements of hazardous wastes, embodied in the 1991 Bamako Convention on the Ban on the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Waste within Africa. The Bamako Convention borrows heavily from the Basel Convention, but it is a lot stricter, in fact Article 4 states that "all Parties shall take appropriate legal, administrative and other measures [...] to prohibit the import of *all* hazardous wastes, *for any reason*, into Africa from non-Contracting Parties".

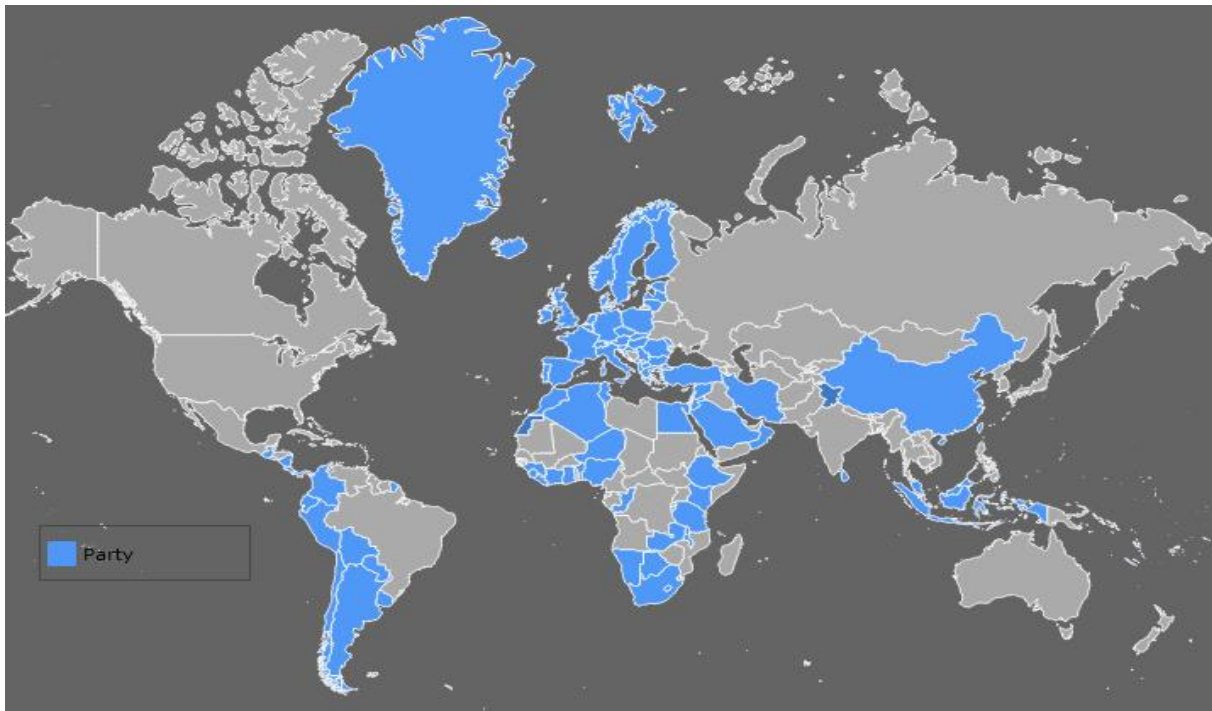


Figure 31: Map of Parties to the Basel Ban Amendment.
Retrieved from <http://www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx>

As a result of such discontent and of lobbying activities by Greenpeace, by some European countries and by some developing countries, in 1995 there was a first important amendment to the Basel Convention. The Basel Ban Amendment entered into force only on 5 December 2019, after being ratified by 98 parties (see Figure 31), which do not include India, Pakistan and Bangladesh.

The main changes brought on by the Basel Ban Amendment were the introduction of a new article (Article 4A, 'General Obligations') and of Annex VII. Article 4A prohibited all transboundary movements of hazardous wastes towards any country not listed in Annex

VII for the purposes listed in Annex IV (disposal in landfills, release into the sea, incineration, etc.). In other words, the 1995 Basel Ban Amendment fundamentally banned all exports of hazardous wastes from “Parties and other States which are members of OECD, EC, Liechtenstein” towards the rest of the world, unless the final purpose of that specific waste is recovery for reuse or recycling. However, while these provisions were indeed needed, they were not enough to solve the problem due to a big weakness: 8 out of the 10 top flag states in 2020 are not OECD members; the only exceptions are Greece and Japan, but they rank 9th and 10th in terms of registered tonnage, and Greek shipowners in particular often reflag their ships before sending them to shipbreaking yards. Reflagging a ship is not particularly unusual, and it does not necessarily suggest that a vessel might be headed to a yard; for this reason, it is difficult for competent authorities to understand whether a shipowner is looking to scrap a ship and to stop him from doing it. Consequently, an end-of-life vessel bearing a non-OECD flag and sailing from a non-OECD country would not fall under the Basel Ban Amendment.

Furthermore, Article 4A(2) provided for a total ban of all transboundary movements of hazardous waste between OECD and non-OECD countries, even for the purpose of recycling; the same Article also set a deadline of 31 December 1997 for the phase out. However, this ban is not truly ‘total’: again, it can be easily circumvented by reflagging the vessel, as testified by the fact that non-OECD countries continue to be top choices for shipbreaking and that many ships broken in South Asia are still owned by OECD-based shipowners.

In 1998, a new amendment led to the addition of Annex VIII and Annex IX. Annex VIII is closely linked to Annex I because it offers a very thorough list of materials which contain the substances listed in Annex I (for instance, Annex I includes PCBs among hazardous materials, and therefore Annex VIII includes capacitors among hazardous waste because they contain PCBs). Similarly, Annex IX is closely linked to Annex III in the sense that it lists materials which are generally not considered hazardous waste, unless they contain enough of the substances listed in Annex I to produce any of the negative effects described in Annex III.

While the Basel Convention was undoubtedly an important step, it remains easily circumventable. In fact, in addition to the loopholes discussed above, a shipowner could

avoid the Basel Convention's provisions by making the shipbreaking country the ship's last port of call (deliberately or not): in this case, in the absence of a contract between the shipowner and the ship recycling company made before the ship entered into the shipbreaking country's territorial waters, it could be difficult to prove that the shipowner had already decided to dispose of the vessel. If it cannot be proven that the ship reached the last port of call already being 'waste' in the shipowner's mind, then there is no transboundary movement of hazardous waste under the conditions set by the Basel Convention.

3.2.5 European Waste Shipment Regulation (2006)

The 2006 European Waste Shipment Regulation (Regulation No 1013/2006) incorporates at the European level the 1995 Basel Ban Amendment. Due to its nature, the EUWSR applies to all EU Member States automatically (meaning that Member States do not need to transpose the EUWSR into their domestic legal regime). As stated in its preamble, the main objective of the EUWSR is to regulate the transboundary shipment of waste "in a way which takes account of the need to preserve, protect and improve the quality of the environment and human health", establishing "procedures and control regimes for the shipment of waste, depending on the origin, destination and route of the shipment, the type of waste shipped and the type of treatment to be applied to the waste at its destination" (Article 1(1)). The preamble of the EUWSR also reaffirms some tenets of the Basel Convention, such as the need to reduce transboundary movements of hazardous wastes as much as possible, the use of the PIC notification system, and the responsibility of waste producers to ensure that their own waste is managed in an environmentally sound way. It is also important to note that the preamble of the EUWSR clearly states that this Regulation is applicable to end-of-life vessels ("It is necessary to ensure the safe and environmentally sound management of ship dismantling in order to protect human health and the environment").

Pursuant to Article 1(2), the EUWSR applies to all movements of waste between Member States of the EU/EFTA, to waste imported into the EU from third countries, to waste exported from the EU to third countries, and to waste movements between third countries which happen to cross the EU. It should be noted, though, that the EUWSR does not include wastes which are generated during a ship's normal operations (Article 1(3)), since they are already covered by the 1973 MARPOL Convention. For the purposes of this thesis, the

focus will be limited to shipments from the EU to third countries, which are dealt with in Title IV ('Exports from the Community to third countries').

Article 34(1) clearly states that the export of waste for disposal from the EU to third countries is prohibited, unless the country of disposal is a member of the EFTA *and* a Party to the Basel Convention (which is not the case for South Asia). Article 36(1) defines the wastes which cannot be exported to non-OECD countries for recovery, which are listed in Annex V of the EUWSR. There are some exceptions (see Article 36(3)), but they are not relevant enough to question the ban on exports of hazardous wastes for the purpose of recovery. Actually, some green-listed items which do not contain and are not contaminated with hazardous substances *and* which will be recovered in an environmentally sound way can be exported to non-EU and non-EFTA countries as well through a PIC procedure. For instance, in the case of an end-of-life vessel, uncontaminated steel, batteries, cables and other items can *technically* be exported to a third country under the EUWSR; however, first the ship would have to be pre-cleaned of all substances and materials whose export is banned, and this would likely impair its seaworthiness. Furthermore, Article 36 claims that the export of waste for recycling purposes can be prohibited if "the competent authority of dispatch has reason to believe [the waste] will not be managed in an environmentally sound manner [...] in the country of destination concerned". Article 49(2) recognizes environmentally sound management of waste if the notifier or the competent authority in the country of destination can prove that the chosen waste management facility can operate at health, safety and environmental protection standards comparable to those established in the EU. In the case of shipbreaking yards in India, Pakistan and Bangladesh, this is debatable (as confirmed by the fact that, currently, the European List of Ship Recycling Facilities does not include any South Asian scrapyards); moreover, the definition of environmentally sound waste management given in Article 49(2) fails to acknowledge the fact that South Asian shipbreaking countries do not lack appropriate regulations, but they still fall behind in terms of law enforcement.

Finally, Title VII contains other general provisions applicable to the shipment of wastes. For instance, Article 49(1) states that all stakeholders "shall take the necessary steps to ensure that any waste they ship is managed without endangering human health and in an environmentally sound manner throughout the period of shipment and during its recovery and disposal". Member States are also advised to apply penalties which are

“effective, proportionate and dissuasive” (Article 50(1)).

Currently, the application of the EUWSR for shipbreaking has been superseded by the 2013 European Ship Recycling Regulation, which fixed some of the EUWSR’s weakest points. First of all, while the EUWSR was intended to be applicable also to exports of end-of-life vessels, its application has not been uniform: in fact, similarly to the Basel Convention, the EUWSR operates on the concept of ‘intent to dispose’; the issue with this, though, is that the intent to dispose of a ship can be difficult to prove in court. The EUWSR can also be circumvented by ‘officializing’ the decision to scrap a ship only after the ship has already left European territorial waters, since the EUWSR is applicable only to end-of-life vessels which either depart from European ports, or which depart from extra-European ports and cross European territorial waters during their final voyage. Finally, the European Environmental Bureau has been advocating for a strict ban of waste exports⁴²: in fact it believes that, since the EUWSR allows export for all types of recovery regardless of the fact that some recovery methods are more sustainable than others (see reuse versus incineration), this is watering down the EUWSR and making it less effective in protecting people and the environment in the countries where waste is exported.

It is worth mentioning that, at this point, the EUWSR should have also been superseded by the 2009 Hong Kong Convention, which was expected to come into force between 2015 and 2020; Milieu and COWI (2009) even stated that the EUWSR was most likely only a “temporary solution”, hence why there was no need to put too much effort into amending it and enforcing it. However, this has not happened because the conditions for the entry into force of the HKC have not been met yet (see 3.2.6 ‘Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships’).

⁴² <https://eeb.org/eu-waste-shipment-regulation-falls-short-of-fixing-europes-waste-export-crisis/>

signatories will have to ensure that ships flying their flag and that ship recycling facilities operating under their jurisdiction comply with the requirements set by the HKC (Article 4(1)).

One of the most important and ‘innovative’ aspects of the HKC is that its Annex (‘Regulations for safe and environmentally sound recycling of ships’) sets obligations and responsibilities not only for flag States and for recycling States, but also for port States, shipowners, shipbuilders and shipbreaking yards. In order to make this system work, every year the HKC requires Parties to share certain information with the IMO, which will ‘disseminate’ it (Article 12). For instance, recycling States are required to provide a list of the authorized ship recycling facilities operating under their jurisdiction, plus a list of the ships dismantled there, in addition to reporting about violations of the HKC and about the actions taken in response; flag States, on the other hand, are required to submit to the IMO a list of the ships for which they have released International Ready for Recycling Certificates, including also information on the name and on the location of the shipbreaking companies which dismantled them.

Chapter 2 – Requirements for ships

Regulation 4 (‘Control of ships’ Hazardous Materials’) states that the use of the materials listed in Appendix 1 of the HKC is prohibited and/or restricted on board ships flying the flag of a Party or operating under a Party’s authority. Appendix 1 of the HKC (‘Control of Hazardous Materials’) lists hazardous materials (asbestos, ozone-depleting substances, PCBs and anti-fouling compounds and systems) the use of which is forbidden in newbuilds. Appendix 2 (‘Minimum list of items for the Inventory of Hazardous Materials’), on the other hand, lists substances such as materials listed in Appendix 1, cadmium, lead, mercury and radioactive substances; the use of the materials and substances listed in Appendix 2 is allowed in ships which have already been built, but their presence must be reported in the Inventory of Hazardous Materials (see Regulation 5).

Regulation 5(1) (‘Inventory of Hazardous Materials’) requires shipbuilders to provide a ship-specific Inventory of Hazardous Materials (IHM) for all newbuilds; then, shipowners will have to ensure that each of their vessels is carrying on board its own IHM at all times. Part I of the IHM must identify the type, quantity and location of all hazardous materials present in the ship’s structure, while Part II of the IHM must state that the ship does not

contain any materials whose use has been prohibited or restricted by the flag State or by the IMO. As for existing ships, they have 5 years from the entry into force of the HKC to obtain their IHM, or less than 5 years if recycling takes place earlier (Regulation 5(2)). In case a vessel's structure or equipment is substantially changed during its operational life, the IHM will have to be updated accordingly (Regulation 5(3)).

According to Regulation 8 ('General requirements'), ships flying the flag of a Party can be recycled only in ship recycling facilities under the jurisdiction of HKC signatories *and* which have been authorized as compliant with the requirements of the HKC. Before a ship's final voyage, its shipowner must obtain a certificate stating that the ship is ready for recycling; in the specific case of tankers, the HKC also requires the shipowner to clean cargo tanks so that, once the tanker arrives at the shipbreaking yard, it will be ready to be certified as safe-for-entry and safe-for-hot work. Finally, Regulation 8 of the HKC requires shipowners to provide the chosen ship recycling facility with all information needed to create a Ship Recycling Plan.

Regulation 9 ('Ship Recycling Plan') of the HKC requires the ship recycling facility to collaborate with the shipowner in order to prepare a Ship Recycling Plan which must contain information such as the type and amount of hazardous materials contained in the vessel, and how they will be managed. The ship recycling facility must submit the Ship Recycling Plan to its domestic Competent Authority; once said Authority has approved the Plan, recycling activities can start.

Regulation 10 ('Surveys') sets intervals and events for ship surveys. Generally, vessels to which the HKC applies must be inspected at least every 5 years, but additional inspections are required after reflagging or after alterations, replacements or repairs which significantly alter a ship's structure, equipment or systems; this is done in order to update the IHM and ensure that the ship is still HKC-compliant. The HKC also requires a final inspection before the vessel departs for the recycling yard, in order to verify the accuracy of the IHM, to make sure that the Ship Recycling Plan is adequate for the ship, and to confirm that the chosen ship recycling facility holds a valid authorization for the recycling of that specific vessel.

Regulation 11(1) ('Issuance and endorsement of certificates') states that International Certificates on Inventory of Hazardous Materials are issued by the Administration of the

flag State (or another organization authorized by the Administration) after a ship has successfully passed a renewal inspection; such certificates are valid for 5 years (Regulation 14(2)) and can be renewed only after passing another renewal inspection. The flag State's Administration is also tasked with issuing International Ready for Recycling Certificates to ships which have passed their final survey; since these inspections are done close to the beginning of the final voyage, they remain valid only for 3 months (Regulation 14(3)).

Pursuant to Article 8(2) of the HKC, officers at any port or offshore terminal located in a Party's territory are authorized to inspect ships in order to verify their compliance with the HKC; this usually means ensuring that a ship is carrying a valid International Certificate on Inventory of Hazardous Materials or International Ready for Recycling Certificate. In case a ship to which the HKC applies is found to be noncompliant (or if there are reasonable grounds to doubt its compliance), officers are authorized to carry out a more detailed inspection and, if noncompliance is confirmed, they have the power to "warn, detain, dismiss or exclude the ship" from the country's ports (Article 9(3)).

Chapter 3 – Requirements for ship recycling facilities

Regulation 15(1) ('Controls on Ship Recycling Facilities') requires Parties to "establish legislation, regulations, and standards that are necessary to ensure that ship recycling facilities are designed, constructed, and operated in a safe and environmentally sound manner", in accordance with the requirements set by the HKC. Parties shall also define procedures for authorizing HKC-compliant ship recycling facilities to operate (Regulation 15(2)), and for inspecting them and enforcing provisions in case they are found to be noncompliant (Regulation 15(3)).

According to Regulation 16 ('Authorization of Ship Recycling Facilities'), ship recycling facilities operating under the jurisdiction of a Party can operate only after they have been cleared to do so by the Party's Competent Authority; authorization is usually issued after an inspection carried out by the Competent Authority or by another organization appointed by the Competent Authority. The HKC requires renewal inspections to be carried out at least every 5 years.

Regulation 17 ('General requirements') states that authorized ship recycling facilities

must “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” in order to eliminate (or at least prevent and minimize) the negative externalities generated by recycling activities. Furthermore, authorized facilities are required to recycle only ships carrying appropriate documentation and which have been cleared for recycling.

Regulation 18 (‘Ship Recycling Facility Plan’) of the HKC states that ship recycling facilities have the duty to prepare a Ship Recycling Facility Plan which illustrates – inter alia – the facility’s policies for ensuring the protection of the environment and of the health and safety of workers, how the facility is going to minimize and possibly eliminate the negative environmental and health effects generated by shipbreaking activities, the provision of training programs for workers, and reporting systems for accidental environmental pollution, injuries, accidents and occupational diseases.

Regulation 19 (‘Prevention of adverse effects to human health and the environment’) states that ship recycling facilities must put in place procedures for maintaining and monitoring safe-for-entry and safe-for-hot work conditions, and in general for preventing occupational diseases and accidents which may harm the environment and/or human health.

Regulation 20 (‘Safe and environmentally sound management of Hazardous Materials’) states that authorized ship recycling facilities must handle hazardous materials in a safe and environmentally sound way, for example by identifying, labeling, packaging and removing all hazardous materials before cutting starts. The same regulation also calls for the establishment and use of proper waste management and disposal sites.

According to Regulation 21 (‘Emergency preparedness and response’), ship recycling facilities must prepare and maintain an emergency preparedness and response plan. This plan should cover areas like first aid and medical assistance, communication with local firefighting and emergency services, evacuation procedures for all employees, safety and emergency training for workers, and periodic safety drills.

Regulation 22 (‘Worker safety and training’) sets out the duty of employers to distribute and maintain PPE and appropriate clothing for workers, plus the duty to train workers so

that they will be able to carry out their activities as safely as possible. Moreover, the HKC advises employers in ship recycling facilities to offer refresher courses in addition to initial training, to document workers' attendance to such courses, and to assess participants' technical and safety knowledge.

Regulation 23 ('Reporting on incidents, accidents, occupational diseases and chronic effects') requires authorized ship recycling facilities to report to the Competent Authority accidents and occupational diseases, describing the issue, its cause and how the issue was addressed, plus future corrective actions.

Since Parties are encouraged to cooperate in enforcing the HKC and in reporting possible violations, if a Party receives a request for investigating a ship recycling facility operating under its jurisdiction (backed with sufficient evidence of infringements of the HKC), said Party is required to take action; then, once the ship recycling facility has been inspected, the Party must prepare a report and submit it both to the reporting Party and to the IMO (Article 9(4)).

Chapter 4 – Reporting requirements

Regulation 24(1) ('Initial notification and reporting requirements') requires shipowners to notify the flag State's Administration about their intention to scrap a ship; this must be done taking into account the time it will take for the Administration to organize the final survey and to issue the International Ready for Recycling Certificate. On the other side, authorized ship recycling facilities must inform the domestic Competent Authority of their intention to scrap a ship (Regulation 24(2)); in doing so, they must also submit a draft of the Ship Recycling Plan for approval. Once the shipowner has obtained the International Ready for Recycling Certificate, the ship recycling facility must inform the Competent Authority that recycling is about to start.

Under Regulation 25 ('Reporting upon completion'), ship recycling facilities also have a duty to inform the Competent Authority when recycling has been completed; this entails preparing and submitting a document in which the ship recycling facility reports – inter alia – any accident which might have damaged the environment and/or human health. After receiving and reviewing this document, the Competent Authority will issue a statement of completion.

3.2.6.1 *Strengths and weaknesses of the HKC*

Overall, the HKC has received mixed reactions. Its holistic ‘cradle-to-grave’ approach is considered to be one of its main strengths: in fact, unlike the Basel Convention and the EUWSR, the HKC’s provisions are not limited to the dismantling of ships and to the disposal and/or recovery of the waste they contain. Instead, the HKC addresses the problem of hazardous waste straight from its source, preventing shipbuilders from using certain materials and encouraging them to find alternative solutions for greener ship design and construction. The HKC also exercises control throughout a ship’s service life thanks to periodical surveys aiming to certify that the ship is still not only seaworthy, but also HKC-compliant. Finally, the HKC sets forth a system to ensure that, at the end of their operational life, ships will be dismantled safely, and that the resulting waste will be handled in an environmentally sound way. Moreover, the HKC’s cradle-to-grave approach helps to shift some costs from shipbreaking and waste treatment facilities to shipbuilders and shipowners, in line with the ‘polluter pays’ principle.

The surveying and certification system imposed by the HKC also allows to keep track of a ship’s inbuilt hazardous materials no matter how many times its ownership will change during its service life, ensuring that even the final owner (the shipbreaking company) will have access to the information contained in the IHM (Ahmed, 2020b). The IHM is another important innovation, because it allows ship recycling facilities to draft a Ship Recycling Plan, which is supposed to result in safer waste handling and in better coordinated dismantling operations.

However, not all that glitters is gold. In fact, the HKC has several gaps: for instance, Regulation 10 states that additional surveys following significant alterations to a ship’s structure are to be made at the shipowner’s request, even though carrying an outdated IHM should not be compatible with the HKC’s cradle-to-grave approach. Further shortcomings are listed in the next paragraphs; some of them are serious enough that they prompted many scholars and organizations to claim that the HKC does not offer a level of protection and control equivalent to the Basel Convention (Matz-Lück, 2010).

Lack of a ban on transboundary movements of waste and no duty to reimport illegal waste

First of all, unlike the Basel Convention, the HKC does not ban transboundary movements

of waste and, as noted by Moncayo (2016), it does not even include the proximity principle, which would encourage shipowners to reduce transboundary movements of waste to a minimum. Moreover, unlike the Basel Convention, the HKC does not explicitly allow flag States to prohibit the export of an end-of-life vessel in case the flag State has reason to believe that the ship would not be handled appropriately in the shipbreaking State. In fact, according to the HKC, flag States can prohibit export only by refusing to issue the International Ready for Recycling Certificate; however, under the HKC this is justifiable only if the final survey identifies discrepancies between the ship's structure and its IHM. In this sense, as evidenced by Orellana et al. (2011), the issuance of the International Ready for Recycling Certificate acts like a green light for the beginning of demolition activities because, if a ship passes the final survey, then flag States technically have no reason to refuse to issue the International Ready for Recycling Certificate. Similarly, recycling States can prohibit the demolition of a ship only if the facility chosen by the shipowner is not authorized to operate, or if the Ship Recycling Plan is inadequate.

Additionally, unlike the Basel Convention, the HKC does not set a duty for shipowners to reimport the vessel back to the exporting country in case the vessel was exported illegally (in violation of the HKC's provisions): this could result in these vessels being abandoned on the beaches of shipbreaking States.

Limitations to applicability

The HKC contains an exemption for ships below 500 gross tons, for warships, for ships operated on government non-commercial service, and for ships which operate inside their flag State's waters. The exclusion of warships in particular is quite debated: in fact, although they represent only a very small share of ships broken worldwide – Milieu and COWI (2009) report that only 0.4% of all European scrapped ship in 2007-2010 were warships – they tend to be highly contaminated with hazardous materials, and therefore dismantling operations can be more dangerous compared to regular merchant vessels (Ahmed, 2020b).

On the other hand, the exclusion of smaller ships and of domestic ships is more understandable (although not everyone agrees on the arbitrary limit of 500 gross tons), because it is mostly a matter of logistics and economic viability. In fact, there are so many small ships all over the world that the burden of preparing IHMs and surveying and

certifying all of them would be unbearable for many flag States. Moreover, smaller vessels are less prone to traveling long distances for demolition because, compared to larger ships, proportionally they contain more hazardous materials, and therefore recyclers are less interested in them (which obviously reflects also in the price that shipbreaking companies are willing to pay for small vessels).

In any case, it should be remembered that all vessels beyond the scope of application of the HKC will still fall under other international conventions, such as the Basel Convention and the Basel Ban Amendment.

Acceptance of low shipbreaking standards and lack of a ban on beaching

In addition to limited applicability, the HKC has been criticized due to its ambiguity on the requirements for safe and environmentally sound shipbreaking. In fact, the HKC does not include a list of acceptable breaking methods, and it does not even set any ‘universal’ criteria to use when evaluating a ship recycling facility’s compliance (or lack thereof): instead, the HKC simply sets a standard of ‘practicability’ (Ahmed, 2020b). The main problem is that practicability is subjective, and it can vary considerably from one country to another, and even from one yard to another (due for instance to investment capacity constraints, available machinery and infrastructure, etc.). Additionally, practicability involves a trade-off between profitability and protection of the environment and of the health of workers. This tradeoff in particular raises important ethical issues because, when surveying ship recycling facilities for authorization, in the absence of objective criteria, HKC Parties basically have to look at one yard’s safety performance and waste management performance and determine whether it is worth improving those aspects at the expense of profits; this means that, potentially, a cash-strapped yard could be cleared to operate even though it underperforms in workers’ safety and environmental protection, as long as inspectors believe that said yard is taking every financially practicable measure to mitigate risks.

In particular, the HKC has been heavily criticized because it does not ban beaching, despite being extremely polluting and dangerous for the marine and land environment, for shipbreaking workers and for the neighboring communities. It is evident that the HKC drafters attempted to strike a balance between environmental protection, workers’ safety and political and economic interests: in fact, if beaching was banned altogether, none of

the major shipbreaking countries would have ratified the HKC, and as a result there would be a drastic reduction in global recycling capacity. For this reason, it could be advisable to set defined, objective and acceptable safety, environmental and waste management standards, allowing Parties to start with partial compliance and setting a deadline for achieving full HKC compliance later.

During drafting of the HKC, it was believed that such flexibility in ship recycling standards would encourage the top shipbreaking nations to join the Convention. However, the fact that the HKC has not entered into force yet shows that flexibility is not enough to 'convince' countries such as Pakistan and Bangladesh, even though the HKC is already favoring the interests of yards and shipowners. The difficult part of drafting the HKC was balancing obligations in a way which tried to protect everyone, but not strongly enough to drive shipbreaking countries away; unfortunately, the problem with trying to accommodate everyone's requests is that, at the end, no one is satisfied with the outcome. NGO Shipbreaking Platform, for instance, claimed that the HKC is greenwashing the shipbreaking industry and that it is legitimizing substandard procedures, rather than promoting the adoption of best practices; Rizwana Hasan, chief executive of the Bangladesh Environmental Lawyers Association used even harsher words, calling the HKC a "useless piece of paper" (Bhattacharjee, 2009).

Lack of 'polluter pays' principle and no express need for pre-cleaning

Under the 'polluter pays' principle, the polluter (which is generally identified with the shipowner) has the duty to pre-clean end-of-life vessels from hazardous materials before exporting them for scrapping, and he is also liable for any damage which might be caused by pollution generated from the vessel he owns. The 'polluter pays' principle features in all the main international regulations on ship recycling and transboundary movements of waste, because it helps protect both the environment and the health of shipbreaking workers and local communities from the effects of careless waste management. The point is that pre-cleaning is expensive, hence why shipowners would gladly avoid having to pay for it, externalizing the cost to someone else; on the other side, many ship recyclers are not very concerned about the consequences of dismantling a 'toxic' ship which will expose workers and the local environment to hazardous substances.

Despite this, the HKC does not contain any provision related to the 'polluter pays'

principle. Regulation 8 states that shipowners should “conduct operations in the period prior to entering the Ship Recycling Facility in order to minimize the amount of cargo residues, remaining fuel oil, and wastes remaining on board”. The phrase “conduct operations” in particular seems to suggest that end-of-life vessels should be *operated* in a way which minimizes hazardous wastes, but not *expressly* pre-cleaned. This interpretation is reaffirmed by the fact that shipowners must ensure that the ship recycling facilities they choose are equipped to deal adequately with waste: as explained by Galley (2014), this, coupled with the lack of explicit references to pre-cleaning, could mean that actual pre-cleaning can also be carried out after the ship has already reached the recycling State.

Similarly, the HKC’s provisions on tankers are lacking as well. In fact, Regulation 8 states that end-of-life tankers must reach the ship recycling facility “in a condition that is ready for certification as safe-for-entry, or safe-for-hot work, or both”: this means that, while tankers must be ready to be certified as safe-for-entry and/or safe-for-hot work, they are not required to obtain the certificate *before* departing on the final voyage to the scrapyard (unless required by the recycling State). Interestingly, Ahmed (2020b) reports that, when the HKC was being drafted, India proposed to allow tankers to be exported only after being certified as safe-for-entry and/or safe-for-hot work, but shipowners strongly opposed to this idea, hence why, in the final drafting, tankers are merely required to *prepare* tankers for certification, rather than actually *obtaining* a certification.

Downstream waste management is not covered

Many environmental groups and scholars have complained about the HKC’s failure to cover downstream waste management (Galley, 2014; Qayum and Zhu, 2018). In fact, Regulation 20(3) states that ship recycling facilities must identify waste management and disposal sites which can ensure safe and environmentally sound management of the hazardous waste recovered from end-of-life vessels; however, the HKC does not provide any operational standard for downstream waste management facilities, and it also does not specify who is tasked with authorizing such facilities to operate. In order to be effective in protecting health and the environment, the HKC should extend its scope to cover waste management, disposal and/or recovery as an integral part of ship recycling operations.

If the HKC entered into force, waste handled outside ship recycling facilities would still be regulated by the Basel Convention, although this is not an ideal choice, because the Basel Convention has been proved to be quite ineffective due to poor monitoring and enforcement on the part of shipbreaking States. Moreover, applying both the Basel Convention and the HKC to different parts of the dismantling and recycling process in a smooth way is complicated, especially considering that the Basel Convention's list of hazardous materials is a lot more comprehensive than the HKC's list (basically, some materials would have to be handled according to the Basel Convention as soon as demolition begins, while others would be covered by the Basel Convention only after they leave the shipbreaking yard for recovery or disposal).

Lack of a PIC notification system

The PIC (Prior Informed Consent) procedure is another essential element of the Basel Convention which is missing from the HKC. It has been replaced by a communication mechanism in which the shipowner contacts the flag State's Administration to obtain an International Ready for Recycling Certificate and, on the other side, the chosen ship recycling facility notifies the domestic Competent Authority and submits a Ship Recycling Plan. However, the lack of mandatory state-to-state communications means that, potentially, a recycling State could be notified of a yard's intention to scrap a ship only after the ship has already entered the recycling State's territorial waters. While Recycling States still have the right under the UNCLOS to refuse entry into their territory, and while Article 9 of the HKC allows Parties to exclude ships from their ports in case they are believed to be acting in violation of the HKC's provisions, the lack of a PIC system could force recycling States to make decisions too quickly (Jain et al., 2013); moreover, if a ship has already reached the recycling State's territorial waters, the recycling State might decide to allow scrapping simply because the situation configures as sort of a *fait accompli* (Bhattacharjee, 2009).

Transit States too are impacted by the lack of a PIC procedure. In fact, while the Basel Convention required shipowners to notify the State of import *and* transit States, the HKC does not contain any provision of this kind. If the HKC entered into force, technically transit States would still have a right to deny end-of-life ships the right of innocent passage under the UNCLOS for environmental protection reasons; however, exercising

this right would be almost impossible if transit States are not even aware that an end-of-life vessel will cross their territorial waters on the way to a recycling State.

Heavy reliance on recycling States for implementation and lack of third-party auditing mechanisms

The HKC has been criticized for leaving too many details to the discretion of recycling States, despite the fact that many shipbreaking countries are unable (and unincentivized) to enforce standards and regulations effectively. First of all, all the provisions contained in the HKC must be incorporated into each Party's domestic legislation; at this point, each Party must also set its own requirements for safe and environmentally sound waste management (which, as already stated, are going to be different from one country to another due to the HKC's vagueness on this matter).

Furthermore, Parties are responsible for inspecting, authorizing and monitoring the compliance of ship recycling facilities operating under their jurisdiction. While it is important to ensure that recycling States are able to exercise sovereignty over their own territory, it is also true that giving this much leeway to recycling States can perpetuate undesirable conditions where authorizations are issued too generously, based only on economic considerations, and yards are not punished in case of noncompliance. As noted by Matz-Lück (2010), this system could become a breeding ground for corruption.

The most practical and reliable solution would be to set up an independent third-party auditing mechanism; indeed, the initial draft of the HKC discussed about this (Bhattacharjee, 2009), but then the idea was abandoned due to pressures from India and China (among others). The delegations which were opposed to a mandatory third-party auditing mechanism complained especially about the resulting loss in sovereignty. However, as explained further on, since 2015 many Indian yards have obtained HKC statements of compliance from independent accreditation societies (which had not been appointed to do so by the Indian Government): truthfully, since the HKC is not in force yet, the relevance of such statements of compliance is limited, as they cannot stop noncompliant yards from operating; however, at the same time, the Indian Government has shown little interest in issuing its own statements of compliance, which raises doubts about the motivations used by India against independent auditing schemes.

Regarding violations, Article 9 of the HKC illustrates the actions available to Parties for notifying potential breaches of the Convention. As stated in Article 9(4), if a Party has sufficient evidence to believe that a ship recycling facility “is operating, has operated or is about to operate in violation of any provision” of the HKC, it has a duty to request an investigation. This provision is obviously needed, but it might not yield the expected results because there seems to be little interest for Parties to report a foreign ship recycling facility; this is true especially for flag States, because reporting alleged violations could alienate shipowners (which would result in monetary losses for ‘uncompetitive’ flag States). For instance, the HKC requires ship recycling facilities to send a copy of the statement of completion both to the recycling State’s Competent Authority and to the flag State’s Administration, in order to inform them about any damage to the environment and/or to human health which may have occurred during a ship’s demolition. Presuming that the information contained in the statement of completion is truthful, even if the flag State’s Administration noticed that accidents are very common in a certain ship recycling facility, there is not much it can do to prohibit ships from using that yard in the future. In fact, as already stated, the only reason to deny issuance of an International Ready for Recycling Certificate is if the ship’s IHM does not match with the ship’s actual condition; then, the only possible solution for the flag State would be to ask the recycling State to investigate that yard, but again, this would likely have consequences on that flag State’s appeal in the eyes of shipowners. Considering that it would be easy for shipowners to reflag their ships in a country which is more ‘tolerant’ of violations – or even in a non-Party – it is easy to understand why many breaches could go unreported.

The European Commission brought up this issue even before the HKC’s final text was approved: in particular, in its EU Strategy for Better Ship Dismantling (2008a), the European Commission stated that the HKC’s effectiveness could be limited due “existing governance problems in some developing countries”, coupled with the fact that the HKC does not provide for any specific noncompliance mechanism. This means that, in case a Party identifies any violation of the HKC, the Party itself will see to imposing sanctions according to its domestic legislation: the problem is that, if sanctions are not proportional to the damage caused, and if they are too light to have any dissuasive effects, there will not be any noticeable improvement.

But it is not only a matter of incentives: another weak point of the HKC’s reporting system

is that, after receiving a report for a yard's alleged violation, the recycling State itself will carry out inspections. However, in the case of South Asian shipbreaking countries, there is an evident interest in downplaying the consequences of dangerous, noncompliant practices in favor of economic interests. Clearly, a more reliable solution would be to task an independent, IMO-approved party to carry out inspections and issuing reports.

Reliability of accreditation societies and statements of compliance

This leads to another issue: the reliability of statements of compliance issued so far by accreditation societies. Even though the HKC has not entered into force yet, over the years many shipbuilders, shipowners and ship recycling facilities have taken steps to meet the criteria set by the HKC (which will hopefully prevent administrative bottlenecks when – and if – the HKC will enter into force). According to data reported by cash buyer GMS, so far statements of compliance have been issued to 92 yards in India, 14 yards in Turkey, 2 yards in China and 1 yard in Bangladesh⁴³. In particular, Indian yards have ramped up their efforts to achieve compliance after India ratified the HKC and subsequently issued the 2019 Ship Recycling Act⁴⁴.

However, some organizations are dubious about the criteria used for issuing statements of compliance. For instance, when the PHP Family yard in Chittagong (Bangladesh) announced that it had obtained an HKC statement of compliance, local trade unions and the Bangladesh Institute for Labour Studies protested against this decision, claiming that, in the past, PHP Family had violated its employees' freedom of association⁴⁵; other NGOs denounced that they had been prohibited from entering PHP Family's premises, and that many accidents had been occurring at that yard. NGO Shipbreaking Platform describes a similar situation in India, noting that the first yards in Alang-Sosiya which received HKC statements of compliance (Priya Blue, Kalthia, Leela and Shree Ram)⁴⁶ were respectively linked to cash buyers Best Oasis, Wirana, GMS and NKD Maritime. In general, NGO

⁴³ https://www.gmsinc.net/gms_new/index.php/blog-details?rowId=88

⁴⁴ <https://safety4sea.com/cm-industry-needs-to-give-to-ship-recycling-regime-the-attention-it-deserves/>

⁴⁵ <https://shipbreakingplatform.org/press-release-ngos-and-trade-unions-denounce-certification-issued-to-php-yard-by-classification-society-rina/>

⁴⁶ <https://shipbreakingplatform.org/issues-of-interest/the-law/hkc-soc/>

Shipbreaking Platform believes that the standards used by accreditation societies are too lax, and that the resulting proliferation in HKC statements of compliance is greenwashing the South Asian shipbreaking industry.

Most HKC statements of compliance have been issued by legitimate accreditation societies such as ClassNK, RINA and Bureau Veritas. However, as already stated, the HKC does not set specific standards, and none of these societies has been appointed by the Indian Government; consequently, they are not evaluating yards through universally recognized criteria. For instance, Laursen (2016) reported that, while ClassNK's certification process lasted up to 18 months, RINA's process lasted only 4 months because it did not include secondary cutting facilities.

Lack of incentives to join the HKC

Overall, it could be said that the main reason why the HKC has not entered into force yet is that it does not really offer any worthwhile incentive to its Parties, compared to non-Parties. In fact, if the HKC entered into force as it is, it could have the following estimated effects:

- Shipowners whose ships fly a Party's flag would be able to send their vessels only to HKC-compliant yards operating under another Party's jurisdiction. As a result, they would have less options because, for instance, they could not have their ships dismantled in Pakistan or in Bangladesh. Moreover, likely these shipowners would have to accept lower prices for their end-of-life vessels, since compliance costs for the yards would be higher than they currently are.
- Shipowners whose ships fly a non-Party's flag would still be able to choose yards freely, but keeping in mind that, if they choose a yard from a Party, they will have to ensure that their vessels are in a condition comparable to those required to Party vessels; this can be quite expensive, depending on the specific conditions set by the recycling State for accepting end-of-life vessels from non-Parties (but, again, these costs can be avoided by choosing a yard located in a non-Party's territory). It should be noted that only 2 out of the 10 top flag States have joined the HKC at this moment (namely Panama and Malta).
- Ship recycling facilities operating under a Party's jurisdiction will still be able to break ships from both Parties and non-Parties (however, as required by Article

3(4), Parties must give “no more favorable treatment” to vessels flying non-Party flags). Currently, India is the only South Asian shipbreaking country among HKC Parties; even if it set ‘relaxed’ conditions for accepting vessels from non-Parties, its yards would probably still dismantle less ships because compliance costs would force them to bid lower so that, from a purely economic point of view, it would be more convenient for non-Party ships to be dismantled in non-Party yards. Turkish yards, on the other hand, could potentially benefit from increased traffic due to less competition from yards in Pakistan and Bangladesh. In general, the type and magnitude of the HKC’s impact on Indian and Turkish yards will depend a lot on reflagging trends.

- Ship recycling facilities operating under a non-Party’s jurisdiction would be able to break only ships from non-Parties. Pakistan and Bangladesh could lose some business, but probably not much since, as already stated, they would probably ‘lose’ almost only ships from Panama and Malta (keeping in mind that some of these ships could also be reflagged to a non-Party’s flag in order to escape from the HKC’s provisions).

It appears that the HKC would have the most ‘negative’ impact on shipowners whose ships fly a Party’s flag and – to a much lesser extent – on yards operating under a Party’s jurisdiction. Overall, it is easy to see why most top flag States do not feel urged to join the HKC: ships flying their flag are subject to lower compliancy requirements throughout their service life and, at the time of disposal, responsible shipowners can still opt for safe and environmentally sound ship recycling, if they wish to do so. Ahmed (2020b) challenged Article 3(4), claiming that “mere acceptance of ships from nonparty by a party’s facility would indirectly discriminate between party and nonparty ships” because, even though Party and non-Party end-of-life vessels must be treated equally by Party yards, non-Party vessels still enjoyed far more favorable treatment during their operational life. However, the problem with putting limits on which ships can be dismantled in Party yards is that it could ‘force’ responsible shipowners to choose substandard yards in non-Party countries if their vessels are flying non-Party flags (which would clearly be an undesirable outcome).

On the other hand, it is also easy to see why Pakistan and Bangladesh have not joined the HKC: reaching HKC compliance would require huge efforts and investments; moreover,

Mikelis (2021) reports that many yards in Pakistan and Bangladesh are not motivated to upgrade their infrastructure and to train their workers because shipowners' demand for HKC-compliant recycling has increased more slowly than the supply of HKC-compliant recycling capacity. However, as reported by the ECSA (2019), this is a missed opportunity for these countries to improve their environmental performance and workplace safety. Moreover, as claimed by the ECSA (2019) and Mikelis⁴⁷, the decision not to ratify the HKC is a threat to India and China as well: in fact, these countries have been investing into upgrading their facilities and, considering that they are already less attractive and competitive, they could lose even more ground if the HKC entered into force without ratifications from Pakistan and Bangladesh. For this reason, shipowners could play a powerful role in convincing Pakistan and Bangladesh to join the HKC, if the majority of them actually showed more interest in safe and environmentally sound ship recycling.

Lack of a funding mechanism

Finally, the HKC fails to address financing, which is an important issue for developing shipbreaking countries. Most of the HKC's provisions for ship recycling facilities require large investments in areas such as employee training, infrastructure, PPE and other equipment, construction of first aid and waste management facilities, and so on; this is a heavy burden, especially considering that most scrapyards are small family-run companies (Galley, 2014). In this sense, a funding mechanism or a ship-recycling fund could encourage Pakistan and Bangladesh to join the HKC and to meet the environmental, health and safety standards imposed by the Convention. Furthermore, a funding mechanism would ensure that the actual polluters internalize a reasonable share of the costs needed to prevent damages arising from shipbreaking, in line with the Basel Convention's 'polluter pays' principle. This could be achieved by setting up a fund with financial contributions from shipowners, shipping companies, shipowning States and/or flag States.

3.2.7 European Ship Recycling Regulation (2013) and European List of Ship

⁴⁷ <https://safety4sea.com/cm-industry-needs-to-give-to-ship-recycling-regime-the-attention-it-deserves/>

Recycling Facilities (2016)

In March 2012, the European Parliament and the European Council presented a proposal for a new European regulation on ship recycling. There were two main reasons for this:

- The 2006 European Waste Shipment Regulation had not yielded the expected results (according to data gathered by the European Commission, in 2009 more than 90% of all EU-flagged vessels were dismantled in non-OECD countries, especially in South Asia). The proposal reported lack of recycling capacity in OECD countries and economic unviability as the main explanations for such a high level of noncompliance, coupled with the fact that the EUWSR had not been drafted specifically for ship recycling.
- The 2009 Hong Kong Convention was still far from entering into force. According to the European Parliament and the European Council, issuing a brand-new regulation would have solved the problem of poor ratification of the HKC even among Member States (since the EU itself was not allowed to ratify the HKC on behalf of all its Member States). This situation was quite problematic, because it could have generated unfair competition among European flag States due to the different legal requirements applicable to HKC Parties and non-Parties.

The final draft of the European Ship Recycling Regulation (EUSRR) was approved in November 2013 and entered into force on 31 December 2018. The EUSRR, which is legally binding for all EU Member States, is the only international regulatory instrument on shipbreaking currently in force, incorporating and expanding the requirements set by the HKC. As stated in its Preamble, the purpose of the EUSRR is “to reduce disparities between operators in the Union, in OECD countries and in relevant third countries in terms of health and safety at the workplace and environmental standards”, encouraging the owners of EU-flagged ships to use yards which operate in a green, safe and sustainable way. The following paragraphs will describe more in detail the duties contained in the EUSRR; since – as already stated – the EUSRR borrows heavily from the HKC, all provisions are approximately the same unless specified otherwise.

Title I – Subject-matter, scope and definitions

According to Article 1 (‘Subject matter and purpose’), the main aim of the EUSRR is “to

prevent, reduce, minimize and, to the extent practicable, eliminate accidents, injuries and other adverse effects on human health and the environment caused by ship recycling”. Similarly to the HKC, the EUSRR too adopts a ‘cradle to grave’ approach, covering a ship’s entire lifetime, starting from the design phase and until all the waste generated during dismantling has been recycled or disposed of properly.

Similarly to the HKC, Article 2 (‘Scope’) specifies that the EUSRR is applicable only to commercial vessels larger than 500 gross tons; ships which do not fall under the EUSRR remain under the 2006 EUWSR. It is important to note that the EUSRR’s provisions are applicable not only to ships flying a Member State’s flag, but also to every ship calling at an EU port or anchorage, regardless of its flag.

Title II – Ships

Article 4 (‘Control of hazardous materials’) prohibits or restricts the installation and use of the hazardous materials listed in Annex I of the EUSRR. The main difference between Annex I of the EUSRR and Appendix 1 of the HKC is that the former also includes perfluorooctane sulfonic acid (PFOS) and its derivatives (usually found in some firefighting foams).

All the substances listed in Annex I of the EUSRR must be included in the Inventory of Hazardous Materials (IHM), which is mandatory for all newbuilds as required by Article 5(1) (‘Inventory of hazardous materials’). Additionally, the IHM must specify if any substance listed in Annex II is present in the vessel’s structure or in its equipment, reporting approximate quantities and locations. Annex II of the EUSRR and Appendix 2 of the HKC are very similar as well, the only difference being the inclusion of brominated flame retardant (HBCDD), which is used for insulating liquefied gas tanks and refrigerated areas. Regarding existing ships, the EUSRR sets only a general obligation to comply “as far as practicable” (Article 5(2)), but all end-of-life vessels must carry an IHM.

Article 6(2) (‘General requirements for ship owners’) sets an obligation to recycle ships flying a European flag only in yards which are included in the so-called European List, in addition to duties to obtain a Ready for Recycling Certificate (RRC) and to conduct operations in a way which minimizes the amount of cargo residues and oil and other wastes in the period prior to demolition. Unlike in the HKC, Article 6(5) of the EUSRR

clearly states that shipowners are responsible for ensuring that their ships comply with the requirements set by their flag State's Administration all throughout their operational life, until the moment when the ship recycling facility accepts responsibility for the end-of-life vessel. For this reason, it is important that ship recycling facilities accept responsibility for a ship only after verifying that its actual conditions correspond with the content of the IHM. This means that, in case a yard believes that a ship's IHM has not been updated to reflect its actual condition, the responsibility for that ship will be retained by the shipowner, who will have to inform the flag State's Competent Authority and obtain a new certificate.

Article 7(2) ('Ship recycling plan') lists the information which must be contained in a Ship Recycling Plan. Unlike the HKC, pursuant to Article 7(2) of the EUSRR, the Ship Recycling Plan must specify if any preparatory work will be carried out at a location other than the ship recycling facility. This means that, for instance, if the shipowner decides to carry out some pre-cleaning before sending the ship to a recycling facility, he will have to indicate the extent of pre-cleaning activities, how the waste generated during this phase will be handled, and how he plans to ensure a safe arrival and placement of the vessel in the 'final' ship recycling facility's premises. Article 7(2) also requires the Ship Recycling Plan to estimate the type and amount of waste which will be generated during dismantling, in addition to specifying how said waste will be managed and stored both in the yard and downstream.

As for Article 8 ('Surveys'), the only substantial change is that the RRC can be issued only if, besides carrying an updated IHM, the Ship Recycling Plan is valid and has been issued by a facility which is included in the EU List (Article 8(7)).

Article 12 ('Requirements for ships flying the flag of a third country') regulates non-EU-flagged ships calling at Member States' ports, stating that they must carry on board a valid IHM (Article 12(1)); as a result, even though the HKC has not entered into force yet, all ships calling at European ports must be HKC-compliant, regardless of whether their flag State is an HKC Party. Finally, according to Article 12(5), while a non-EU-flagged ship cannot be detained by a Member State's authority due to inconsistencies in its IHM, it can be warned, detained, dismissed or even excluded from a Member State's ports in case its owner is unable to provide a copy of its EUSRR statement of compliance.

Title III – Ship recycling facilities

Pursuant to Article 13 ('Requirements necessary for ship recycling facilities to be included in the European List'), all ship recycling facilities intending to apply for inclusion in the EU List must comply with the EUSRR and with the HKC (but ILO and IMO guidelines, the Basel Convention and the Stockholm Convention on Persistent Organic Pollutants are taken into consideration as well). This means that, in order to be included in the EU List, yards must have been authorized to operate by their domestic Competent Authority *and* are also subject to additional requirements, such as:

- Being “designed, constructed and operated in a safe and environmentally sound manner”.
- Operating “from built structures”.
- Enforcing measures which minimize and aim to eliminate environmental pollution and health risks for the workers and for the local communities.
- Demonstrating the ability to control leakages, especially in intertidal zones.
- Ensuring safe and environmentally sound waste management both inside the yard and in downstream waste management facilities. In this sense, the EUSRR clearly requires that recycling is carried out “only on impermeable floors with effective drainage systems” in order to contain any hazardous material which might be released from the ship during dismantling operations.

According to Article 14 ('Authorization of ship recycling facilities located in a Member State'), recycling facilities located in a Member State which fulfil the aforementioned prerequisites are authorized to operate by their domestic competent authority. Authorizations are renewed every 5 years, as long as the requirements set out by Article 13 are still met. Inclusion and renewal decisions must always be notified to the European Commission.

On the other hand, Article 15 ('Ship recycling facilities located in a third country') disciplines ship recycling facilities located in a third country. In order to be included in the EU List, these facilities must submit an application to the European Commission, backed up by evidence that the facility fulfils the conditions set out in Article 13. Some examples of such evidence are a map indicating the boundaries of the yard and the location where dismantling is carried out, proving that the facility's personnel is

authorized to remove every hazardous material listed in Annex I, specifying how wastes will be managed and disposed of outside the ship recycling facilities (in landfills, by incineration, etc.), and providing the names, addresses and qualifications of said downstream waste management facilities (Article 15(2)). An inspection by a qualified independent verifier is required as well (Article 15(4)); if the conditions listed in Article 13 are fulfilled, then the independent verifier will issue a certification (renewed every 5 years, plus a one-off midterm review during the initial inclusion period). Once the ship recycling facility has been successfully certified, it must submit its certification to the European Commission for further evaluation. At this point, if needed, the Commission (or agents acting on its behalf) can decide to visit facilities before approving them.

All ship recycling facilities approved by the European Commission must be included in the EU List (Article 16, 'Establishment and updating of the European List'). The first EU List has been published in the Official Journal of the European Union and on the website of the European Commission in December 2016, while the most recent one dates back to November 2020.

Title V – Reporting and enforcement

Pursuant to Article 21 ('Reports by the Member States'), every 3 years each Member State must send the European Commission a list of the ships flying its flag for which it has issued a RRC and a list of the ships flying its flag for which it has received a statement of completion, in addition to information on illegal ship recycling, penalties and follow-up actions (if any).

With regard to penalties, Article 22 ('Enforcement in Member States') states that they must be laid down by Member States, ensuring that they are "effective, proportionate and dissuasive". In this respect, it is interesting to compare the final draft of the EUSR with the 2012 original proposal, which was a lot stricter in terms of penalties: in fact, Article 23(2) of the proposal stated that, in case an EU-flagged ship was dismantled in a non-listed yard, "the applicable penalties shall, as a minimum, correspond to the price paid to the shipowner for its ship".

Title VI – Final provisions

Finally, Article 29 ('Financial incentive') states that, by 31 December 2016, the European

Commission shall submit a report to evaluate the feasibility of a financial instrument for facilitating safe and sound ship recycling (hence reinstating the 'polluter pays' principle) and for mitigating the issue of reflagging. In 2013 the Environment Committee of the European Parliament made a proposal for the creation of a ship recycling fund, suggesting that each vessel calling at an EU port should pay €0.03 per gross ton, and that the proceedings would be accumulated in a public centralized fund. However, this proposal was rejected because, according to the European Parliament, it was too vague and needed further elaboration. Later, in June 2016, Ecorys, DNV GL and Erasmus University published a joint report in which they analyzed the feasibility and possible effects of the following measures:

- Non-financial measures, such as extending the duty of EUSRR compliance also to the beneficial owner and to the penultimate owner. However, beneficial ownership can be concealed by setting up a new company in a non-EU State and by managing the ship through this company, which would then be the beneficial owner (as is already common practice). On the other hand, it is difficult to hold the penultimate owner responsible in case a vessel passes from a European owner to multiple non-EU owners over time. Furthermore, this solution could make EU-owned ships less attractive in the secondhand market due to the additional obligations they impose on shipowners (and as a result, in case the secondhand price for these vessels decreased sharply, then European shipowners could be incentivized to circumvent the EUSRR altogether).
- Ship recycling guarantee, meaning that a contract is made between the shipowner and a third-party financial institution (for example using a ship mortgage as collateral). According to this contract, if the shipowner meets all the conditions for ship recycling set out in the contract, he will be entitled to receive a payment from the financial institution. The main issue with this solution is that, in case a vessel is sold to a new owner, one of the parties of the guarantee contract will have to be replaced; however, this is subject to approval by the bank and therefore, if the bank refuses to approve the new owner, the guarantee will be discontinued. Another weakness of this solution is that it would be applicable even to ships which seldom call at EU ports (but it would be unreasonable for a shipowner to enter into such a long-term scheme).

- Ship recycling escrow account, where the shipowner opens an escrow account with a financial institution and makes regular deposits which will be used to pay for safe and environmentally sound recycling. However, this system can be disadvantageous for shipowners in case a newer vessel is lost prematurely in an accident, because it is likely that, at this point, its owner has not deposited enough money to cover expenses for green recycling. Furthermore, the problem for ships calling at EU ports with a low frequency remains (because setting up such an account is a long-term arrangement).
- Ship recycling insurance, linked to the ship rather than to its owner. As envisioned in the report, the insurance premium would be accumulated in a public ship recycling fund or in a private ship recycling escrow account. However, this solution is problematic because it does not offer any incentive to choose safe and environmentally sound ship recycling in case a vessel suffers an early casualty (considering that it would take many years to accumulate enough money to pay for green recycling).
- Port levy, to be paid every time a ship enters an EU port. This option was rejected first of all because it would impose a heavy administrative burden on ports and other regional and national institutions; then, it would also take a long time to draft the regulation at EU level and to implement it in each Member State's domestic legislation.
- Ship recycling license, which appears to be the most promising solution (although it has not been approved yet). Under this system, in order to call at EU ports, all ships (regardless of their flag) must receive an authorization by a European agency. A small part of the payment made in exchange for the authorization will be used to cover administrative costs, while the remaining money will be transferred to a ship recycling fund; ideally, the premiums levied throughout a ship's lifetime should be enough to cover the gap between the cost of safe and unsafe shipbreaking. Then, after recycling, if a shipowner is able to prove that the ship was recycled in an EU-listed yard, he will receive all his money back, otherwise he will forfeit all accrued rights. The report suggests offering short-term authorizations as well, in order to offer a convenient solution for ships which call at EU ports with a low frequency. Predictably, this solution would slightly increase operating costs and it might even have a small impact on trade to and from the EU,

but the report states that the positive effects generated by a ship recycling license would outweigh any disadvantage.

3.2.7.1 *Strengths and weaknesses of the EUSRR*

As already explained, the EUSRR is clearly inspired by the HKC, hence why its strengths and weaknesses are more or less the same. While it should be pointed out that the EUSRR sets higher standards than the HKC, some lacunae persist.

Wider scope of application

Even though the EUSRR's end-of-life provisions are applicable only to EU-flagged ships, the EUSRR has influenced even the practices of extra-European shipbreaking yards and of non-EU-flagged ships. In fact, first of all the EUSRR demands even non-EU-flagged ships to carry an IHM if they intend to call at European ports; considering that IHMs allow yards to carry out dismantling activities more safely, extending the need for IHMs also to non-EU-flagged vessels will have a positive impact. Moreover, requiring IHMs for both EU-flagged and non-EU-flagged ships calling at EU ports could make it slightly more convenient for European shipowners to fly EU flags because, even though they would be forced to choose a ship recycling facility from the EU List at the end of the vessel's service life, if their ships are calling at EU ports, they must carry an IHM anyway. As stated, many stakeholders in the shipping and ship recycling industry also believe that the HKC and the EUSRR have already had a positive impact in some Indian yards (ECISA, 2019) although the reputation of these yards is often tarnished by the surrounding substandard yards. In this sense, it could be said that the EU is acting as a catalyst for global change in ship recycling.

Third-party auditing and certification at ship recycling facilities

As claimed by NGO Shipbreaking Platform, EU-listing is "the only guarantee that a yard has been independently certified and audited up against an acceptable standard"⁴⁸. In fact, whereas the HKC delegates jurisdiction to authorize yards to ship recycling States, the

⁴⁸ <https://shipbreakingplatform.org/issues-of-interest/the-law/eu-srr/>

EUSRR makes a distinction between facilities located in a Member State and facilities located in a third country. While in the former case Parties are still the ones issuing authorization, the authorization procedure for non-EU yards is quite demanding and involves inspections by independent verifiers (and even by the European Commission, if deemed appropriate). This strict approach for the authorization of facilities located in non-EU countries, coupled with the fact that, so far, no South Asian yards have been included in the EU List, has raised suspicions among some stakeholders. For instance, BIMCO believes that the EU List is a protectionist instrument which is damaging European shipowners by forcing them to use expensive European ship recycling facilities⁴⁹.

In its 2019 report the ECSA too expressed worries about the EUSRR's strict requirements for approval, claiming that they might discourage South Asian yards from trying to apply for inclusion in the EU List, especially if they have already received an HKC statement of compliance. This is a reasonable concern, but HKC statements of compliance should not hold too much weight when evaluating a yard's compliance with the EUSRR, since the requirements set by the EUSRR are stricter. The ECSA called for a "pragmatic approach during the auditing process" to give South Asian facilities "a fair opportunity to be included in the European List", but this appears to be just another way of asking the European Commission to be more lenient when enforcing a regulation it made with the exact goal of encouraging safe and environmentally sound ship recycling. Actually, after being included in the EU List, there might be little incentive for yards to invest in further improvements. So, while it is indeed important to applaud some South Asian yards for their recent advancements, at the same time they should not get a pass if they are not enforcing best practices for ship recycling.

Bartlett (2021a), who interviewed multiple shipping and shipbreaking industry stakeholders, reported complaints about the EU putting up "unnecessary barriers" and red tape for shipowners, while Lowry (2019) concluded that "there is anger in the shipping community about the EU's ship recycling policies". In fact, interviewees lamented that many HKC-compliant yards in India have not been approved by the

⁴⁹ <https://www.bimco.org/news/priority-news/20190408-eu-ship-recycling-rules-are-protectionism>

European Commission, despite improvements in safety and pollution prevention. Most opponents of the EUSRR focus on the EU's lack of recognition for improvements in South Asia, but they always gloss over the fact that, despite improvements, many yards are still operating below international standards.

On the other hand, some reasonable points have also been raised. For instance, the ECSA's director of maritime safety and environment criticized the EUSRR's "Eurocentric approach"⁵⁰, explaining that it would be impractical for an EU-flagged vessel which never operated in European waters to go back to Europe for the only purpose of scrapping: the only answer to this issue is to have safe and environmentally sound ship recycling facilities spread out more evenly across the globe, and in any case, this should not be treated as an excuse to make a concession to such ships. Certainly the EU List needs to include more extra-European yards, but this should not be achieved by lowering approval criteria as demanded by cash buyers, by shipowners and by the shipping industry.

Higher requirements for recycling and downstream waste management

The EUSRR sets stricter requirements for ship recycling facilities compared to the HKC, which helps explain why many yards which have been certified as HKC-compliant have not managed to be included in the EU List. For instance, the HKC regulates only waste management performed inside a yard's premises; on the other hand, the EUSRR considers safe and environmentally sound downstream waste management a fundamental prerequisite for obtaining a statement of compliance. In particular, Article 15(5) of the EUSRR states that ship recycling facilities can be assumed to manage and dispose of waste in a safe and environmentally sound way if these operations are performed "in accordance with human health and environmental protection standards that are broadly equivalent to relevant international and Union standards". In this regard, Paragraph 2.2.5 of the 2016 Technical Guidance Notes explains that non-EU facilities do not need to be fully compliant with EU regulations, although they should be able to ensure "a similar level of protection of human health and the environment" (in addition to complying with international waste

⁵⁰ <https://loydslist.maritimeintelligence.informa.com/LL1128228/EU-told-to-end-protectionist-stance-and-back-Hong-Kong-Convention>

management regulations and standards). Galley (2014) reports that, during the EUSRR's drafting phase, some parties asked for even higher requirements, demanding safe and environmentally sound waste management to include full traceability of all hazardous wastes generated during recycling; however, the proposal was vetoed by major shipowning countries such as Greece and Malta.

Hiremath (n.d.) reported that many Indian yards were not approved by the European Commission due to factors "beyond the control of yard owners", such as the lack of nearby medical facilities or adequate downstream waste management facilities; this was echoed by Marprof (2020) and Bartlett (2021a). Hiremath (n.d.) also noted that the Gujarat Maritime Board had already approved a \$1 million grant for building a trauma center in Alang. This confirms that Indian yards are ramping up efforts to be included in the EU List, but at the same time, it is reasonable for the EU Commission not to approve a yard on the basis of something which will hopefully be built in the future: inspections must evaluate only the situation 'as is', and in any case these yards will still be able to reapply in the future. The requirements set by the EUSRR for safe and environmentally sound ship recycling are indeed demanding, but they are not unattainable: again, cooperation between yards and shipbreaking States, and international cooperation in general, could go a long way to achieve safer and greener ship recycling in the Indian subcontinent.

Ban on beaching

Article 13(1) of the EUSRR can be interpreted as an implicit ban on beaching. In fact, while as noted by the ECSA (2019), yards operating in intertidal zones are not excluded a priori from the EU List, it is difficult to actually enforce the requirements contained in Article 13(1) on a beach. In this regard, the European Commission's 2016 Technical Guidance Note offers some help in interpreting the EUSRR's provisions. For instance, the ability to "demonstrate control of any leakage" is a basic requirement for safe and environmentally sound operations (EUSRR Article 13(1)). Paragraph 2.2.1 of the Technical Guidance Notes illustrates some practical methods to achieve this (such as rapid-response teams and drainage canals); however, the Note also explicitly states that activities carried out in intertidal zones "present specific challenges when it comes to control of leakages, due to constantly changing conditions stemming from tides".

Another example is Article 13(1), which demands waste generated during dismantling to

be handled exclusively on impermeable floors. The Note specifies that that such floors should be able to prevent hazardous materials from being washed away into the open sea and that, in any case, contact between hazardous materials and water should be avoided. In practice (as explained in Paragraph 2.2.2 of the Note), this means that elements separated from the vessel (such as painted steel plates) should not be dropped on the sand, but only on impermeable floors; clearly, this is hardly compatible with ‘traditional’ beaching. On the other hand, a more ‘advanced’ yard which carries out dismantling from “built structures” could be able to fulfil all of Article 13(1)’s demands. Built structures are defined by Paragraph 2.2.4 of the Technical Guidance Note, which lists facilities such as pontoons, slipways and dry-docks in the area where primary cutting is carried out.

Clearly, this was an unpopular decision among shipowners, and especially among cash buyers, whose whole business relies on beaching end-of-life vessels in South Asia. For instance, the CEO of GMS launched a fearmongering campaign claiming that, due to the EUSRR, the value of end-of-life vessels could decrease by as much as 50% (thus severely impacting shipowners’ cashflow), and that European shipowners could become unable to find an available EU-listed yard for their EU-flagged ships⁵¹. On the other hand Mikelis (2013), GMS’s non-executive director, was more optimistic about the possibility to continue beaching after the EUSRR’s entry into force. In 2013 he celebrated the European Council’s success “in deleting many of the demands made by the Parliament’s Green Party Rapporteur, including all direct references to banning beaching” (a ban which, in his own words, would have been “an absolute blunder”); however, considering that the EU List so far does not include any ship recycling facility which uses the beaching technique, his celebrations were probably shortsighted. The ECSA too lobbied against a ban on beaching EU-flagged ships, claiming that it would exclude these ships from “the current world largest ship recycling market” (ECSA, 2019). While there have indeed been discussions about the actual ship recycling capacity of European yards, the ECSA is likely overestimating the number of ships which will be affected by the EUSRR, considering that EU-flagged vessels represent about 22% of global commercial gross tonnage (Heidegger

⁵¹ <https://www.tradewindsnews.com/law/scrap-values-of-eu-flagged-ships-could-plummet-50-/2-1-480225>

et al., 2015) and that the entry into force of the EUSRR could lead to more reflagging.

Instead, more concerning effects of a ban to beaching could be lower tax revenues and unemployment in South Asian shipbreaking areas. According to Bangladesh's Ministry of Industries deputy secretary, in her country alone there are more than 300,000 people whose income depends on shipbreaking⁵². Considering the high number of workers employed in this industry across the whole Indian subcontinent, and considering also the positive economic effects of ship recycling in the area, a more advisable solution could be to increase the involvement of major shipowning countries and shipping companies in upgrading South Asian yards, rather than forcing yards to shut down.

Potential capacity issues and low attractiveness of EU-listed yards

Many complaints brought up by cash buyers and European shipowners are linked to profits and to other economic considerations. In fact, since the center of the global shipbreaking industry moved to Asia, many European yards have specialized in dismantling offshore units, warships or small vessels; furthermore, many EU-listed yards do repairs as a primary activity, carrying out occasional dismantling on the side. As a result, European yards cannot offer competitive prices for recycling end-of-life vessels; rates offered by Turkish yards are the ones which come closest to South Asian rates, but still it not enough for most shipowners: for instance, Jorgensen (2020) reported that EU-listed yards were offering \$150 per ton less than South Asian yards.

Similarly, in a 2019 report Marprof reported that, while South Asian yards were offering \$400 per ton for end-of-life vessels, the highest figure offered by EU-listed yards was \$240 per ton. However, according to Marprof's 2020 report, the price offered by South Asian yards in 2020 had already dropped down to \$300 per ton due to unfavorable market conditions, with 'green' Indian yards being expected to cut their rates by an additional \$50 per LDT. In this same report, Marprof also stated that "the maximum figure may be similar to the price offered in Turkey", thus suggesting that the price gap between EU-listed and South Asian yards had decreased. Instead, Marprof used this information to

⁵² <https://www.wsj.com/articles/SB10001424127887324423904578522982568438250>

prove that recycling in EU-listed facilities “is an unattractive proposition in the overall international marketplace”, and that shipowners should not be expected “to pay a regional penalty to recycle a ship”, hence putting profits above the safety of workers and the protection of the environment. Considering that this report has been commissioned by BIMCO, this statement is not surprising, as it fully supports BIMCO’s stance on (de)regulation of the shipbreaking industry. In any case, quotes for recycling in EU-listed facilities should be taken with a grain of salt: in fact, the ISRA reported that EU-listed yards had received only a few requests for quotations, some of which they did not take seriously as they appeared to be fake⁵³.

Other times, shipowners have attempted to conceal their reluctance to use EU-listed yards under the guise of insufficient recycling capacity, both in terms of ship size and tonnage. For instance, the ECSA noted that the tonnage approved in the 2018 European List amounted to around 300,000 LDT⁵⁴, even though Article 32(1) of the EUSRR stated that the Regulation would enter into force after the EU List’s recycling capacity reached 2.5 million LDT. However, Article 32(1) also mentions that the EUSRR would enter into force on 31 December 2018 in case, by this date, the 2.5 million LDT threshold had not been met yet. This shows that, despite the desirability of a 2.5 million LDT capacity, the European Commission prioritized early entry into force rather than waiting indefinitely for the threshold to be met. BIMCO also complained about an alleged scarcity of breaking capacity in EU-listed yards, coupled with the fact that not many yards can accommodate Panamax-sized vessels⁵⁵: as a result, low capacity and size constraints were “leaving them [European shipowners] no alternative than to reflag” (thus basically shifting the blame to the European Commission’s decision to implement the EUSRR). Nevertheless, it should be noted that BIMCO evaluated available recycling capacity based on the maximum ship recycling annual output reported in the EU List (which amounts to the highest annual volume recycled in the past 10 years, as explained by Article 32(1) of the EUSRR).

⁵³ <https://www.isranetwork.com/nieuws/expert-meeting-isra-european-commission-and-member-states/>

⁵⁴ <https://www.ecsa.eu/news/european-shipowners-encourage-european-commission-have-sufficient-recycling-capacity-eu>

⁵⁵ <https://www.bimco.org/news/priority-news/20201203-bimco-eu-ship-recycling-regime-improved-but-gaps-remain>

However, this value is meaningless in the case of new yards, since their maximum annual output is often listed as 0 LDT; data for older facilities is distorted as well, considering that many European yards have been operating below capacity for years. For this reason, as suggested by Gilliam and Jenssen (2018), it is more reliable to consider the so-called 'theoretical capacity' (the yearly capacity which a yard has been licensed to handle).

Truthfully, it is difficult to evaluate actual recycling capacity in EU-listed facilities, considering that there are also multiple reports stating that capacity is not an issue. For instance, according to the ISRA⁵⁶, the European Commission and NGO Shipbreaking Platform, there is already enough recycling capacity, and Turkish yards will be able to satisfy the recycling demand for Panamax vessels⁵⁷. Gilliam & Jenssen (2018) as well agreed that the recycling capacity provided by EU-listed yards is sufficient, claiming that shipowners were using lack of capacity to justify the use of beaching. In fact, according to their findings, the phenomenon of FOCs is so common that only 9% of end-of-life vessels fly a Member State's flag, meaning that the EUSRR's provisions on end-of-life vessels would apply to only 9% of the global commercial fleet. In general, it is difficult to predict how EU-listed capacity will evolve, and how many years it will take for South Asian yards to gain approval by the EU Commission. In this sense, rather than approving yards indiscriminately, a better approach would be to increase investments and knowledge transfers in order to help yards in the Indian subcontinent to meet EU requirements. At the same time, it will be important to support recycling in European and Turkish yards, because they will be more willing to invest in increasing capacity if there is steady demand for their services.

Reflagging

European shipowners can easily dodge the EUSRR by reflagging their vessels to non-EU flags, or by selling them to cash buyers, which is probably the Regulation's biggest flaw. Actually, the 2012 proposal contained some bold provisions to discourage European

⁵⁶ <https://www.isranetwork.com/nieuws/expert-meeting-isra-european-commission-and-member-states/>

⁵⁷ <https://www.isranetwork.com/nieuws/press-release-isra-ship-recycling-capacity-and-eu-regulation/>

shipowners from infringing the EUSRR: for instance, Article 23(2) of the proposal suggested penalties to be at least equal to the price paid to the shipowner for the ship in case dismantling took place at a non-EU-listed yard. Furthermore, Article 23(5) of the EUSRR proposal seemed to target cash buyers because it stated that, in case a ship was scrapped in a non-EU-listed facility after less than 6 months from being sold to a new owner, then penalties would be imposed *jointly* on the penultimate and on the last owner if the ship was still flying an European flag; on the contrary, if the vessel had also been reflagged to a non-EU register before scrapping, then the penultimate (European) owner of the ship would have to pay the entire penalty. However, these provisions did not make it to the final draft due to pressures from shipowners and major shipowning States, which found the proposal too aggressive. Clearly, the final draft of the EUSRR is much more friendly to the shipping industry, although still not enough according to some stakeholders.

Unfortunately, due to reflagging, the situation cannot be changed simply by imposing stricter rules: for instance, in 2016 Danish shipping leader Maersk threatened to reflag its end-of-life vessels in order to be able to scrap them in Bangladesh, in case the EUSRR was enforced too harshly⁵⁸. This shows not only that some stakeholders have significant influence over lawmakers, but also that flag State jurisdiction is not powerful enough. In fact, the EUSRR's provisions for end-of-life vessels target only EU-flagged ships which, however, account for only a small percentage of all EU-*owned* vessels; even worse, many EU-owned vessels fly the flag of countries which are not even Parties to international regulations and conventions such as the Basel Ban Amendment or the HKC. At the same time, it should be kept in mind that unreasonably stringent regulations can have undesirable effects on the shipping industry and even on international trade. For example, a 2009 report by consultancy groups Milieu and COWI warned that imposing rules also to non-EU-flagged vessels calling at European ports could lead to transport being redirected to non-EU ports, favoring land transport instead. More likely, very strict rules for EU-flagged ships would lead to reflagging and, in case of limitations to reflagging, the burden

⁵⁸ <https://shipbreakingplatform.org/platform-news-clean-shipping-coalition-maersk-undermines-its-reputation-with-plan-to-circumvent-ship-recycling-law/>

imposed on European shipowners could even lead to market distortions (Solakivi et al., 2021).

Influence on the ratification and entry into force of the HKC

Even though Article 1 of the EUSRR states that the Regulation was created to facilitate the HKC's entry into force, multiple stakeholders believe that the EUSRR might actually be slowing down the adoption of the HKC. For example, the ECSA (2019) warned that the EUSRR could discourage Pakistan and Bangladesh from ratifying the HKC because, if they will not be able to meet the EUSRR's requirements, then they will not be authorized to break EU-flagged vessels anyway. However, this is not a very convincing explanation since, as already stated, only a very small part of vessels dismantled globally still fly EU flags. So, while it is true that the dismantling of EU-flagged vessels will still be regulated by the EUSRR, at the same time, even after ratifying the HKC, yards in Pakistan and Bangladesh would still be able to scrap vessels flying every other flag. For this reason, Pakistan and Bangladesh's choice not to join the HKC seems to be driven more by a lack of ability and/or willingness to enforce higher shipbreaking standards because, even if they did not enter the EU List, they would not lose much business. BIMCO also criticized the EUSRR, claiming that, instead, the EU should have focused on increasing HKC ratifications⁵⁹. As a matter of fact, an EU Member State which is already subjected to the EUSRR would not have reason to ratify the HKC (especially because it less prescriptive in areas such as downstream waste management). Many top flag States have not joined the HKC yet but, among them, the EU has power only on Greece and Cyprus. Data from the 2021 UNCTAD Review of Maritime Transport suggests that current HKC Parties account for around 29-31% of the world's total tonnage; however, even if the EU somehow 'forced' Greece and Cyprus to join the HKC, tonnage still would not reach the 40% threshold needed for the HKC to enter into force.

On the other hand, NGO Shipbreaking Platform reported increasing efforts from shipowners and cash buyers to put the HKC into force, likely because, compared to the

⁵⁹ <https://www.bimco.org/news/priority-news/20201203-bimco-eu-ship-recycling-regime-improved-but-gaps-remain>

EUSRR, the HKC is a much more convenient option (especially for end-of-life vessels). Mikelis (2013) as well agreed that the EUSRR could accelerate the HKC's entry into force. Overall, even those who support the EUSRR believe that the HKC would be a better alternative because it would offer a truly global solution, but at the same time, they recognize that encouraging safe and environmentally sound ship recycling is an urgent matter (whereas it might take years for the HKC to enter into force).

3.3 Main national regulations

3.3.1 Overview of legislation in India

While shipbreaking was officially recognized as a manufacturing activity in 1979 (Kumar, 2009), the first industry-specific regulation came only in 2013 in the form of the Indian Shipbreaking Code. As a result, ship recycling activities in India are disciplined both by general and industry-specific regulations. Overall, India has extensive legislation on labor and environmental protection, hence why the following paragraphs will cover only the most important Acts and Rules.

3.3.1.1 Labor law

The most comprehensive legal instrument on Indian labor law is the **1948 Factories Act**, which was issued by the Ministry of Labour and Employment. While its name could be misleading, it does apply to shipbreaking yards as well, since Article 2 defines a factory as a premise where manufacturing activities are carried out with the aid of power by at least 10 workers, or without the aid of power by at least 20 workers. Employers must keep a register of all adult workers, listing their name and tasks in addition to other information (Article 62(1)).

The 1948 Factories Act imposes on employers a general duty to ensure the health, safety and welfare of employees in the workplace (Article 7A). Therefore, workers must not be required to work more than 48 hours a week (Article 51), with at least one day of rest per week (Article 52); regarding daily hours, workers must not work for more than 9 hours a day (Article 54), and they are entitled to breaks of at least 30 minutes every 5 hours of work (Article 55(1)). In case they work overtime, workers are entitled to being paid twice their ordinary rate (Article 59(1)). As for occupational health and safety, workers must not be required to lift or carry loads heavy enough to cause injuries (Article 34). Instead,

lifting machines such as cranes and winches shall be used; these must be of good quality, properly maintained and examined by a competent person at least once a year (Article 29(1)). Some other important precautions for avoiding accidents and for protecting the health of workers include taking measures to prevent inhalation of dusts and other impurities (Article 14(1)), taking measures to prevent and extinguish fires (Article 38(1)), and allowing workers to enter into areas which might contain dangerous levels of gases, fumes, vapor or dusts only in presence of a certificate stating that the space is reasonably safe (Article 36(2)). In case an accident causes death or bodily injuries, the employer must notify it to the competent authorities (Article 88), and in general employers must provide free medical examinations for workers before, during and after they have worked with hazardous substances (Article 41C).

In case a factory is involved in hazardous processes, it must disclose all information related to health and environmental hazards generated by its activities and by the handling, transportation and storage of hazardous substances to employees, to the Chief Inspector, to local authorities and to the neighboring communities pursuant to Article 41B(1) and to Article 41B(7). The occupiers of factories involved in hazardous processes are also required to create a detailed plan on how to protect workers' health and safety (Article 41B(2)), and to lay down measures for safe handling, transportation, storage and disposal of hazardous materials both inside and outside the factory's premises (Article 41B(7)). This includes maintaining health records for all the workers who are exposed to hazardous substances, and appointing persons who are qualified and experienced in handling hazardous wastes to supervise handling of hazardous wastes inside the factory.

The 1948 Factories Act was recently replaced by the **2020 Occupational Safety, Health and Working Conditions Code**. The content of the 2020 provisions is mostly the same as the 1948 Factories Act, except for some minor differences (for instance, pursuant to Article 25(1), now Indian workers must not work more than 8 hours a day).

Some additional provisions are contained in the **1948 Employees' State Insurance Act**, which mandates all workers to be insured (Article 38); contributions must be paid to the Employees' State Insurance Corporation jointly by the employer and by workers (Article 39). In case of sickness, occupational diseases or disablement due to injuries sustained while working, workers are entitled to the payment of insurance benefits; on the other

hand, in case of death, periodical payments will be made to the worker's dependents (Article 16(1)).

The **1979 Inter-State Migrant Workmen Act** is also applicable to the ship recycling industry, considering that many of its workers migrated to Alang from other Indian States. This Act requires migrant workers to be treated in the same way as non-migrant workers in terms of wage rates, hours of work, holidays, and so on (Article 13(1)). It sets duties for employers and contractors too, stating that they must inform authorities both in the migrant worker's State of origin and in the State where he is employed (Article 12(1)). Moreover, in order to keep track of migrant workers and of their rights, contractors must issue a passbook to migrant workers; said passbook must contain a photograph of the worker and information on the place of employment, the period of employment and any payable wage and allowance.

Finally, the **1986 Child and Adolescent Labour Act** states that children younger than 14 cannot be employed in any type of work (Article 3(1)), while adolescents (aged 15-18) can be employed only in non-hazardous processes (Article 3A). In other words, neither children nor adolescents can be employed in shipbreaking yards.

3.3.1.2 *Environmental law*

According to the **1974 Water Act**, persons intending to establish activities which are likely to discharge pollutants into streams, wells or on land must first be authorized to operate by the State Pollution Control Board (Article 25(2)). Despite the authorization, these persons are prohibited from causing or permitting pollutant substances to contaminate streams, wells or land, either directly or indirectly (Article 24(1)). In case this happens, the polluter can be punished with imprisonment (Article 43), and the State Pollution Control Board can issue a restraining order against the polluter to prohibit him from discharging additional hazardous substances (Article 32(1)), in addition to demanding the polluter to remove and dispose of the matter he discharged (Article 33(1)). In case the polluter fails to undertake cleanup as demanded, the State Pollution Control Board will do it at the polluter's expense.

The **1989 Hazardous Waste Rules**, which were issued by the Ministry of Environment and Forests in response to the Basel Convention, apply to facilities where waste is generated, collected, treated, stored or disposed of. According to Article 5(1), these

activities must be carried out only in facilities which have been cleared to operate by the State Pollution Control Board; the occupier and the operator of these facilities will be jointly responsible for ensuring that hazardous waste is handled and disposed of without damaging the environment (Article 4(3)). Some examples of the requirements set out by the 1989 Rules in order to prevent and limit the consequences of accidents include training workers and providing them with appropriate PPE (Article 4A), in addition to packaging and labeling waste (Article 7(1)). All accidents involving hazardous wastes must be reported to the State Pollution Control Board by the facility's occupier and/or operator (Article 10), who are liable to pay for and to remedy any damage caused by improper handling and disposal of hazardous wastes (Article 16). Finally, the 1989 Rules prohibit all imports of hazardous wastes from any country for dumping or disposal (Article 11); on the other hand, imports for the purpose of reuse or recycling are allowed (Article 12(3)), as long as they are Basel-compliant (Article 12(6)) and they have been authorized by the State Pollution Control Board and by the Ministry of Environment (Article 13). Authorization to import hazardous wastes for recycling is granted if the importer is believed to be able to handle and reprocess the waste in an environmentally friendly way, if adequate facilities for treatment and disposal of hazardous wastes are present, and if all relevant authorities have issued no objection certificates (Article 13(3)).

The Ministry of Environment and Forests' **2008 Hazardous Wastes Rules** are very similar to the original 1989 Hazardous Waste Rules, except for some small differences: for instance, Article 13 introduces a total ban on imports of certain hazardous materials (such as heavy metals, PCBs, asbestos, etc.), which therefore cannot be imported anymore through the recycling/reuse loophole. Moreover, the 2008 Rules explicitly require a PIC procedure for importing non-banned hazardous wastes for reuse or recycling (Article 14(2)); such imports must be authorized by the State Pollution Control Board and by the Ministry of Environment and Forests, which will evaluate the importer's ability to handle waste in an environmentally sound way and the presence of adequate waste treatment facilities (Article 16(2)). The 2008 Hazardous and Other Wastes Rules were later replaced by the 2016 Hazardous Waste Rule. The main text is about the same, the most important difference being the inclusion of more hazardous processes and waste constituents with concentration limits.

3.3.1.3 Shipbreaking law

The **2013 Indian Shipbreaking Code**, issued by the Ministry of Steel, was the first regulation disciplining ship recycling activities in India. The Code sets up a complex system of notifications and authorizations, which must start at least 7 days before the end-of-life vessel even enters Indian territorial waters. In fact, pursuant to Article 3(1), first of all shipowners must notify the Indian State Maritime Rescue Coordination Center, in addition to submitting to the State Maritime Board and to the Port Authority a series of documents such as ship information, a copy of the Memorandum of Agreement with the ship recycler, and a list of the hazardous materials present inside the ship's structure. It should be mentioned that this procedure does not follow the Basel Convention's rules, since pre-cleaning prior to exportation is not explicitly required.

Once the aforementioned documents have been reviewed by the State Maritime Board and by the Port Authority, the vessel is allowed to be anchored in order to allow the Port Authority, the State Maritime Board and the Customs Department to physically inspect it and decide whether to issue a permit for recycling (Article 3(11)). At this stage, some ships will have to undergo additional inspections: for instance, tankers must be inspected also by the Petroleum and Explosives Safety Organization in order to obtain a gas-free-for-hot work certificate, while passenger ships above 20,000 LDT must be inspected by the State Pollution Control Board. Article 3(12) lists the documents which are inspected during anchoring, such as the IHM, the vessel's technical information and IMO information. Permission for beaching at an authorized facility will be granted by the State Maritime Board and by the Port Authority only in case the documents provided by the shipowner are found to be truthful and correspond to the vessel's actual conditions (Article 3(24)).

Once the vessel has been beached as authorized, the recycler must secure it properly and remove leftover oil from bunkers through a registered dealer (Article 3(30)). Once all oils, wastes and sludges have been removed from the ship, the recycler must obtain a decontamination certificate from the State Pollution Control Board, plus a gas-free-for-hot work certificate by the Directorate of Industrial Safety and Health or by the Department of Explosives (Article 5(2)). Once he has completed these steps, the recycler must prepare a Ship Specific Recycling Plan and a Recycling Facility Management Plan (Article 5(1)). The Recycling Facility Management Plan in particular will be approved by

the State Maritime Board and by the Port Authority only if – inter alia – the yard has been authorized to handle hazardous waste by the State Pollution Control Board, if it contains appropriate facilities for removing, handling and storing asbestos, and if it is able to provide a list of all trained and certified workers (Article 5(3)). This is in addition to the requirements needed for obtaining clearance to operate from the State Maritime Board and from the Port Authority, such as having a program for training workers, having an emergency preparedness and response plan, providing PPE for workers and enacting policies which aim to minimize and ultimately eliminate negative effects on workers' health and on the environment (Article 5(9)). On the other hand, the Ship Specific Recycling Plan must contain information such as the work schedule, the procedures used, gas-free-for-hot work certificates, the decontamination certificate issued by the State Pollution Control Board, and a hazardous waste handling and disposal plan identifying and marking all the areas which might contain hazardous substances (Article 5(10)(2)). Once the Ship Recycling Facility Management Plan and the Ship Specific Recycling Plan have been approved by the State Maritime Board and by the Port Authority, then the Port Authority will issue a Ship Recycling Permission (Article 5(10)(3)) and cutting can start. Then, once dismantling is completed, the recycler shall issue a statement of completion and notify the State Maritime Board and the Port Authority (Article 5(11)). During recycling, facilities must comply with the 1974 Water Act and with the 2008 Hazardous Wastes Rules (Article 6(4)).

Regarding occupational safety and health, the basic requirements already contained in the 1948 Factories Act apply. With regard to training, workers must receive both general shipbreaking training and task-specific training, and at the end of the program they must receive a certification of successful completion (Article 6(3)). In order to keep an eye on workers' health, recyclers must offer free medical examinations for workers, and they must ensure that there are appropriate healthcare facilities nearby (Article 6(9)). In case a worker is diagnosed with asbestosis cancer or if he loses a limb as a result of a work-related injury, he must be compensated by the Ship Recyclers Association (Article 6(12)). In order to avoid such accidents, the Code states for example that guardrails (or at least safety nets) must be installed in order to prevent workers from falling from heights, and objects must not be thrown down from a height unless safety precautions such as fences or barriers are taken (Article 7(13)). In any case, all accidents and occupational diseases

must be reported by the recycler to the Directorate of Industrial Safety and Health and to the State Maritime Board and to the Port Authority (Article 7(6) and Article 7(7)).

The **2015 Gujarat Maritime Board Regulations** amended the 2006 ones issued by the Gujarat Maritime Board (GMB), a government agency which controls and manages ports in the State of Gujarat. These Regulations discipline the issuance of permissions to use ship recycling plots in Alang, in addition to the duties of permission holders. For instance, permission holders are required to comply with workers' safety and environmental protection laws (Article 9(10)), for example by hiring only trained worker who have received a training certificate from the GMB or another recognized training institute (Article 9(11)). Furthermore, the GMB Regulations set a general duty for permission holders to "keep up and employ modern technology" for recycling activities (Article 9(15)), although the Regulations do not offer any example or explanation.

Article 2(6) contains a somewhat puzzling provision, since it states that permission holders cannot "construct or erect any permanent structure on the plot", even though they can put up temporary or semi-permanent structures at their risk and cost. Therefore, in case a permission holder for whatever reason loses or is unable to renew his permission, he will have to remove any structure he built without being entitled to any compensation. Unfortunately, the GMB Regulations are vague about the meaning of "permanent structure", so it is not clear whether a concrete slipway or a concrete base for cranes would be considered as a permanent or semi-permanent structure; in the former case, this provision would be problematic because, if recyclers were prohibited from building concrete structures, they would have to keep on beaching ships, rather than adopting a safer and greener dismantling method.

The **2019 Recycling of Ships Act** is an upgraded version of the 2013 Ship Breaking Code, since it fully embodies the HKC into Indian domestic legislation. According to Article 1(3), the Act applies – inter alia – to non-Indian-registered ships entering Indian territorial waters and to ship recycling facilities operating in India; moreover, similarly to the HKC, the 2013 Act does not apply to ships below 500 gross tons, to warships and to government-owned vessels operated on non-commercial service (Article 5). However, it should be noted that the 2019 Act offers an unsatisfactory definition of 'recycling', since Article 2 states that ship recycling includes dismantling and on-site storage of hazardous

and non-hazardous materials, but it does not include “their further processing or disposal in separate facilities”. Unfortunately the 2019 Act – unlike its predecessors – is silent about downstream waste management (although the HKC suffers from the same problem).

With regard to ship recycling facilities, the 2013 Act states that they can operate only if they have been authorized to do so (Article 11); authorizations are valid for 5 years (Article 12(8)), and authorized yards are subject to yearly audits by the Competent Authority in order to verify compliance with the Act (Article 12(10)). In order to be compliant with the 2019 Act, yards must follow all the main 1948 Factories Act’s provisions regarding emergency preparedness and response (Article 14) and workers’ health, welfare, safety and training (Article 15(1)); moreover, both permanent and temporary workers must be insured by the recycler (Article 15(2)).

Shipowners intending to recycle a ship in an Indian facility must inform the Maritime Rescue Coordination Center and the Competent Authority of the date of arrival, submit all the required documents and minimize fuel and wastes on board (Article 19(1)); tankers must also be delivered in a safe-for-entry and/or safe-for-hot work condition (Article 19(2)), but in general there are no requirements for pre-cleaning of any vessel (which is contrary to the Basel Convention’s provisions and to the ‘polluter pays’ principle). Once a ship has been inspected by the Competent Authority, it can receive authorization for beaching (Article 20(1)). In this sense, Article 20(2) can be problematic, since it states that, in case after 15 days from application the Competent Authority has not communicated its decision yet, this can be interpreted as a tacit permission for recycling. As noted by Srinivras (2020), during recycling booms 15 days will likely not suffice for the Competent Authority to inspect all ships and their documents, and as a result, many ships could end up being recycled without proper planning.

Once a vessel has been beached, the beginning of recycling activities must be authorized by the Competent Authority by submitting a Ship Recycling Plan for approval (Article 17(1)). Once clearance has been received, cutting operations can begin (Article 18(1)) and, once recycling has been completed, the recycler will submit a statement of completion to the Competent Authority (Article 23). The 2019 Act requires recyclers to ensure safe and environmentally sound hazardous waste management, having regard for

environmental law regulations (Article 21). During the whole dismantling and recycling process, recyclers must also take measures to prevent any damage to the environment (Article 22(1)), bearing in mind that they are liable to pay for any environmental damage and consequent cleanup operations (Article 22(3)).

Finally, as explained by Srinivras (2020), the 2019 Recycling of Ships Act contains a huge shortcoming which might end up diluting the effectiveness of these rules. In fact, while the 2019 Act provides for imprisonment and fines in case of violations of its provisions, Article 36 states that Courts can investigate only on complaints raised by the Central Government, by the National Authority or by the Competent Authority. In this way, the 2019 Recycling of Ships Act is actually prohibiting trade unions, workers, NGOs and local communities from filing direct complaints.

3.3.2 Overview of legislation in Bangladesh

3.3.2.1 *Labor law*

Every shipbreaking yard must be registered as a factory under the Ministry of Labour and Employment and under the Department of Inspection for Factories and Establishments. The main role of these Departments is to enforce the **2006 Labour Act** and to monitor the status of workers' rights through field inspections. According to Article 34, children cannot work, while adolescents can be employed (Article 34), unless for jobs which have been listed as hazardous work in the Official Gazette (Article 40(3)). Considering that a Government Order issued on 13 March 2013 recognized shipbreaking as a hazardous activity, it means that people younger than 18 cannot be employed in the ship recycling industry. As for adult workers, they must not work for more than 8 hours a day (Article 103), and they are entitled to one day of weekly rest (Article 103); any overtime must be compensated at twice the worker's ordinary rate (Article 108). Further ahead, Article 176 establishes the right of workers to freely join and form trade unions.

With regard to occupational health and safety, the 2006 Labour Act states that establishments must be safe for workers (Article 61). For instance, this means that cranes and lifting equipment must be of good quality, well-maintained and frequently inspected (Article 68), workers must not lift or carry loads heavy enough to cause injuries (Article 74) and they must be provided with appropriate PPE (Article 75). Employers are liable to

pay compensation for any accident causing death or bodily injury (Article 150), and they must report such accidents to the Inspector (Article 80). Moreover, employers are liable to pay compensation also for occupational diseases contracted after at least six months of continuous service (Article 150(3)), and they must pay a death benefit in case a worker dies while in service after at least three years of continuous service (Article 19). Workers are entitled to 14 days of full-pay sick leave in a year (Article 116), and they can be dismissed in case they become mentally or physically incapable to perform their job; however, this condition must be certified by a medical practitioner, and the worker is entitled to compensation (Article 22).

3.3.2.2 *Environmental law*

The **1995 Environment Conservation Act** is Bangladesh's most important legislative instrument covering environmental protection. It states that every "industrial unit or project" must possess an Environmental Clearance Certificate obtained from the Director General of the Department of Environment (Article 12). It should be noted that the Act does not define 'industrial unit' and 'project', and therefore it is not clear whether a recycling yard would have to apply for an Environmental Clearance only once (because the yard is considered an industrial unit), or every time it imports a ship for breaking (because breaking a single entire vessel could fall under the definition of 'project'). In any case, the 1995 Environmental Conservation Act declares that, in case of accidental spills and emissions of environmental pollutants exceeding a certain limit, the polluter is responsible for taking measures to control and mitigate any adverse effect (Article 9(1)). Finally, according to Article 7(1), in case the Director General determines that an act or omission is causing damage to the environment or to person(s) – either directly or indirectly – the Director General can demand the polluter to pay compensation for the damages his actions or omissions have caused.

The **1997 Environment Conservation Rules** are linked to the 1995 Environment Conservation Act, since they describe the procedure for obtaining an Environmental Clearance Certificate, depending on the type of activities carried out by the applicant. The 1997 Environment Conservation Rules introduced a list of activities which are classified as Green, Orange-A, Orange-B or Red depending on the environmental impact they cause (Article 7(1)). Shipbreaking is listed as an Orange-B activity, even though shipbuilding and activities dealing with hazardous chemicals, heavy metals, asbestos and explosives

are listed as Red; for this reason, it could be argued that even shipbreaking should belong in the Red list. According to Article 4(7), a recycling yard should first of all obtain a Location Clearance Certificate, even though the same Article also states that, if he “considers it appropriate to issue such certificate to the industrial unit or project”, the Director General is also allowed to issue an Environmental Clearance Certificate without requiring a Location Clearance Certificate. This is less than ideal, especially considering that Article 4(7) does not offer any example or explanation of the situations and objective criteria under which the Director General is allowed not to require applicants involved in Orange-A, Orange-B or even Red-listed activities to submit a Location Clearance Certificate. The Location Clearance Certificate would be quite useful for promoting a safe and environmentally sound shipbreaking industry since, in order to obtain it, yards would have to submit a report on the Initial Environmental Examination of their establishment, an Environmental Management Plan, a no objection certificate obtained from the local authority, and an emergency plan for environmental pollution (Article 4(6)).

3.3.2.3 *Shipbreaking law*

2009 was a turning point for shipbreaking in Bangladesh: in fact, after the Bangladesh Environmental Lawyers Association filed a writ to stop the toxic ship MT Enterprise from entering Bangladeshi waters, on 17 March 2009 the Bangladesh High Court launched an investigation (Haque, 2016). It learned from the Department of Environment that none of the Chittagong yards possessed an Environmental Clearance Certificate as required by Article 12 of the 1995 Environment Conservation Act, and hence shut them down. Moreover, the High Court found out that the Department of Shipping had authorized the import of many ‘toxic’ vessels which should have followed the rules set by the Basel Convention: therefore, the High Court also temporarily suspended all ship imports. The import of end-of-life vessels was allowed again starting from early 2010, under the conditions set in the Statutory Regulatory Order issued on 26 January 2010: as required by the Basel Convention, ships could be imported for scrapping only if they were certified as pre-cleaned of any toxic materials. This decision, coupled with the forced closure of all the shipbreaking yards which could not be cleared to operate, led to national strikes and even to disruptions in steel production.

As required by the High Court, in 2011 the Government of Bangladesh promulgated the **2011 Ship Breaking and Ship Recycling Rules** for the purpose of integrating the

existing provisions into a single comprehensive regulation. The 2011 Rules created a new authority under the Ministry of Industry – the Ship Building and Ship Recycling Board (SBSRB) – tasked with reviewing end-of-life vessels’ documentation before issuing a no objection certificate (Article 3(1)). In addition to this desk review, ships must also undergo multiple inspections:

- The Customs Department must confirm that the ship is not carrying any type of cargo banned by Bangladeshi laws (Article 3(2)).
- The Department of Environment must examine the ship for hazardous waste banned by the Basel Convention (Article 3(3)). This inspection however expressly does not include inbuilt hazardous materials (such as asbestos inside the vessel’s walls).
- The Department of Explosives must issue a gas-free-for-man-entry certificate and a gas-free-for-hot work certificate (Article 3(4)), thus declaring that it is safe for workers to go inside the ship and to use acetylene torches.

In order to receive the no objection certificate from the SBSRB, yard owners must first submit a Ship Recycling Plan and a copy of the yard’s permit for Ship Recycling Facility Plan (Article 3(5)), which is released by the SBSRB after inspecting the yard to ensure that the yard’s facilities allow shipbreaking activities to be carried out in a safe and environmentally sound way (Article 3(7)). Once the yard has obtained a no objection certificate from the SBSRB, the letter of credit can be issued (Article 4). Once the vessel has been successfully imported, the recycler must secure it safely, clean it from bunker fuel and sludges, and entrust said waste to a dealer approved by the SBSRB who will take care of its disposal (Article 10(1)). Demolition can start only after the recycler has obtained a cutting permission; this entails resubmitting to the SBSRB a copy of the pre-approved Ship Recycling Plan, a copy of the yard’s Environmental Clearance Certificate, a list of the employees who will demolish the vessel, a proof that oil and sludges have been removed from the ship, and the gas-free certificate previously released by the Department of Explosives (Article 11).

Any hazardous waste generated during recycling must be handled by specialized agents appointed by the SBSRB (Article 3(13)); for this purpose, Article 3(8) states that the SBSRB will build and operate facilities for hazardous waste management. In general,

waste management and ship recycling activities must be carried out in compliance with domestic laws on environmental protection, plus some additional requirements introduced specifically for ship recycling: for example, all approved yards must be equipped with a temporary storage area for hazardous wastes (Article 18), ballast water must be emptied out in the open sea, oil, sludge and bilge water must be treated in an appropriate facility on land, and hazardous waste must not be burned (Article 19).

With respect to occupational health and safety, Article 3(10) declares that the SBSRB is also responsible to ensure that safety conditions for workers are satisfactory. In particular, workers must undergo training (Article 17(1)) and wear appropriate PPE (Article 17(2)), medical facilities close to the yards must be arranged by ship recyclers' associations (Article 29), and all the equipment used in the yard must be in good condition and be inspected once a year (Article 15(7)). As for working conditions and workers' rights, the 2006 Labour Act Applies (Article 17(22)).

Unfortunately, these rules were never properly enforced and inspections were infrequent, hence why soon many yards went back to importing ships which had not been pre-cleaned. As a result, in 2014 the Bangladesh Environmental Lawyers Association filed a writ with the Bangladesh High Court, claiming that the Department of Environment and the Department of Shipping had been handing out Environmental Clearance Certificates and no objection certificates without inspecting the yards first. Moreover, multiple explosions had occurred in shipbreaking yards, raising suspicions also about the release of safe-for-hot work certificates by the Department of Explosives (Haque, 2016). Currently, all imports of end-of-life vessels must be approved by the Department of Shipping and by the Mercantile Marine Department. The Mercantile Marine Department verifies the presence of all the documents required for importing the vessel; then, the Department of Shipping issues a permit for beaching in the form of a no objection certificate which is released to the importer of the vessel. At this point, there must already be a valid sale contract between the shipbreaking company and the shipowner/cash buyer, but payment (usually in the form of a letter of credit) takes place only after the vessel is cleared for import. In order to enact the 2009 HKC domestically and reinforce regulation on shipbreaking, in 2018 Bangladesh issued the **2018 Ship Recycling Act**, but its original text is not available in English yet.

3.3.3 Overview of legislation in Pakistan

In the early 2000s, Pakistan began a devolution process, with Provincial Governments increasingly gaining legislative autonomy from the Federal Government; this process peaked in 2010 with the Eighteenth Amendment of Pakistan's Constitution. Today, both labor and environmental protection are concurrent subjects, meaning that responsibility for them is shared between the Federal Government and Provincial Governments. For this reason, the following paragraphs will offer an overview of both federal law and provincial law, with a focus on the Province of Balochistan (where Gadani, Pakistan's main shipbreaking hub, is located).

3.3.3.1 Labor law

First of all, the **1973 Constitution of the Islamic Republic of Pakistan** sets some basic, inalienable rights for all workers: for instance, it states that children below 14 years of age cannot be employed in any hazardous work (Article 11(3)). The Constitution also grants citizens freedom to form and join associations and unions (Article 17(1)), and it sets a general duty for the State of Pakistan to take measures for ensuing "just and humane conditions of work" (Article 37(e)).

According to the **1923 Workmen's Compensation Act**, employers are liable to pay compensation to workers suffering from employment injuries, and to the dependents of workers who died as a result of accidents and injuries occurred in the workplace. Employers also have a duty to arrange at their own expense medical examinations for injured workers (Article 11(1)). In case the employer fails to arrange an examination within 3 days from an accident, the worker himself will have to pay for his own medical examination, asking the employer to reimburse him; however, while this provision is better than nothing, it might lead an injured worker to skip the medical examination altogether in case the employer does not offer to pay for it immediately. Furthermore, this Act does not set any need to report injuries or occupational diseases, except for some activities (but shipbreaking is not included).

On the other hand, the Labour Commissioner must be informed "from any source" about workplace deaths. Afterward, the Commissioner shall request the deceased worker's employer to make a report describing the accident and indicating whether, in his opinion, he is liable to pay compensation for the worker's death (Article 10A(1)). According to

Article 3(1), the only exceptions to employer's liability in case of work-related deaths or injuries are when the worker was under the influence of alcohol or drugs, if the worker willfully disobeyed to orders or rules set for his own safety, or if the worker willfully removed or disregarded safety guards. At this point, in case the employer states that, in his own opinion, he is not liable to pay any compensation, the Commissioner will inform the deceased worker's family that it is up to them to file a claim, if they wish so. In this case, it would have been better if the Labour Commissioner or another agency were tasked with carrying out an independent investigation. In fact, it could be argued that it is very convenient for an employer to state that the injured worker disobeyed or was working under the influence (and it is unlikely that any coworker will testify against the employer due to fear of losing his job). Moreover, considering that many shipbreaking workers are migrants and come from poor families, their relatives might lack both the knowledge and the financial means needed to file a claim for compensation.

The 1923 Workmen's Compensation Act was later expanded and amended by the **1965 Provincial Employees' Social Security Ordinance**. The main difference is that the 1965 Ordinance introduced an intermediary (the Employees' Social Security Institution) which is tasked with paying compensations in place of employers; in return, employers must pay a contribution to the Employees' Social Security Institution for each worker (Article 20(1)). The 1965 Ordinance also introduced specific forms of compensation such as sickness benefits (Article 35), injury benefits (Article 39), disablement pensions (Article 40), death grants (Article 37) and survivor's pensions (Article 42) – whereas the 1923 Act named only generic compensations. Moreover, Article 72 explicitly states that workers cannot be dismissed or punished while they are receiving sickness benefits, injury benefits or medical care. Finally, Article 44 states that workers who need medical care due to an employment injury are entitled to receive it (including general practitioner and specialist care, medication and hospitalization).

The **1934 Factories Act** (which applies to any premise employing at least 10 workers) is closely related to the Indian 1948 Factories Act, to the point that multiple provisions are expressed with the same exact words. The main differences between the Pakistani 1934 Factories Act and the Indian 1948 Factories Act are as follows:

- Every worker must undergo medical examinations for contagious and infectious

diseases twice a year at the employer's expense. The results of said examinations must be annotated in each worker's personal 'Hygiene Card' (Article 23(1)). Moreover, workers must be vaccinated against contagious and infectious diseases (Article 23A).

- According to Article 33M(1), it is up to Provincial Governments to discipline the employment of children in certain types of establishments. However, according to Article 33M(2), in case an Inspector witnesses children being employed in a factory or in a part of a factory carrying out activities that "may be dangerous to them or injurious to their health", the Inspector shall order the factory's manager to prohibit the children's employment in that (part of) factory. In this sense, shipbreaking could configure as an activity where children cannot be employed, even though the 1934 does not provide an 'official' list of hazardous activities.
- In case a Provincial Government finds that an establishment exposes employees to adverse health effects, it can demand that factory to arrange periodic medical examinations for workers and to take measures to protect both workers and the neighboring community (Article 33Q(4)).
- The limit of daily working hours is still 9 (Article 36), whereas India later lowered it to 8 hours a day.

The **2009 Balochistan Provincial Employees Group Insurance Act** introduced an insurance scheme managed by the Board of Trustees of the Provincial Employees Insurance Fund. According to Article 10, the aforementioned Board is tasked not only with compensating the dependents of deceased workers, but also with paying pensions for retired workers. In order to be insured, workers must pay monthly premiums (Article 13(1)), which will be accumulated in a Provincial Employees Insurance Fund (Article 12).

According to the **2010 Balochistan Industrial Relations Act**, workers and employers have the right to freely establish and join associations and registered trade unions (Article 3). For this reason, employers cannot discriminate against trade union members, force them to relinquish trade union membership, threaten them, injury them, dismiss them, or even prohibit trade union members from persuading other workers to join trade unions; moreover, employers cannot force or intimidate any officer of the collective bargaining agent to arrive at a settlement (Article 17(1)). In the same way, workers cannot intimidate or force workers to join (or leave) trade unions, they cannot force employers to accept

any demand, and they cannot commence, take part in or promote illegal strikes or go-slows (Article 18(1)). Moreover, workers in all establishments have the right to nominate a trade union to become their collective bargaining agent (Article 24); establishments employing more than 50 workers have a right to select a ship steward as well (Article 33(1)), who will collaborate with the employer to improve health, safety and working conditions, and to nominate workers' representatives who will participate in the factory's management (Article 34(1)). However, these provisions have not had much of an impact on the rights of workers in the shipbreaking industry, since they are mostly temporary workers (often even hired by contractors, rather than by the actual yard owners).

The **2021 Balochistan Employment of Children Act** finally cast light on the employment of children and adolescents in the ship recycling industry. In fact, it adopts the same definition of hazardous work contained in the 1999 ILO Worst Forms of Child Labour, and explicitly names shipbreaking as an activity which can be carried out only by people older than 18 (Article 3(2)).

Finally, the **2021 Balochistan Factories Act** expands and amends the 1934 Factories Act. Pursuant to Article 14(1), occupiers of a factory are responsible for complying with labor regulations and with occupational health and safety standards, for instance by ensuring to use work methods which are reasonably safe for workers' health. Moreover, employers must train and supervise employees appropriately, providing them with adequate PPE free of charge (Article 14(2)). Similar provisions were already present in the 1934 Factories Act, but the 2021 Act sets out the employers' obligations more thoroughly.

3.3.3.2 *Environmental law*

The **1997 Pakistan Environmental Protection Act** is Pakistan's main regulation on this matter. As explained in the Act's preamble, it was made "to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development". According to Article 11(1), no one is allowed to discharge or emit waste or pollutants (including noise) in excess of the limits set by the Environmental Quality Standards (which are established either by Federal or Provincial Agencies). Article 11(2) states that, in case of failure to comply, the Federal Government will levy a pollution charge to be paid by the polluter; however, Article 11(3) goes on to establish that "any person who pays the pollution

charge [...] shall not be charged with an offence with respect to that contravention or failure”, meaning that polluters who pay an administrative penalty cannot be further prosecuted. In this respect, Pakistan is much less severe than India, where polluters can be both fined and imprisoned. As a result, depending on the amount of money to be paid, this provision could end up being interpreted by polluters as sort of a ‘license to pollute’ (especially considering the shipbreaking industry’s profit margin). Additionally, under Article 24 and 25 there appears to be no provision stating that, in case of contravention, waste management licenses will be suspended and/or not renewed.

According to Article 12(1) of the 1997 Act, establishments engaged in activities which are likely to damage the environment must be authorized to operate by submitting an Initial Environmental Examination and an Environmental Impact Assessment to the relevant Federal Agency. Then the Agency will review the application and decide whether to authorize the establishment to operate “subject to such conditions as it may deem fit to impose” (Article 12(2)); it could be argued that the conditions for approval should be explicitly listed, at least in a general manner. Further ahead, Article 12(4) contains another problematic provision, since it states that, in case after 4 months from the date of application the Federal Agency has not yet communicated its decision, the applicant will be tacitly cleared to operate “to the extent to which it does not contravene the provisions of this Act and the rules and regulations”. Again, this is too vague, and it is hard to believe that inspections will effectively detect and punish every establishment which has been tacitly approved and is infringing environmental protection rules. Actually, Paragraph 5 states that the 4-month deadline can be extended “if the nature of the project so warrants”, but without any explanation on the criteria to be used.

Even more confusing, Article 13 declares that “no person shall import hazardous waste into Pakistan and its territorial waters, exclusive economic zone and historic waters”, but it is not clear how this would apply specifically to shipbreaking. Article 14(1) does not offer any help, because it simply sets an obligation for persons who generate, handle, store and dispose of waste to obtain a waste management license from the Federal Agency or to act “in accordance with the provisions [...] of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Pakistan is a party”. Considering that Pakistan is a Party to the 1989 Basel Convention, but not to the 1995 Basel Ban Amendment, and recalling the difficulties in applying the Basel Convention to

end-of-life vessels, it could be argued that Pakistan needs more exhaustive regulations on this subject, especially considering how – as explained further ahead – shipbreaking in Pakistan is severely underregulated. As a final note on Article 14, it states that waste management facilities must be authorized to operate by a Federal Agency *or* comply with relevant international environmental law. Using ‘or’ rather than ‘and’ is an interesting choice which could suggest that authorized facilities do not need to follow international rules, or that facilities which comply with international rules can operate without any authorization from domestic authorities; however, this is likely just an inaccuracy.

The **2003 Hazardous Substances Rules** solve the doubts raised about Article 12(1) of the 1997 Pakistan Environmental Protection Act, since Article 8(2) and Article 12 list the conditions for the approval of a waste management license (such as employing experienced personnel who is knowledgeable about waste management, packing and labeling hazardous substances, training workers, providing PPE and first-aid medical facilities, etc.). Moreover, according to Article 19, facilities applying for a waste management license must prepare a waste management plan including inter alia the measures taken to prevent adverse effects on the environment. The 2003 Rules also clarify that approved waste management facilities must be inspected yearly by the Federal or Provincial Agency (Article 16(1)) and that, in case they are found to be noncompliant, their license can be canceled (Article 15(1)).

Finally, the **2012 Balochistan Environmental Protection Act** repealed the 1997 Pakistan Environmental Protection Act in the Province of Balochistan. The devolution process is noticeable here, since environmental matters and authorizations have been delegated to Provincial Agencies. This Act is overall very similar to the 1997 one, except for the following differences:

- Article 14 of the 1997 Act was translated into Article 14 of the 2012 Balochistan Act, but rather than simply stating that hazardous waste cannot be imported in Balochistan, it lists “items or materials or equipment or instruments or automobile or pesticides etc. [...] which may have any potential of causing environmental problems”. Probably it would be better to summarize everything into ‘hazardous materials’, possibly listing all the items or categories of items to which this provision applies in an annex (also because it still leaves ships in a gray area,

although automobiles are explicitly listed). The next paragraph (Article 14(3)) even creates a contradiction by stating that import of those items and materials is allowed if approved by the Balochistan Environmental Protection Agency and by the relevant Government Agency. In this case, it would be more straightforward to condense these paragraphs as 'hazardous items listed in Annex X cannot be imported unless authorized by the Balochistan Environmental Protection Agency and the relevant Government Agency'.

- Article 20(3) is a new provision, stating that, in case activities carried out on a land are likely to pollute water resources, measures must be taken to prevent any adverse effect (but again, there are no examples or exhaustive explanations).
- Finally, Article 23 is also a new provision, because shipbreaking is never explicitly mentioned in the 1997 Pakistan Environmental Protection Act. It states that the ship recycling industry must fulfil all the Basel Convention's requirements, and that waste and hazardous wastes must be disposed in a manner which protects both the terrestrial and the marine environment.

3.3.3.3 Shipbreaking law

Shipbreaking in Gadani is supervised mainly by the Balochistan Development Authority and by the Balochistan Environmental Protection Agency, in addition to Federal Ministries such as the Ministry for Ports and Shipping and the Ministry of Labour and Manpower (Iqbal and Heidegger, 2013). The first and only regulatory instrument applicable to shipbreaking activities in Pakistan is the **1979 Balochistan Ship Breaking Industry Rules**; however, there is not much information about it, also because its text is not available online. The lack of more recent regulations is surprising, especially considering how much the local industry has grown over the past 20 years; however, this is likely advantageous for the industry, especially when it comes to scrapping dangerous vessels (like tankers). Clearly, the aforementioned labor laws and environmental laws do apply to shipbreaking but, as already explained, working conditions are difficult to assess and to improve due to a high level of informality, and environmental regulations (even recent ones issued by the Government of Balochistan itself) are so fuzzy that it is difficult to understand how they would apply to ship recycling and to imports of end-of-life vessels.

Chapter 4 – The way forward

The following chapter will focus on what stakeholders can do in order to improve the conditions under which shipbreaking is carried out in the Indian subcontinent. Accepting lower environmental, health and safety standards in developing countries is not a solution and does not lead to sustainable development, no matter how important ship recycling is for the economy of coastal South Asia: instead, every stakeholder should assume common but differentiated responsibilities, each according to his own capabilities. Efforts should be made to bring up the whole industry in the Indian subcontinent in a similar way and at a similar time, in order to avoid shipbreaking activities moving away towards less regulated regions.

4.1 Suggestions for achieving safe ship recycling

Training

The first step towards safe ship recycling is making basic training available for all shipbreaking workers – regardless of their role in the yard – in order to foster the development of human capital. Basic training should be engaging and easily understandable also for illiterate workers: for example, it could be more visual than text-based, and it could include videos, pictures, practical case studies and interactive quizzes in order to test how workers would react in dangerous situations. In addition to working techniques, basic training should also include:

- Environmental awareness training and basic knowledge about how to handle hazardous materials in a way which protects the environment and the workers' own health (although not as deep as the knowledge needed by workers who deal frequently with hazardous materials).
- Basic knowledge of firefighting techniques, plus practical emergency drills. Clearly workers should not be expected to extinguish fire by themselves (the local fire brigade should intervene), but they should know what to do in order to stop the fire from spreading and how to evacuate the area quickly and safely (plus being taught how to avoid fires and explosions in the first place). In addition to firefighting, workers should also be instructed on how to behave in multiple common emergency scenarios.

- Basic first aid training. Unskilled workers should not be expected to know how to deal with a seriously injured person, but they should know at least the dos and don'ts for preventing the situation from becoming worse. This is important especially for the yards which are located far from hospitals and are not equipped with adequate medical facilities.
- Finally, workers should have some basic knowledge of the main laws, conventions and regulations on environmental protection, occupational health and safety and shipbreaking activities, including awareness of workers' rights, duties and responsibilities. Being aware of one's rights does not have any impact on occupational safety, but it helps workers to take advantage of the rights they are entitled to.

After having learned all the basics, it is recommended to test the workers' knowledge and to issue a certificate of attendance, stating that the final exam has been passed successfully. At this point, the workers who are going to carry out particularly dangerous activities should undergo more specific training (for instance on how to use gas torches safely, or on how to handle hazardous materials in a safe and environmentally sound manner). At the beginning, inexperienced workers should only shadow more experienced workers, and they should familiarize themselves with the yard's specific characteristics which could influence emergency procedures. In any case, training should not end once workers have completed their basic training course: continuous education is needed, in order to keep the workers updated about new dismantling techniques and to refresh their knowledge on emergency procedures.

In many cases, some basic training is already offered by local shipbreakers' associations, but – as explained in Chapter 2 – often these courses are quite superficial due to financial constraints and lack of time. Yard owners could step in and offer more comprehensive training, but it would be expensive – especially considering that many workers are engaged only in temporary employment. This issue could be partly solved by collaborating with local environmental organizations and trade unions, which would likely be glad to help and even offer a small financial contribution for training, if it will improve working conditions in the yards and environmental pollution in coastal areas (in the past, some yards have already successfully collaborated with the Bangladesh Environmental Lawyers Association, for instance).

Another potential solution could be creating a training fund with contributions from local yards and from shipbreaking States' local and/or national governments. In general, funds should be provided by the stakeholders who benefit the most from ship recycling activities being carried out in India, Pakistan and Bangladesh; for this reason, even responsible shipping companies and shipowners could voluntarily make some donations. Contributions from major shipowning States and flag States would be appreciated as well; maybe the amount could be tied to how many ships they sent to South Asia in the past 5-10 years, but this solution might prove difficult to enforce.

As for training, it could be carried out by the Provincial Government (or by organizations appointed by it), rather than delegating this responsibility to yard owners or to yard owners' associations (who have an incentive to make training programs as quick and inexpensive as possible). In such a system, all trained workers could be added to a public 'register' of trained shipbreaking workers, and yards could be required to hire only workers who are part of this list. Additionally, trained workers could receive a 'shipbreaking license', intended as a card which contains a photo of the worker and some information on the worker and on the training he has received; this solution could be quite effective especially for temporary workers and for migrant workers.

Finally, developed countries could also help to fund and/or organize training programs. For instance, between 2011 and 2014 the EU-funded Ship DIGEST (Dismantling Insight by Generating Environmental and Safety Training) project for vocational education was carried out with the aim of improving environmental, safety and health conditions inside Turkish yards. Unlike previous programs, the Ship DIGEST project was tailored exactly with Turkish yards' conditions in mind, and it was created in accordance with the European Qualifications Framework and the European Credit System for Vocational Education and Training (McKenna, 2013), meaning that the courses would be valid and recognized in Europe too. In general, intellectual exchange programs could be useful especially for the most advanced topics (such as waste management or new dismantling techniques), although local instructors are also needed in order to avoid excessive dependency on foreign trainers.

Daily activities

With regard to day-to-day operations, first of all, yards should work on improving morale

in the workplace and on fostering teamwork. This might seem unimportant and even ridiculous in an industry that does not care much about the safety of its workers and does only the bare minimum to avoid accidents and the inspections from governmental agencies which would follow; another obstacle is the widespread employment of temporary workers. However, knowing coworkers and interacting with them (not necessarily at work, but also in recreational facilities after work) could lead to situations in which workers look after each other when they are carrying out dangerous activities (which is important especially in cases where some inattentive or inexperienced workers could be a danger to other workers). Effective teamworking would also increase coordination between shipbreaking workers, which could lead to a reduction in workplace accidents.

A good atmosphere would have a positive impact on the workers' emotional wellbeing as well, and it could increase productivity. In this sense, it is important that yards reward skilled, experienced employees properly, because it would offer lower-ranked workers an example to follow and it would motivate them to do their best. High performers could also be selected for further training and/or for becoming internal trainers, since employees would probably be more inclined to listen to fellow coworkers, rather than to their bosses or to third-party trainers.

In any case, though, 'basic', visible improvements should be prioritized, including:

- Increasing mechanization in the yards. This would improve productivity and reduce injuries and sick leave days (a win-win both for workers and employers).
- Planning out how the demolition of each specific vessel will be carried out, and making sure that all the workers who will take part in it are aware of the plan.
- Providing safe drinking water and sanitation facilities in the yards, in order to prevent dehydration and to reduce transmission of infective diseases and other illnesses.
- Providing weather-appropriate PPE for all workers. Since the South Asian climate tends to be very hot and humid, workers who are forced to wear low quality PPE could be tempted not to use it.
- Regularly testing workers for occupational diseases and providing adequate medical facilities at least for first aid, before carrying injured workers to an actual

hospital.

As a final note on occupational health and safety, it is advisable that ship recycling facilities work towards obtaining an ISO 45001 certification. In order to obtain this certification, yards must meet the standards developed by the International Organization for Standardization (which are inspired by recommendations from the ILO, among other sources); then, compliance must be certified by third-party auditors appointed by the International Organization for Standardization itself. Considering the occupational health and safety conditions currently present inside South Asian yards, this is a long-term goal, since it is more urgent to reach compliance with the HKC and the EUSRR first. However, the ISO 45001 standards should not be ignored, since research by Tanha et al. (2021) found that workplace injuries and deaths were less common in the yards which had obtained ISO certifications.

4.2 Suggestions for achieving environmentally sound ship recycling

As explained by the 2008 Green Paper on Better Ship Dismantling, environmentally friendly ship recycling starts in the design phase: in fact, it is crucial to keep investing in researching ways to replace hazardous materials and to make ships easier and safer to dismantle. As explained by Sivaprasad and Nandakumar (2013), generally vessels are designed exclusively with ease of construction and operational efficiency in mind, with no attention being paid to ease and safety of recycling. The authors believe that switching to a 'design for ship recycling' approach could make shipbreaking safer and more environmentally sound by prioritizing easy assembly (and disassembly) of components, by using simple structures, by avoiding the use of composite materials (which are difficult to recycle), and by including instructions for recyclability and/or disposal in the manuals for onboard equipment.

With regard to the yards, ideally they should achieve EUSRR compliance, since it is more demanding than the HKC, and since it would allow them to recycle EU-flagged vessels as well. However, according to data gathered by Illius (2020), PHP Family (the only HKC-compliant yard in Bangladesh) has spent about \$6.4 million to achieve compliancy; the estimated expense for upgrading other yards in Chittagong are lower – between \$2.3 million and \$3.5 million each – but still overwhelming for most yards in the area. Gradual upgrading could be a solution: for instance, yards could start the modernization process

with relatively low cost (but still impactful) measures, such as training workers, providing adequate basic PPE and storing hazardous waste correctly. Then, yards could set a medium-term deadline of 5 years to provide more 'advanced' PPE (such as respirators) and to build improved facilities for handling asbestos. And finally, in the long term (10 years), there will be time (and hopefully money as well) to undertake more demanding projects, such as laying down impermeable floors, further improving facilities for handling asbestos, building facilities for hazardous waste treatment and disposal, and so on. The main problem with such a solution, though, is that HKC and EUSR compliance would be achieved only in the long term, whereas there is an urgent need for safe and environmentally sound recycling facilities in South Asia. Considering this, the most viable solution would probably be cooperation at a provincial, national and international level, involving multiple categories of stakeholders.

Another possible option for improving environmental performance could include strengthening inspection procedures before authorizing yards to begin cutting operations, in order to verify their compliance with the main national and international regulations regarding waste disposal, working conditions, presence of medical and firefighting facilities, and so on. This would definitely require an increased budget for inspectors, but it could be partly compensated by the resulting increase in fines. In general, punishments for noncompliant yards should be more severe and include not only administrative penalties, but also temporary closures of the yard and/or revocation of the yard's license to operate (especially in case of reiteration). Stricter and more frequent inspections will ensure that substandard yards do not continue to operate, which reflects poorly on the institutional credibility of South Asian shipbreaking nations and damages the reputation of those yards which are actually operating under acceptable standards. The issue of corruption could be solved by offering financial rewards to inspectors each time they report a yard (and after noncompliance has been confirmed by a higher authority, in order to avoid baseless reporting).

As a longer-term goal, yards should work towards meeting ISO requirements: ISO 9001 (quality management) and ISO 14001 (environmental management) are applicable to all industry, whereas ISO 30000 is designed specifically for ship recycling and covers every procedure from the moment in which the ship arrives in the yard until the moment in which all the waste generated during recycling is disposed of in a safe and

environmentally sound manner⁶⁰. As stated above, ISO-compliance should be targeted only after a yard has already achieved compliance with the HKC and the EUSRR, but it must not be ignored altogether, since companies such as Evergreen Marine Corporation are already requiring the yards which dismantle their end-of-life vessels to have obtained multiple ISO certifications⁶¹.

There is also a need for more and better infrastructure. For instance, both Pakistan and Bangladesh need more waste treatment and disposal facilities; considering the need for specific expertise and construction costs, it would be advisable to task local shipbreakers' associations and local and national governments with this task. As for the yards, stricter requirements for their location are needed as to prevent further environmental damages (for example, by making sure that the water level is high enough, that the tides are strong enough, that the area is not too exposed to strong winds, etc.). Moreover, efforts should be made to restore mangroves and other types of vegetation close to the yards.

Creating a Research & Development center in proximity of the yards would help as well. This center would mainly collect and analyze environmental and safety data, in addition to keeping up with the latest innovations on dismantling and recycling techniques. Yan et al. (2018), for instance, have suggested abrasive water jets as an alternative to cutting with acetylene torches. This method has multiple advantages (reduced noise exposure, no toxic fumes produced by combustion, less dust, lower CO₂ emissions, etc.). However, it is still an emerging technology, and it requires a large initial investment which might not be interesting in labor-abundant countries like India, Pakistan and Bangladesh (especially considering that shipbreaking yards are traditionally focused on keeping operational costs low, which hampers innovation adoption). But overall, the most dramatic improvement in environmental performance would probably be achieved by switching to a safer method (such as landing), because it would help reduce the occurrence of oil spills and other accidental emissions of hazardous substances. Even better, dry-docking would drastically reduce water pollution (and fishing activities would benefit from this);

⁶⁰ <https://www.rina.org/en/ship-recycling-management-systems>

⁶¹ <https://www.shiprecyclingtransparency.org/view/srti-disclosures/entry/176/>

however, this is extremely expensive, to the point that its implementation in South Asia would be unreasonable (especially without any financial aid from other countries).

Finally, more transparency is needed. Currently ship recyclers are required to prepare annual reports which include information on their employees, on accidents in the workplace and on occupational diseases, on environmental pollution, on the number and flag State of the ships they dismantle, and so on (Das and Shahin, 2019). These reports must be submitted to the Government for statistical purposes, but neither the yards nor the Governments of shipbreaking States are required to make this information public. This lack of transparency reflects poorly both on yards and on State Authorities because, if data is inaccessible for all the other stakeholders, then it is legitimate to believe that something fishy might be going on in the yards, and that the Government is underestimating – or even willingly ignoring – the social, environmental and health impact of ship recycling. Therefore, it is advisable that at least Governmental Authorities make aggregate data on shipbreaking publicly available, so that other stakeholders will be informed about the impact of recycling activities and will be able to take measures for defending their own interests.

4.3 Suggestions for shipowners and shipping companies

In any case, it is likely more feasible and effective to target shipowners, rather than shipbreakers. According to the 2011 OECD Guidelines for Multinational Enterprises, multinational enterprises (such as large shipping companies) must prevent, mitigate and remedy adverse effects caused by their own activities, and even by activities carried out by someone else, if that adverse impact is “directly linked to their operations, products or services by a business relationship” (Paragraph 12); this is true particularly when a shipping company or a shipowner has enough leverage to demand yards to improve their practices. The same view is shared by the European Parliament, which stated in the 2008 Green Paper on Better Ship Dismantling that shipowners are “always responsible for any harmful effects of the dismantling on workers, public health or the environment”.

Similarly, the second pillar of the 2011 United Nations Guiding Principles on Business and Human Rights is the company’s responsibility to respect human rights (Principle 11), no matter whether it is operating in its home country or abroad, and regardless of a State’s regulations and law enforcement performance. But protecting human rights is not

enough: businesses must also ensure to prevent, mitigate and remedy any adverse human rights impact caused by their activities. Due to the way in which Principle 11 is phrased, it could be argued that it does not apply to shipowners who decide to have their end-of-life vessels scrapped in South Asia. However, Principle 13(b) clearly states that businesses' responsibility to respect human rights includes also preventing and mitigating human rights abuses "that are directly linked to their operations, products or services by their business relationships, even if they have not contributed to those": in other words, in the case of shipbreaking the UN Guiding Principles suggest that shipowners have a responsibility to ensure that human rights abuses caused during recycling are minimized and mitigated, even though they are not contributing to them directly (because they are contributing to them through their business relationships with substandard yards anyway).

In order to act in a socially responsible way, shipowners and shipping companies should first and foremost follow all applicable legislation, but this is not enough: they should also prepare a risk management plan and carry out due diligence processes for selecting ship recycling facilities carefully and for identifying, preventing and mitigating potential risks both upstream and downstream of their value chain. As suggested by UN Guiding Principles 15 and 16, all this information should be included in a publicly available statement and be communicated both to internal and external stakeholders. Understandably, no one wants to hit the headlines due to an accident occurred during the dismantling of one of his ships, because this would be a major blow to a company's reputation. For this reason, it is very important to address immediately and effectively any potential human rights abuse in the value chain, in order to avoid any legal or reputational damage in case a party which is linked to the enterprise engages in human rights violations. In the specific case of shipbreaking, in fact, there is a risk that shipowners are considered to be complicit in yard's misdeeds and human rights abuses. The case *Hamida Begum (on behalf of MD Khalil Mollah) v. Maran (UK) Limited* really exemplifies this risk.

In 2018 the Claimant's husband died in an explosion while he was dismantling Liberian-flagged tanker Maran Centaurus. In 2013 the Defendant (shipbroker Maran UK Limited) had tasked Maran Tankers Management with recycling the tanker; after a series of name changes, in 2017 the ship was ultimately sold in Singapore to St Kitts and Nevis-based

Hsejar Limited through cash buyer Wirana and subsequently beached in Bangladesh. Mrs. Begum based her case on the fact that Maran UK Limited, looking at the high price offered for its end-of-life tankers, would have known that they were going to be scrapped unsafely in South Asia. As noted in the Court of Appeal's final judgement, a Chinese yard would have paid about \$10 million, but Maran chose a Bangladeshi yard which offered an additional \$6 million. In 2021, the UK Court of Appeal ruled that Maran "owed a duty of care to the Claimant's husband", and to shipbreaking workers in general (even though the actual sale was handled by a cash buyer); therefore, the judges declared that Maran was liable for the death of Mr. Mollah and added that Maran should have "insisted on the sale to a so-called 'green' yard, where proper working practices were in place". While this is only one case among thousands of unreported ones, hopefully this landmark judgement will encourage the families of former shipbreaking workers to report accidents more frequently. Furthermore, it is hoped that this judgement will lead shipowners and shipping companies to take human rights violations in their supply chain more seriously, since they might not be able anymore to plead innocent simply by stating that they were not aware of such abuses.

Shipowners can exercise due diligence and protect themselves from liability for accidents occurred during ship recycling by 'strengthening' the sale contracts for their vessels. For instance, many shipowners are already using BIMCO's 2012 RECYCLECON Standard Contract for the Sale of Vessels for Green Recycling, which binds the secondhand buyer of a vessel to recycle the ship as described in term 18 ('Safe and environmentally sound recycling') of the contract. This means that the seller must provide the buyer with the ship's IHM, and that the buyer must provide the seller with a copy of the chosen facility's Ship Recycling Facility Plan, plus a statement of completion after recycling has been completed; moreover, the buyer must ensure that the seller can visit the recycling facility at any time in order to ascertain that recycling is being carried out as described in the Ship Recycling Facility Plan and in the Ship Recycling Plan.

However, the RECYCLECON contains some deficiencies: for instance, it is silent about the seller's rights in case he is not satisfied with the Ship Recycling Plan, or in case he finds out that recycling is not being carried out as described in the Ship Recycling Plan (because there is no clause in RECYCLECON requiring the seller to approve the Ship Recycling Plan). Clauses on recycling procedures display another serious lacuna: in fact the contract's

preamble states that the buyer must commit himself to recycling the vessel “in a safe and environmentally sound manner consistent with international and national law and relevant guidelines”, but the contract never mentions explicitly neither the HKC nor the EUSRR (and this is a very problematic omission, considering that the HKC has not entered into force yet and that the RECYCLECON can be used also for non-EU-flagged vessels which are not subject to the EUSRR). For these reasons, sellers can (and should) improve the standard contract, for instance by requiring the buyer to use an HKC-compliant yard, or at least by defining more clearly what “safe and environmentally sound” really means.

The 2008 European Commission’s Strategy for Better Ship Dismantling even suggests shipowners to restrict the sale of their end-of-life vessels only to shipowners based in a country which has ratified the 1989 Basel Convention (and preferably the 1995 Basel Ban Amendment as well). Moreover, the seller could include a clause requiring the buyer to provide him with periodic reports in order to keep track of how dismantling is being carried out, rather than having to go visit the yard himself (especially because it is expensive and time-consuming, and therefore a seller might decide not to do it and simply trust the buyer). Some shipowners also require the buyer to halt recycling in case it is found to be noncompliant with the Ship Recycling Plan (in the sense that the contract’s requirements have been breached), at least until the nonconformity is remedied. In any case, sellers should take a proactive approach towards monitoring the recycling of formerly owned vessels, since including a general clause for safe and environmentally sound ship recycling could not be enough to protect them from the legal and reputational consequences of a shipbreaking accident.

4.3.1 Corporate social responsibility and reputation in the shipping industry

It is difficult to offer advice to shipowners and shipping companies because – economically speaking – they are strongly incentivized to beach their end-of-life vessels. In fact, while in the past some shipowners have faced legal prosecution due to their irresponsible actions, so far backlash from the general public has been quite limited and, as a result, the reputation of these shipowners has not suffered much. Indeed, the threat of reputational damages could be the most effective incentive for improving ship recycling practices, but it can work only if awareness about the dangers of substandard shipbreaking increases among the general public. At the same time, whereas corporate social responsibility (CSR) is definitely a precious asset for the general public, its role in

the eyes of investors is ambivalent: in fact, according to some shareholders the only duty of a company is to maximize profits, whereas others believe that businesses should also pursue social objectives for the advancement of society, and they understand that a bad reputation could damage the company's profitability.

More specifically, Friedman (1970) believes that a corporate executive's sole responsibility is to follow stockholders' wishes, which usually means maximizing profits "while conforming to the basic rules of society, both those embodied in law and those embodied in ethical custom". He also called CSR "hypocritical window dressing" which "does clearly harm the foundations of a free society". Today Friedman's doctrine is quite outdated, since businesses are increasingly expected to act in a socially responsible way, to the point that CSR could fall under the definition of "ethical custom"; moreover, the damage caused by lack of regulation and profit-maximizing behaviors in the Indian subcontinent is there for all to see. Obviously, according to Friedman's view it makes perfect sense to choose beaching at the best-paying yard, because it *is* technically the best option for profit maximization; selecting an HKC-compliant or even an EU-listed yard would surely entail a trade-off between sustainability and profitability.

However, even Friedman's contemporaries challenged his opinion of CSR. For instance, Davis (1973) claims that CSR goes beyond mere compliance with minimum legal requirements ("Social responsibility begins where the law ends") and goes on to explain why CSR is a fundamental requirement for a company's survival and long-term success. According to Davis (1973), engaging in socially responsible behavior is not incompatible with stockholders' interests, because the non-monetary benefits generated by such behavior (for instance in the form of good corporate reputation) will attract better employees and more customers, increasing profits over the long term. Interestingly, he also believes that socially responsible behaviors can prevent government regulation (or at least reduce the need for it) and compliance costs. This is generally true, although not in the case of ship recycling: in fact, the problem of this industry is that it was severely underregulated for a long time, and most shipowners started acting in a socially responsible way only recently; however, at that point it was already too late, because the situation in South Asian yards was out of control and the IMO and the EU had to intervene. For example, Maersk opposed strongly to the EUSRR, claiming that it was already promoting safe and environmentally sound recycling in the Indian subcontinent.

However, it must be mentioned that in 2013 companies like Maersk were an exception – not a rule – because the shipping industry tends to be more reactive than proactive.

In practice, the shipping companies interviewed by Fafaliou et al. (2006) had no qualms about lowering their standards for ship recycling at the expense of their corporate image, if it helped them maximize their profits. However, a study from Alcaide et al. (2017) found that shipowners' recycling decisions are influenced by ethical reasons, although they are still driven mainly by economic and strategic considerations (in the sense that, when they choose safe and environmentally sound recycling, they do it mainly for improving their corporate image in the hope that their profits will also increase as a result). Schøyen et al. (2017), on the other hand, obtained mixed results: in fact, some of the shipowners they interviewed cared mostly about maximizing profits for their shareholders, whereas others invested a lot of effort into maintaining a pristine reputation and avoided beaching at all costs.

Most importantly, a company's actual practices must be consistent with the image it is trying to project. For instance, Maersk's reputation took a blow when, in 2016, some of its former ships were beached in Bangladesh⁶². The North Sea is one of these ships: theoretically Maersk had required its new buyer to recycle it in an HKC-compliant yard, but this did not happen, and the vessel was subsequently sold by the new owner to cash buyer GMS. The backlash Maersk received was so strong mostly because the company used to boast about its responsible ship recycling program. It could be argued that, considering that the new shipowner (Conquistador Shipping Corporation) was a letterbox company based in St. Kitts and Nevis (a popular end-of-life FOC), Maersk could have avoided this accident either by choosing a more reputable buyer, or at least by following the vessel more closely after its sale, in addition to taking a stronger stance and suing the new owner for breach of contract. Even better, considering the company's size and the fact that it was already collaborating with some Indian yards, Maersk should have arranged recycling personally in one of its supervised yards, rather than relying on a

⁶² <https://www.maersk.com/news/articles/2017/01/03/maersk-tightens-its-ship-recycling-procedures>

shady third party.

4.3.2 The Ship Recycling Transparency Initiative

Pressure for safe and environmentally sound ship recycling does not come only from the general public: in fact, cargo owners as well are increasingly asking shipowners and shipping companies to act responsibly 'from the cradle to the grave'. Such cargo owners are usually very serious about their environmental, social and corporate governance initiatives and therefore, in order to improve the global sustainability of their value chain, they choose shippers after carefully assessing their social and environmental performance. In such a scenario, shipping companies and shipowners are basically forced to act, if they want to remain competitive. Cargo owners shopping around for maritime shipping services could gain information on each company's practices by contacting each one of them individually, or they could visit their websites and read their CSR reports...but it would be extremely time-consuming. Luckily, there is an alternative.

The Ship Recycling Transparency Initiative (SRTI) online platform was created in 2018 thanks to the joint efforts of multiple shipping companies which teamed up with the non-profit organization Sustainable Shipping Initiative. The SRTI's vision is to see ships being recycled responsibly from an environmental, social and economic point of view, meeting and exceeding the standards set by current regulations on ship recycling. Shipping companies and shipowners who wish to promote their commitment to safe and environmentally sound shipbreaking can do their part by signing up (voluntarily) and answering a questionnaire on their practices and requirements for ship recycling. The answers – which are publicly available – can then be used by cargo owners and other stakeholders to evaluate the behavior of potential (or current) maritime shipping services providers and make an informed decision. Currently the SRTI has 29 signatories, including shipowners, charterers, cargo owners, and other stakeholders such as insurers, investors and lenders (including major players like A.P. Moeller-Maersk, CMA CGM, Evergreen Marine Corporation and Hapag-Lloyd).

It would be advisable that more shipowners join the SRTI. SRTI membership requires a high level of transparency, which can be scary, because it makes shipowners effectively accountable for their recycling decisions (and it will probably expose them to increased condemnation in case they mess up). However, at the same time, transparency can be an

economically rewarding strategy, since it makes a company more attractive in the eyes of responsible cargo owners and financiers (compared to non-transparent ones), and since it also introduces an element of differentiation (at least currently, when it is not common practice yet). Hopefully, the SRTI will gain more traction over time, to the point that disclosure of ship recycling practices will truly become the norm, and the bar will be raised across the whole industry. This is explained in the SRTI's so-called 'Theory of Change': if shipowners start disclosing their ship recycling practices, then demand from cargo owners, investors and other stakeholders for such transparency will increase, and transparent shipowners will be rewarded, thus incentivizing other shipowners to improve their practices and join the SRTI in a virtuous circle.

4.3.3 Additional suggestions for shipowners and shipping companies

Founded in 2000, the UN Global Compact is the world's largest corporate sustainability initiative⁶³, comprising over 12,000 companies located across more than 160 countries. The UN Global Compact's 10 Principles encourage businesses to "ensure that their own operations are not complicit in human rights abuses" (Principle 2) and to protect and respect "internationally proclaimed human rights" (Principle 1) and labor rights such as freedom of association and collective bargaining (Principle 3) and elimination of child labor (Principle 5). Furthermore, the Global Compact requires businesses to act in an environmentally friendly manner and to promote environmental responsibility and green technologies (Principles 7, 8 and 9). Currently the most important shipping companies which have joined the UN Global Compact are A.P. Moeller-Maersk, CMA CGM and MSC; it is advisable that more shipowners and shipping companies join the UN Global Compact, especially the biggest and most powerful ones (such as Evergreen Marine Corporation or Hapag-Lloyd).

⁶³ <https://www.unglobalcompact.org/what-is-gc>



Figure 33: The 17 UN Sustainable Development Goals.

Retrieved from <https://www.un.org/sustainabledevelopment/news/communications-material/>

When they join the UN Global Compact, organizations must commit themselves to promote the 17 Sustainable Development Goals (SDGs, see Figure 33) for the advancement of society as a whole. In particular, the actions of shipowners and shipping companies engaged in safe and environmentally sound ship recycling could help towards the achievement of SDGs number 1 (no poverty), number 3 (good health and well-being), number 8 (decent work and economic growth), number 9 (industry, innovation and infrastructure), number 13 (climate action), number 14 (life below water), number 15 (life on land) and number 17 (partnerships for the goals).

Many of these goals could also be promoted by the yards themselves, but it is clear that – for multiple reasons – they should not be relied on. On the other hand, shipowners and shipping companies are in a much better position for driving change in the South Asian ship recycling industry: in fact, while these companies are the ones who keep on ‘feeding’ substandard shipbreaking, they *do* have the power to demand better conditions, both from yards and cash buyers. In addition to the suggestions presented above, there are some additional measures which shipowners and shipping companies could (and should) take.

First of all, safe and environmentally sound ship recycling starts with thorough pre-cleaning. Carrying out this operation in developed countries is very expensive for shipowners, especially if the vessel is likely to end up in a ship recycling facility which is unable to handle hazardous waste correctly. It could be argued that a shipowner who is responsible enough to pre-clean his end-of-life vessels is probably also responsible

enough to use an HKC-compliant yard or an EU-listed yard, but this recommendation never hurts. In any case, it is advisable that shipowners provide IHMs also for their non-EU flagged ships, and that they assist yards closely when they prepare the Ship Recycling Plan.

Secondly, without a doubt the easiest, most direct way to solve the human rights and environmental issues related to shipbreaking activities would be to use exclusively HKC-compliant yards for non-EU-flagged ships, and EU-listed yards for EU-flagged ships (without trying to dodge the EUSRR by reflagging end-of-life vessels). In order to have more control over the recycling process, bigger companies which have the resources and the numbers to make it possible and convenient to manage ship disposal, should do it by themselves, rather than selling their end-of-life vessels to cash buyers or to other third parties. In order to take full advantage of the resources they commit to ship recycling, large shipping companies and shipowners could also offer their services to other companies, thus acting as brokers. Actually, Maersk used to do this. In fact, in 1997 Maersk started engaging in exclusive arrangements with some well-performing Indian yards for demolishing its ships, while at the same time offering technical advice and supervising the recycling process, even though this meant that it was earning less for its end-of-life vessels. This initiative was so successful that, in 2000, Maersk ended up creating a new department (Maersk Ship Management Recycling), which would assist and provide green recycling services to other shipowners as well (for instance by preparing the sale contract and all necessary documentation for the final voyage, and by supervising recycling at the yard). In 2011 Maersk stopped offering this service because it no longer considered it a core business (Galley, 2014). As a matter of fact, offering recycling services might not be profitable enough to be treated as a core business (especially if compared to the profitability of maritime shipping) but, under some circumstances, it could still be a good opportunity for diversifying revenues.

Today some agents are offering a similar service. For example, Sea2Cradle arranges also pre-cleaning (which Maersk did not perform) and offers both photographic and documental evidence of the recycling procedure (for instance, it sends the shipowner a copy of the documentation released when waste is transferred from the yard to a waste treatment facility). Galley (2014) calls this approach 'facilitated disposal', in the sense that it is a greener, more responsible option than using cash buyers, but it is also suitable for

smaller shipowners for whom it might be unreasonable to spend a lot of time and financial resources for arranging and supervising green recycling once in a blue moon.

Even in case they do not want to partake personally in the shipbreaking process, shipowners should still increase their engagement with the yards they use for recycling their end-of-life vessels, especially if they are located in the Indian subcontinent. Using an HKC-compliant yard or an EU-listed yard is one way of internalizing costs for preventing and remedying environmental damage, but the 'polluter pays' principle can be upheld also by investing financial and non-financial resources into upgrading recycling facilities. In order to achieve substantial results, sizeable investments are needed; however, these will pay off in terms of improved reputation and reduced reputational risk for shipping companies and shipowners (besides obvious advantages for the yards and for their workers, for the environment and for the local population). Non-financial investments from shipowners and shipping companies could include training, technical assistance during recycling, and knowledge transfers for safer and greener ship recycling techniques. Financial investments, on the other hand, could be especially useful for building or improving waste management facilities, but they could also be routed towards the yards (for instance by providing better PPE and work tools for the workers, or for building concrete slipways or dry-docks). Shipowners and shipping companies should not be expected to fund these projects entirely, but they could reward ship recycling facilities' efforts by sending their end-of-life vessels there (even though they would likely offer lower prices than disreputable yards).

Furthermore, it is advisable that shipowners are physically present in the yard during recycling, since, as reported by some shipowners interviewed by Schøyen et al. (2017), even workers in carefully selected yards tended to ditch PPE and to use potentially dangerous shortcuts when unsupervised by the shipowner (or a shipowner's representative). In any case, if shipowners cannot supervise recycling (or have someone else do it for them), then they should at least demand recyclers to provide photos and frequent reports on the recycling operations. These pieces of evidence could be used to measure a yard's performance against a set of pre-determined key performance indicators and to reward good behavior with bonus payments.

Curiously, Galley (2014) reports that, when the MS Tor Anglia was dismantled in China in

2010, Danish shipowner DFDS Seaways included a clause in the sale contract requiring the recycler to send contaminated bilge water back to Scandinavia in containers. Repatriation of hazardous wastes could be a viable solution in some situations, but, considering the amount of hazardous waste generated by shipbreaking, it is not surprising that this never became common practice in the ship recycling industry. In theory, it makes sense to send hazardous waste somewhere where it can be treated appropriately, but in practice this solution is expensive, troublesome and polluting due to the length of the 'return' journey. If a company is willing to go through the trouble of sending an end-of-life vessel to Asia and then arrange repatriation of hazardous waste at its own expense, then it would probably be cheaper and more reasonable to recycle the ship straight away in Europe or Turkey.

4.4 Suggestions for financial institutions

In the past years, financial institutions such as pension funds and banks have been modifying their behavior in order to meet the increasing demand for green finance and sustainable investments. As a result, profitability and financial returns are not the only criteria used by financial institutions for evaluating clients or assets anymore; instead, a lot of importance is being placed on a company's CSR policies and initiatives.

In the specific case of ship recycling, shipping banks have been leading efforts towards encouraging shipowners and shipping companies to manage their ships sustainably 'from cradle to grave'. For instance, in 2017 Dutch banks ABN Amro, ING and NIBC started selecting their borrowers more carefully, and later other Scandinavian and German banks followed their example; soon they joined forces and finally introduced the so-called Responsible Ship Recycling Standards. According to these Responsible Ship Recycling Standards, when signing loan agreements with shipowners and shipping companies, member banks must require them to demolish their ships in a socially and environmentally responsible way. This means that these banks must finance only lenders who have committed themselves to:

- Not selling their end-of-life vessels to cash buyers.
- Including clauses on responsible ship recycling in the sale contracts for their ships.
- Preparing and enforcing policies for sustainable ship recycling.
- Inspecting the yards where their ships are demolished.

- Observing the HKC’s requirements (and the EUSRR’s requirements, if applicable).
- Abiding by the 2011 OECD Guidelines for Multinational Enterprises, the 2011 UN Guiding Principles on Business and Human Rights, and any other relevant international convention and regulation.

Some pension funds as well have been looking more carefully into the companies they invest in. For example, in January 2018 the Norwegian Central Bank announced that it would exclude Evergreen Marine Corporation, Korea Line Corporation and Thoresen Thai Agencies from the Government Pension Fund Global due to “severe environmental damage” and “violation of human rights” linked to substandard ship recycling in Pakistan and Bangladesh⁶⁴. The divestment in itself was not very sizeable, but it still sent out a signal to other financial institutions; for instance, soon after Norwegian life insurer KLP also sold its shares in Evergreen and excluded Korea Line, Precious Shipping and Thoresen Thai Agencies from future investments⁶⁵. Interestingly, initially in 2018 Norges Bank added Precious Shipping (China) as well to the exclusion list, but in July 2021 it revoked this decision, since the company had not beached any ship since 2017⁶⁶.

These investors are hoping that, by increasing pressure on shipowners to act responsibly, they will be able to facilitate the uptake of safe and environmentally sound ship recycling even in the absence of an enforceable global shipbreaking regime. This is a commendable effort but, in order to truly make a difference, wider engagement from the financial community is needed. In this sense, insurers can also play a crucial role. In fact, considering that the owners of EU-flagged vessels are required to recycle their ships in a European or Turkish yard and that, so far, the EU Commission has not introduced any financial mechanism for discouraging reflagging, a responsible shipowner could end up receiving a very low price from EU-listed yards (compared to the prices offered by South Asian yards). As suggested by a Ecorys, DNV GL and Erasmus University 2016 report for the European Commission, insurers could offer an instrument where the premiums paid by the shipowner during the ship’s lifetime are accrued and used to cover the price

⁶⁴ <https://www.nbim.no/en/the-fund/responsible-investment/exclusion-of-companies/>

⁶⁵ <https://www.klp.no/en/corporate-responsibility-and-responsible-investments/responsible-ownership>

⁶⁶ <https://etikkradet.no/precious-shipping-pcl-revocation-of-exclusion/>

difference between recycling in South Asia and in EU-listed facilities (on the condition that the shipowner proves that his vessel was recycled in an HKC- or EUSRR-compliant facility). This system would help smoothing out the price difference between South Asian and EU-listed yards (which tends to fluctuate dramatically), hence why a recycling insurance could become a popular choice for responsible shipowners. Even better, if it were possible to link the insurance to the ship, rather than to its shipowner, then it would be possible to preserve insurance coverage even through of changes of ownership.

4.5 Suggestions for funding and strengthening international cooperation

The first pillar of the 2011 United Nations Guiding Principles on Business and Human Rights is States' duty to protect human rights. In this regard, the UN Guiding Principles claim that, while States themselves are not responsible for human rights abuses caused by private actors, they have a duty to take adequate steps in order to prevent and punish businesses abusing human rights both within their territory (Principle 1) and abroad (Principle 2). An important step for achieving this result is enforcing laws effectively and reviewing them periodically in order to update them, if necessary (Principle 3).

However, in developing shipbreaking nations, the benefits brought by ship recycling in terms of employment, state revenues and recycled materials are so important that it is easy to see why these countries are prioritizing economic benefits over environmental protection (although these benefits are reaped only by a small part of the population). Local communities are arguably the ones who suffer the most from these activities, since they usually make a living by farming and fishing. As confirmed by Higashida et al. (2014), South Asian coastal communities are a lot more sensitive to environmental issues compared to non-locals, since they do not have much to gain from ship recycling, but their livelihood is at risk. For this reason, when regulating the ship recycling industry, provincial and national governments should consider also the needs of the local population and try to find a balance between economic development and environmental protection. In particular, local fishermen would benefit greatly from dry-docking (and from environmentally friendly shipbreaking in general). Unfortunately, though, the ship recycling industry is extremely volatile and competition is strong, hence why the burden of financing and building better infrastructure should not be borne entirely by yard

owners alone.

First of all, it must be remembered that the land the yards are built on is State property, so it is difficult to find an incentive for yard owners to invest into building (semi)permanent infrastructure (let alone dry-docks). For this reason, it would be advisable that the Governments of shipbreaking nations step in to support a green transition of the ship recycling industry. The Government should not fund these projects entirely, especially because the lack of financial resources would likely slow down progress. A more financially sustainable option could be to reward the yards which invest in upgrades through lower taxation or by prolonging their lease, so that they will not need to renew it as frequently as yards which have not committed any resource towards modernization. As an alternative, yards with a profit above a predefined threshold could be required to invest each year at least a certain percentage of their profits into upgraded infrastructure (although this could lead to financial statement manipulation).

Private organizations could also be involved, for instance through a public-private partnership (PPP) model. In this way, the private and the public sector would collaborate in order to finance, build and operate facilities for ship recycling and/or waste treatment and disposal. More specifically, Build-Own-Operate-Transfer (BOOT) contracts could be employed, meaning that the shipbreaking State's Authorities would look for a private investor, and said private investor would be responsible to finance, build and operate the facility for a certain number of years; after that deadline, the shipbreaking State would gain back ownership and control of the facility.

In any case, shipbreaking nations should keep on cooperating with other countries, as they have already done in the past. For example, in 2017 the Indian Ministry of Shipping negotiated with the Japan International Cooperation Agency a \$76 million loan pact for a project which aimed to upgrade ship recycling yards in Alang-Sosiya⁶⁷. According to the Ministry of Shipping, the project would be supervised by the Gujarat Maritime Board, while the \$111 million needed for carrying it out would be obtained from the Japan

⁶⁷ <https://timesofindia.indiatimes.com/business/india-business/india-inks-76-mn-loan-deal-with-japans-jica/articleshow/60532083.cms>

International Cooperation Agency's loan (\$76 million), from the Government of Gujarat (\$25 million), and jointly from the Indian Ministry of Shipping and the Government of Gujarat (\$10 million). This project was expected to be completed by 2022, although disruptions caused by the Coronavirus pandemic will likely lead to postponements.

Similarly, between 2015 and 2022 Bangladesh took part to the IMO's SENSREC project, under which Norway donated about \$4-5 million in order to bring HKC-compliant safe and environmentally sound ship recycling to Bangladesh. The project was divided into three phases and began with economic and environmental studies on the local shipbreaking industry, plus a preliminary design for building Bangladesh's first centralized waste management facility⁶⁸. During the second phase of the SENSREC project, the IMO prepared a roadmap and recommendations for Bangladesh in order to help its yards achieve HKC compliance, and it designed a country-specific training program⁶⁹. Finally, during the third phase technical assistance was provided to yards and to the Government of Bangladesh, in order to instruct them on proper waste management and on ways to achieve HKC compliance⁷⁰.

As already explained, the race to the bottom involving South Asian shipbreaking countries removes all sorts of incentives to introduce stricter regulations, because it would mean losing market share. For this reason – and considering that 40% of global tonnage is EU-owned – international cooperation between Europe and India, Pakistan and Bangladesh should be reinforced, in order to help South Asia yards meet the EUSRR's standards. Any grant or other form of aid should not be open-ended or free of performance requirements; instead well-defined performance indicators and a timetable for achieving the expected results should be included; ideally, frequent reporting throughout the project's implementation will ensure that the funds are being invested properly. Finally, achievements should be verified either by the investor itself, or by a third-party accredited body. However, financial assistance limited to upgrading yards is not enough, since medical facilities, waste management facilities, fire stations and decent housing for

⁶⁸ <https://www.imo.org/en/OurWork/PartnershipsProjects/Pages/Ship-recycling.aspx>

⁶⁹ <https://www.imo.org/en/OurWork/PartnershipsProjects/Pages/SENSREC-Phase-II.aspx>

⁷⁰ <https://www.imo.org/en/MediaCentre/PressBriefings/pages/23-SENSREC-Phase-III.aspx>

shipbreaking workers are also needed. Furthermore, yards need technical assistance as well; in this case, countries such as Turkey and China could be well-qualified to instruct South Asian yards, because they started from somewhat similar conditions. Overall, it is advisable to involve flag States, shipowning States, shipowners and shipping companies into financing and offering technical assistance to South Asian ship recycling yards, since this would be in line with the 'polluter pays' principle.

As for incentives for shipowners, since the late 1990s some European States have been trying to compete with open registers by cutting taxes (for instance by replacing corporate tax with flat rate tonnage taxes) and by creating second offshore registers with more flexible employment regimes in order to incentivize European shipowners to fly European flags: the key reason is that reflagging cannot be prohibited, but it can be made less convenient by comparison. Regarding the tonnage tax in particular, the 2004 European Commission Guidelines on State Aid in Maritime Transport declared that European Member States would be allowed to offer State aid only limited to ships which comply with all relevant European and international standards, are "operated from the Community", and whose shipowner is also "established in the Community". In any case, tax relief schemes can be made available "exceptionally" also for shipowners who keep less than 60% of their tonnage under a European flag. However, whereas exceptional tax relief beneficiaries are subject to additional reporting requirements and need to commit themselves "to increasing or at least maintaining" their current share of EU-flagged vessels, more attention should be paid to the fact that shipowners keeping even as little as 60% of their tonnage under an EU flag are 'automatically' eligible for State aid and taxation relief. In this sense, it could be advisable to raise the 60% threshold (not necessarily up to 100%) in order to decrease the attractiveness of open registers for EU-owned vessels compared to open registers (because it would be harder for EU-based shipowners to receive State aid, unless a substantial percentage of their tonnage flies an EU flag).

On the other hand, subsidizing with public funds shipowners who choose green ship recycling should probably be seen only as a last resort, because shipowners should be expected to make sustainable choices regardless of whether they are being rewarded for them (in other words, shipowners should not be enticed with subsidies to choose yards responsibly). It could be argued that China was actually successful in encouraging Chinese

shipowners to recycle their own Chinese-flagged vessels domestically through subsidies; this offered also another advantage – Chinese yards were so busy with dismantling Chinese-flagged ships that they did not need to enter into bidding wars against South Asian countries, or to lower their environmental and safety standards in order to attract foreign ships. However, it should also be remembered that China has been the world's largest steel producer since the early 2000s, in addition to having a large internal demand for steel. Therefore, subsidies for encouraging domestic recycling of ships make more sense in China than in Europe, because the demand and supply for steel in China is so large that it is more economically convenient to use subsidies for obtaining scrap steel domestically rather than to import scrap steel from other countries or to produce new steel.

Instead, the introduction of a financial instrument should be reconsidered, so that the money would come from the shipowners themselves, rather than from taxpayers. The problem is that, besides understandable technical difficulties (which can be overcome), the idea of a financial scheme for green recycling of EU-flagged vessels has already been rejected by the ECSA and other stakeholders. In particular, as reported in the 2008 European Commission's Strategy for Better Ship Dismantling, many shipping industry stakeholders believed that the recycling market was already moving towards greener yards, and that therefore these funds would be enough to encourage yards to invest into upgrading. It is definitely important to support demand for green recycling, but at the same time, as long as cheaper options will be available, effective incentives to fly European flags and penalties for shipowners who reflag their end-of-life vessels will be needed. A global financial mechanism promoted by the IMO would be more effective than a European one, because it would be harder to dodge it through reflagging. However, according to Heidegger et al. (2015), even a port levy applicable to all ships above 500 gross tons calling at EU ports would still cover about 60% of global tonnage; in other words, 60% of global tonnage (regardless of flag State) would already be incentivized to use EU-listed yards in order to recover the levies paid for calling at EU ports. Considering how long it would take to enact a global financial mechanism for end-of-life vessels, enforcing a European port levy or a ship recycling license can be an effective solution in the meantime. This could lead to some traffic being shifted towards land routes in order to avoid calling at European ports, but it likely will not cause any dramatic change,

considering that road and railroad connections in the Asia-Europe route are still underdeveloped.

4.6 Other suggestions

The work of NGOs such as the Bangladesh Environmental Lawyers Association (BELA), NGO Shipbreaking Platform, Young Power in Social Action (YPSA), the International Federation for Human Rights (FIDH), the International Ship Recycling Association (ISRA) and Greenpeace has been very important, because they contributed to bringing shipbreaking issues to the attention of the international community; moreover, if they are vocal enough, their negative publicity can seriously endanger the reputation of shipowners and shipping companies. Indeed, studies from Alcaide et al. (2017) and Schøyen et al. (2017) found out that shipowners are very aware of pressure from the general public, from the media and from NGOs, and that such pressure is forcing them to pay more attention to the way in which their end-of-life vessels are dismantled.

It is important that these organizations keep on collaborating with each other in order to be more effective. For instance, this could include building a partnership with local trade unions for increasing workers' awareness about their own rights, or, alternatively, teaming up with recyclers and recyclers' association for financing and/or providing training programs for shipbreaking workers. There are also instances of workers' organizations reaching out to medical services providers: for instance, in July 2019 the trade unions Bangladesh Metal Workers' Federation and Bangladesh Metal, Chemical, Garments and Tailor Workers' Federation partnered with the Chattogram Medical College Hospital to set up a temporary medical camp for shipbreaking workers⁷¹. Finally, it is advised that NGOs offer legal support and consultations as well for the local population and for workers who might need help for asserting their own rights.

The Governments of South Asian shipbreaking countries might not always appreciate the efforts of NGOs and Western media (Sawyer, 2001), but it could be argued that, if these

⁷¹ <http://www.industrialunion.org/bangladesh-unions-organize-medical-camp-for-shipbreaking-workers>

organizations did not denounce shipbreaking-related issues, then awareness would likely be even lower than it currently is, because shipowners and shipping companies would definitely not disclose these issues voluntarily. In this way, the media and NGOs are keeping the spotlight on the Indian subcontinent's coasts, and they are promoting lobbying activities aimed at enforcing stricter regulations.

With regard to national and international regulatory bodies, some suggestions for on how to improve current legislation on ship recycling were already presented in Chapter 4. Offering such suggestions can be relatively easy on paper, but then reality works differently: in fact, while most suggestions point towards making current legislation stricter, there is always a 'point of diminishing returns' after which compliance becomes too burdensome and, as a result, many shipowners will start to actively look for a way to bypass regulation. It could also be argued that a possible new global regulation on shipbreaking should not be stricter than the HKC, since it would likely attract even less ratifications...but at the same time, replacing the HKC with a more relaxed regulation would send the wrong message, because it would corroborate the claims of those opponents who believe that the HKC's standards are unachievable and unreasonably high.

For these reasons, right now the IMO should focus on obtaining enough ratifications for the HKC's entry into force; this also includes encouraging its Member States, shipowners and shipping companies to support South Asian ship recycling facilities in their green transition, both financially and through training and knowledge transfers. Also, some loopholes should be addressed. For instance, it is clear that legislation based on flag State jurisdiction is failing to hold shipowners accountable for their unsustainable decisions. Wan et al. (2021) suggest that vessels approaching the end of their service life could be required to obtain a second nationality, possibly the same nationality as their beneficiary owner: this could effectively help prevent reflagging for the purpose of dodging the EUSRR (and the HKC when it will enter into force), but there are doubts about the legitimacy and enforceability of this proposal. In fact, first of all determining when a ship is close to the end of its life is tricky; this problem could be solved by creating a list of 'universal' criteria, maybe based on the ship's age and/or use...but this would not solve the problems which would arise in case a ship becomes severely damaged prematurely due to an accident. For this reason, it could be argued that a second nationality should be used throughout a vessel's entire life, but again, this leads to another problem: applicable

legislation. Figuring out all these issues would take a very long time for the IMO, and it could be argued that these efforts would be better spent on strengthening and enacting the HKC.

On the other hand, the proposal discussed above could probably be implemented more easily in the European Union. In fact, the EUSRR could be amended in order to extend its provisions not only to ships flying a European flag, but to all European shipowners altogether. This would definitely put more pressure on South Asian yards to raise their standards to the EUSRR's level, but again, this solution still presents some flaws due to the international nature of the shipping industry. For instance, often two or more shipowners with different nationalities establish an international joint venture in a third country; some of these international joint ventures can be created for managing and operating even just a single vessel. In general, the use of letterbox companies and other forms of complex ownership and/or control structures makes it very difficult to identify a vessel's actual owner. In other words, even at the European level, a second nationality system could hardly work due to lack of transparency on the international level. In any case, as suggested by the 2008 Green Paper on Better Ship Dismantling, cooperation between European Member States and their port authorities should be reinforced, in order to exchange information on potential end-of-life vessels and to strengthen control on such ships.

Conclusion

“Corporate responsibility is a pact for the mutual benefit between society that needs business for economic and social development, and business that needs a supportive business environment”

(Davies, 2003)

This thesis has attempted to offer an overview of ship recycling activities in the Indian subcontinent, starting with how ships are dismantled, why, and where. At this point, the focus shifted towards the social, health and environmental consequences arising in the Indian subcontinent from shipbreaking activities; at the end of this Chapter, the concept of flags of convenience and of end-of-life flags was also discussed. The next Chapter – Chapter 3 – started with an overview of the main sources of international human rights, followed by a review of the main regulations covering environmental protection, import/export of hazardous wastes, and ship recycling. Finally, this Chapter presented the most important domestic legislation on human rights, environmental protection and ship recycling in India, Pakistan and Bangladesh. The last Chapter, on the other hand, offered some suggestions which could be adopted by various stakeholder groups for improving ship recycling practices, thus making them safer and more environmentally sound.

As can be seen in Chapter 4, some efforts have been made recently, in an attempt to regulate the industry before it is too late; however, they have not produced the expected results yet. Naively, one might believe that the best solution is to carry out recycling exclusively in developed countries, thus eradicating from South Asia an industry which every year claims too many lives, severely damages the environment, and endangers the livelihood of the local population...but this would be unrealistic, just like it would be unrealistic (and wrong) to issue statements of compliance indiscriminately to all South Asian yards, even when they do not operate up to international standards. The fact is that ship recycling is an important activity for the economy of South Asian coastal areas. Shipbreaking can contribute to their sustainable development, although not in the way it is being carried out right now.

Shipbreaking nations are experiencing a serious dilemma, which helps explain why their

regulations on ship recycling are so lacking (and unenforced). In fact, India, Pakistan and Bangladesh are afraid that, if they enforced appropriate, stricter laws, then the global center of the ship recycling industry would move somewhere else where it is cheaper and less regulated. At the same time, though, it is unlikely that the shipbreaking industry will move away from the Indian subcontinent anytime soon, because it has the right mix of natural and socioeconomic conditions for the industry to thrive. Moreover, South Asian countries have managed to retain their leadership in shipbreaking longer than any other country in the West or in East Asia, because they are still in a developmental phase (and the high domestic demand for steel is underpinned by a continuing urbanization process).

In any case, adequate domestic regulation and effective law enforcement will not be enough to curb the damages caused by beaching: there is still the need for a global shipbreaking regime such as the Hong Kong Convention, which would also tackle possible issues of unfair competition from countries which do not have an equally restrictive legislation. Some regional efforts have already been made (see the 2013 European Ship Recycling Regulation), but their power to influence the behavior of foreign shipowners and South Asian ship recyclers is still limited due to lack of jurisdiction. At the same time, considering the challenges for enacting the Hong Kong Convention, shipping companies and shipowners must take on a proactive role – rather than just waiting for its entry into force (especially because it still would not be powerful enough to magically solve all shipbreaking-related issues).

The point is that it is time for action. It is undoubtedly important to raise awareness about the dangers of beaching and to condemn it for its negative impacts on workers, on the environment and on the local communities, but commitment should not end here, otherwise it is just empty criticism: shipbreaking nations, flag States, shipowning States, shipowners, shipping companies and other stakeholders must accept their responsibilities and join forces to collaborate towards better and safer ship recycling. So far, many external stakeholders have responded to the challenges presented by ship recycling by criticizing the way it is carried out and/or by demanding stricter standards; this has led to some antagonism in South Asian States, which lack both the financial resources and the institutional capacity needed for revolutionizing the shipbreaking industry.

The standards required by developed countries are indeed currently unrealistic for South Asian yards, but they are not unachievable. International cooperation must work towards reaching a halfway, common viable solution, so that shipowners will continue enjoying economically convenient ship recycling (although they will have to compromise on a lower price). On the other hand, South Asian shipbreaking nations will be able to keep on benefiting from ship recycling, while at the same time suffering less from its negative externalities. By tackling environmental protection and occupational health and safety inside the yards, the difference will be felt also in the local communities, because lower pollution will improve their quality of life and allow them to carry out those traditional coastal activities (such as fishing and small-scale farming) which are so important for their livelihood.

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