



06.20



BREAKING DOWN THE SHIP RECYCLING INDUSTRY

SITARA SRINIVAS

PART 1 - ISSUE BRIEF

TABLE OF CONTENTS

1. ABSTRACT	1
2. INTRODUCTION	1
3. KEY COUNTRIES INVOLVED AND INDIA'S PROMINENCE	4
4. GROWTH AND SIGNIFICANCE OF THE INDUSTRY	6
5. RELEVANT LEGISLATION	7
6. CONCLUDING REMARKS	10
7. BIBLIOGRAPHY	11

Cover Picture Courtesy: Naquib Hossain

*If you have any suggestions, or would like to contribute,
please write to us at contact@sprf.in.*

© Social and Political Research Foundation™

| ABSTRACT

When a ship reaches the end of its life, it is sent to a ship recycling yard to be recycled. Predominantly positioned in South Asian countries, the ship recycling industry is one of the many examples of global waste flows. Having evolved over the years, today the industry provides employment to thousands of people and has reduced several countries' dependence on imported steel. This two-part series attempts to break down this niche, often unheard-of industry. Part 1 provides an introductory overview of the industry, and analyses relevant national legislation and international conventions. Part 2 focuses on the environmental and ethical implications of the industry, engaging with the overarching theme of global waste flows and waste management.

| INTRODUCTION

As one of the oldest modes of transport, maritime transport is the backbone of international trade and the global economy. Over 80% of global trade by volume and over 70% by value are carried by sea and handled by ports worldwide (UNCTAD 2018) . The average service life of a ship is around 30 years, post which the costs of its repair and upkeep makes it unprofitable. Thus, for a ship-owner, the final source of revenue from the ship is the value of its scrap metal, extracted through the process of ship-recycling¹.

Over the years, the shipping industry has evolved alongside developments in maritime trade as well as the shipbuilding industry. When ships used to be made of wood, they would be burnt or sunk. Today, ships are broken down in dry-docks or on beaches where they run into shore at full speed², and are broken apart bit by bit on the shore itself.

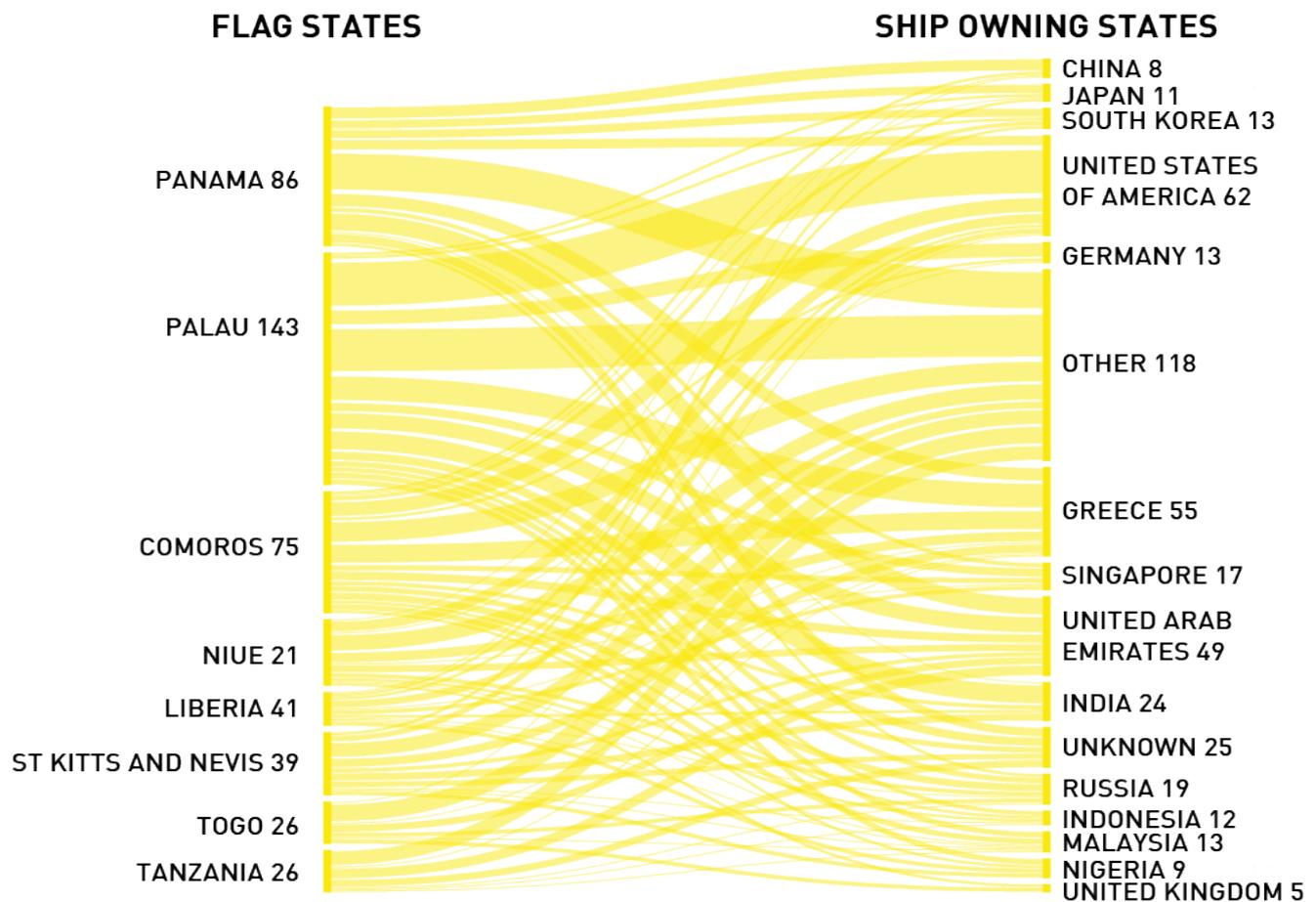
However, like every other industry, the ship recycling industry has several layers due to the number of stakeholders and the unique needs and interests of each party. Most often, a ship destined to be recycled is sold to a broker, who then sells it to a yard. During this process, the nationality and name of the ship are often changed. This is done to evade specific legislations or taxes, and so that it disappears from records and does not tarnish the brand that first owned the ship.

¹ The Industry has several names including the ship breaking industry, ship dismantling industry and steel recycling industry. For the purpose of consistency throughout this paper, it will be referred to as the "ship recycling industry", in line with the terminology used by the Indian legislation that governs this industry.

² Thus, the term beached. Ships are deliberately grounded during high tide and then scrapped during low tide.

About 73% of the world's fleet is flagged³ in a country other than the vessel's beneficial owner (UNCTAD 2014). This is understood as 'Flags of Convenience'⁴. There are key discrepancies between the states in which ship owners are based and the flag states that exercise control over the world fleet. To reduce costs and avoid legal limitations, these flags are often swapped through a process of "flag hopping". When it specifically comes to end-of-life vessels, there are certain countries like St Kitts and Nevis, Comoros, Palau and Tuvalu that are overrepresented at end-of-life but seen less during the operational life (NGO Shipbreaking Platform 2019).

FIGURE 1: KEY FLAG STATES AND SHIP-OWNING STATES IN 2018



SOURCE: NGO SHIP BREAKING FOUNDATION

For instance, the ship '*Oriental Nicety*' which was dismantled in Alang in 2012, was originally called '*Exxon Valdez*'. In 1989, after running aground in Alaska and leading to one of the largest oil spills in history, the ship was renamed '*Exxon Mediterranean*' (Leahy 2019). It was then sold to a new owner and renamed '*SeaRiver Mediterranean*', which was later shortened to '*S/R Mediterranean*' and then '*Mediterranean*'. When sold to another company, it was renamed the '*Dong Fang Ocean*' and finally when sold to be broken was renamed '*Oriental Nicety*' (Barley 2020).

³ The United Nations Convention on the Law of the Sea (UNCLOS) states that the primary responsibility of a ship must rest with the vessel's flag state. That is to say the flag state is responsible for the inspection of the vessel and its sea worthiness, pollution prevention and safety inspection, as well as crew certification.

⁴ Key flag states include Panama, Marshall Islands and Liberia. However, interestingly, these are not the main countries when it comes to the flags of end-of-life ships.

The industry today is one of the most dangerous in the world, taking hundreds of lives each year and causing severe damage to the environment⁵. A Supreme Court-appointed technical committee found that the accident rate in the ship recycling industry was several times higher than the mining industry, which has been famously called the most dangerous industry in the world (Prakash 2006)⁶. Workers in the industry rarely get access to protective equipment, and due to the nature of dismantling - the gravity⁷ method - they risk heavy pieces of steel falling on them, or poisoning by the toxic materials handled during the process. Even if not direct, the presence of material like asbestos heavily impacts the lives of workers, and in extension, their families⁸.

At the same time, it is a necessary evil, considering the current dependence on maritime transport and the need for end-of-life management, as well as the employment that it generates. It is simultaneously termed as one of the most sustainable industries in the world, considering that each part of the ship can be recycled. The industry is central in the debates around waste-flows⁹, and the responsibility that each country has towards managing its waste. With India aiming to control at least 60% of the industry in the next few years and doubling its contribution to the country's GDP by ratifying the Hong Kong Convention and passing the Ship Recycling Act, it is vital to understand the nuances of this usually overlooked industry (Press Trust of India 2019).

⁵ The United Nations Environmental Program (UNEP) in a report published in 2009, found ship-recycling activities in India, Bangladesh and Pakistan as one of the main sources of marine pollution in South-Asia (Jeftic, Sheavly and Adler 2009).

⁶ "[T]he average annual incidence of fatal accidents in the ship breaking industry is 2.0 per 1,000 workers while the all India incidence of fatal accidents during the same period in the mining industry, which is considered to be the most accident-prone industry, is 0.34 per 1,000 workers."

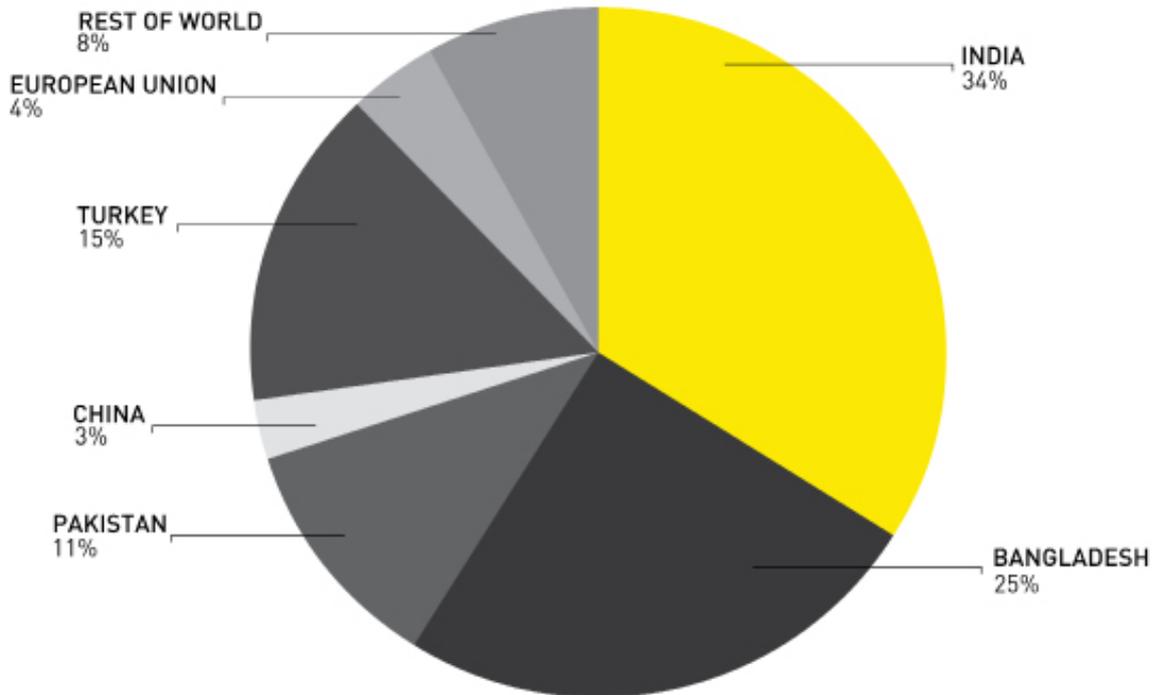
⁷ In this method, large slabs of steel are cut and made to fall to the floor, instead of being removed and placed down by cranes. Because breaking happens directly on the beach surface, which is highly porous cranes and other heavy machinery cannot be used.

⁸ Between 2006-2007, a study conducted by the National Institute of Occupational Health, Gujarat, which carried out X-rays of 94 workers, found 15 workers suffering from very early stages of asbestos poisoning (NIOH 2007).

⁹ To cut costs, instead of recycling ships at an appropriately equipped yard, ships are often sold to developing countries. By doing this, ship owners wash their hands off the toxins on board, making its treatment the responsibility of those breaking the ship. Due to lack of proper infrastructure, this waste disproportionately affects the lives of the poorest and the most impoverished.

KEY COUNTRIES INVOLVED AND INDIA'S PROMINENCE

FIGURE 2: SHIPS SCRAPPED WORLDWIDE IN 2018



SOURCE: NGO SHIP BREAKING PLATFORM 2019

FIGURE 3: KEY COUNTRIES WHERE BEACHING TAKES PLACE



SOURCE: NGO SHIP BREAKING PLATFORM 2019, NGO SHIP BREAKING FOUNDATION

Most of the recycling within the industry takes place in South Asian countries like India, Bangladesh, Pakistan and China. As evident in Figure 2 above, India scrapped the majority of ships in 2018. The reasons for the dominance of India and other South Asian countries in the industry include:

- 1. Favourable Natural and Geographical Conditions:** South Asian countries have favourable natural characteristics, including high tidal ranges. The gently sloping and rocky bottoms of their seabed allow for beaching (Demaria 2010: 252).
- 2. Cheap Labour:** Due to high levels of unemployment amongst the youth, labour is usually abundant, and consequently, cheap.
- 3. Lax Regulatory Frameworks:** Most of these countries, especially India, have lax frameworks that govern the import and taxation of these ships. Compared to other countries in the European Union, as well as the United States, there is a serious dearth of regulations that relate to environmental issues, occupational health, and safety issues (Poddar and Sood 2015: 246, Reddy and Manoharan 2014: 16)¹⁰.
- 4. Demand for Steel:** A significant amount of India's steel demand is met by the ship recycling industry, reducing its import demand. Mansukh Mandaviya, Minister of State for Shipping (Independent Charge) estimated that the steel received from the industry would fulfill 10% of India's steel demands (Mandaviya 2019). Discussed later in this paper, this steel has several uses.

While India has several ship breaking yards in West Bengal, Kerala and Maharashtra, Alang Soshiya in Gujarat is the most prominent. Often called the ship breaking capital of the world, it is the largest breaking yard in the world in terms of actual numbers of ships broken (Sahu 2014).

FIGURE 4: AERIAL VIEW OF ALANG SOSIYA



SOURCE: GOOGLE MAPS

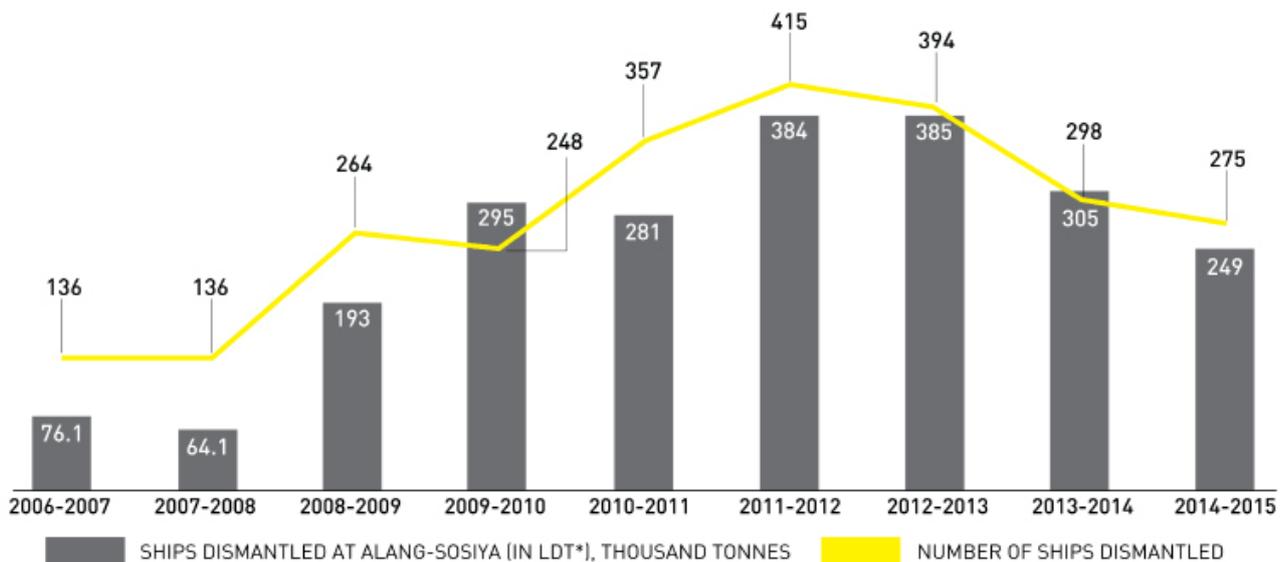
¹⁰ This is discussed in detail in part 2 of the series.

GROWTH AND SIGNIFICANCE OF THE INDUSTRY

Major growth is projected in the ship recycling industry in the next few years. There are several reasons for this, including the signing of the Hong Kong Convention (discussed in detail later in the paper) and the passing of the Recycling of Ships Act, 2019.

Currently, the biggest reason for the growth of this industry is the impact of the Novel Coronavirus. Due to measures taken to prevent the spread of the virus, the world economy is entering into a global slowdown or recession (Gopinath 2014). One of the few industries that saw growth during the last global economic slowdown, the ship recycling industry is looking forward to an increase in the number of ships that it receives in the next few years. For instance, in the years following the financial slowdown of 2008, the number of ships dismantled at Alang (Figure 4) saw a steep growth¹¹. Presently, the global shipping sector has already begun to feel the impact of the COVID-19 pandemic, especially due to the reduced demand for oil, goods and exports. Such slowdowns in global trade force fleet owners to retire their ships earlier.

FIGURE 5: DECADEAL TREND IN SHIP DISMANTLING AT ALANG SOSIYA (2006-2015)



*LDT = LIGHT DISPLACEMENT TONNAGE OF A SHIP, WHICH IS THE WEIGHT OF A SHIP WHEN EMPTY. SHIPS ARE PRICED BASED ON LDT.

SOURCE: PATHAK 2019; GUJARAT MARITIME BOARD N.D.; JAYAKUMAR 2017

As highlighted previously, the importance of the industry can be gauged by the employment, scrap steel and revenue it generates. The industry at Alang-Soshiya itself provides employment to more than 20,000 workers directly and around 3 lakh people indirectly (Manoj 2020). Additionally, the Government of Gujarat as well as the Central Government receive significant revenue from taxation and customs¹². The ship recycling industry is also argued to be sustainable as most of the ship – steel, parts and even furniture – can be recycled and turned into new goods, or even used as is.

¹¹ Alang saw its best year in the 2000s during the FY 2009-10, dismantling 348 ships.

¹² In 2014, it was estimated that the industry provided INR 70 crore in revenue to the Gujarat Maritime Board each year (Sahu 2014).

The steel from a ship is often made into steel bars and rods, reducing the dependence on imported steel. Furniture and other fixtures are also resold as is.

However, it is important to ask if these short-term economic gains are able to justify the long-term environmental and ethical impacts of the industry. Apart from being the most dangerous industry in the world (in terms of lives lost), it also leads to severe environmental degradation and pollution. This is discussed in greater detail in part 2 of this series.

RELEVANT LEGISLATION

There are three main acts and conventions¹³ that are relevant to the industry – The Basel Convention, the Hong Kong Convention, and the Recycling of Ships Act, 2019. Understanding these is important since it helps to highlight the gap between legislation and implementation, as well as the underlying principles that govern the industry.

1. THE BASEL CONVENTION

The ‘Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal’ (Basel Convention) is focused on implementing and restricting the trade of hazardous waste between developed countries and less developed countries. The Convention became international law with Croatia’s ratification in September 2019. Notably it refers to the industry as the “ship-dismantling” industry (Basel Convention 1992).

Based on the principle of ‘prior informed consent’ that allows for the import of hazardous waste only if the importing state offers consent in writing, the Convention defines waste as “substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by provisions of national law”, additionally, the ‘state of export’ is defined as a state “from where a transboundary movement of hazardous waste is planned or to be initiated” (Ibid.: 3). Thus ships destined for dismantling are hazardous waste.

The Convention upholds the importance of pre-cleaning – putting the onus of management of hazardous waste on the origin state. It does not favour beaching – the method used in India and other South-Asian countries.

However, since the Basel Convention is a general law on hazardous waste, and not specifically on the waste in the ship recycling industry alone, it has several loopholes which ship-owners have been able to take advantage of. Thus, the need for an international law that governs ship-recycling specifically, has become evident. This need has been fulfilled by the Hong Kong Convention.

¹³ Other relevant legislation not discussed in the paper include the United Nations Convention on the Law of the Sea, the MARPOL Convention for the Prevention of Pollution from Ships and the London Convention on Dumping of Wastes and other Matter.

2. THE HONG KONG CONVENTION

The 'Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009' was created to help ship recycling states regulate the safety and environmental standards of their international norms, as well as to improve the health and safety of the ship's crew; both in terms of controlling installation of hazardous material and making crew aware of the risks onboard via inventory of hazardous material (Hong Kong International Convention 2009). The Convention not only focused on ships at the point of recycling, but also at the point of construction, requiring certain toxic materials to not be used.

However, despite its cradle-to-grave approach, there are several criticisms of the Convention. This includes its exclusion of war¹⁴ and governmental non-commercial ships, stance on beaching and the lack of requirement of pre-cleaning¹⁵, diluted requirement of prior informed consent considering there is no requirement for inter-state notification, leading to cases of *fait accompli*¹⁶ and a lack of stringency - especially since there is a lack of inter-state notification compliance and recycling states have the autonomy and authority to make their own decisions (Mikelis 2010, Fang and Mejia Jr. 2012, Poddar and Sood 2015).

Article 17 of the Convention governs the entry requirements. Entry into force is only 24 months after certain conditions are met. With India signing the Convention in December 2019, the first of three conditions were met.

3. THE SHIP RECYCLING ACT

To meet the requirements of the Hong Kong convention, India passed the The Recycling of Ships Act in 2019. Meant to create regulations for the recycling of ships by setting certain standards and laying down statutory mechanisms to enforce such standards, the Act improved on Shipbuilding Code, 2013 (The Recycling of Ships Act 2019).

The Act is applicable to both ships and ship recycling facilities, but exempts warships and ships operated by the Government for non-commercial purposes. This exemption is in line with the Hong Kong Convention.

¹⁴ The *Clemenceau* was a decommissioned French aircraft carrier that was destined for India to be broken. However, due to questions around the actual amount of asbestos onboard, the Supreme Court decided that it was to stay outside Indian waters until India's Defence Ministry could assess the amount of toxic waste onboard. However, soon after the French Council ordered a suspension of the ship's transfer, and within the same day, French Prime Minister Chirac ordered the *Clemenceau* to return to France - where it was later broken. The *Clemenceau* is an important example of the need for pre-cleaning as well as transparent identification of toxic and hazardous substances onboard. In context to the Hong Kong Convention and the Ship Recycling Act, it is additionally an important example of why war ships must also be covered.

¹⁵ The concept of pre-cleaning emerges from the 'polluter pays' principle, which states those who produce pollution should bear the costs of managing it so as to prevent damage to human health or the environment. (Grantham Institute 2018). Pre-cleaning thus refers to having the ship stripped of hazardous and toxic material before it reaches the ship recycling yard.

¹⁶ The *Exxon Valdez* was a ship that was first denied entry to India by India's Supreme Court on the basis that it was in violation of the Basel Convention due to the lack of prior decontamination. The Union Ministry of Environment and Forest later said that this case was to be decided by the Gujarat Maritime Board authorities and not the Union Government. Finally, the Supreme Court allowed the dismantling because the Gujarat Maritime Board and the Atomic Regulation Board said that the ship contained no hazardous material.

As per the Act, 'ship-recycling' refers to the "activity of dismantling a ship at a ship recycling facility in order to recover components and materials for reprocessing and reuse, while taking care of hazardous and other materials and includes associated operations such as storage, treatment of components and materials on site, but not their further processing or disposal in separate facilities" (Ibid.: 3). There are two key issues with this. First, for an Act that aims to reduce the impact of hazardous waste, it does not govern the treatment of such waste which enters the soil, sea and air and consequently the food chain, among other things and neither does it suggest legislations or obligations that should surround the processing of such waste.

Violating the polluter pays principle, especially considering the lack of requirement of pre-cleaning, it also puts the onus of all treatment of waste on the ship recycler, to recycle waste properly and to take measures to protect the environment. This gives incentive to ship recyclers to dump the waste without proper treatment.

The onus is also put on the ship recycler to ensure that "there is no damage caused to the environment in any form due to the recycling activities at the ship recycling facilities" as well as to "take necessary measures for the protection of the environment" (Ibid.: 9). Considering even small actions like driving a car or burning something impacts the environment to some extent and additionally considering that the Supreme Court in Writ Petition No. 657 of 1995 saw beaching as environmentally damaging, this statement is ambiguous at best.

Pertinent to mention is also the exclusion of legislation that surrounds labour rights. The Act refers to the "Factories Act, 1948", but not the 2019 labour code. Additionally, the exclusion of an Act that prohibits child labour is also glaring.

The Act requires all ships to have an inventory of hazardous material on board, available by an application to the National Authority. This certificate is issued after a survey at four points and then additionally as and when required. However, there isn't a definition of what hazardous materials are. Existing ships that do not have a certificate can apply to the National Authority within a period of five years, which can also be argued as too long a period, and with several examples of ships having been broken due to cases of *fait accompli*¹⁷, there is also immense scope of misuse.

To recycle a ship, a recycling plan is required, which is to be approved by the Competent Authority. If the Competent Authority does not make its decision within a period of 15 days, the plan is to be approved by default. For an industry that is expected to see a boom, both because this law has been enacted and because of the conditions created by a financial slowdown, this period can be seen as too short with scope for several ships to be recycled without proper plans.

Another notable fact is that following the Act, Ship Recyclers are now required to provide individual or comprehensive insurance coverage, not only to regular but also temporary workers, considering they make up the largest section of the industry workforce.

¹⁷ The *Blue Lady* was a ship which in 2006 was refused entry by the Bangladeshi government into its territorial waters due to the presence of hazardous material. The ship later moved to India but wasn't allowed to enter the Indian territorial waters due to an ongoing court case. However, on humanitarian grounds (since it was monsoon), the Supreme Court allowed it to be anchored but not beached. In violation of this order, 25 days later the ship was beached. The Supreme Court later allowed the dismantling on two grounds. First, due to *fait accompli* - since the ship had anyway been beached, but also because it would offer valuable steel and employment.

There are several issues with the Act when it comes to accountability. First, the specific person accountable for any violation is mentioned only in some instances and not others. This presents a chance for scapegoating. Second, the punishment – prison term of 3 months, fine of maximum 5 lakhs, or both, can be considered too lenient, especially taking into account the huge margins the industry has the potential to make. But most worrying is the fact that courts cannot take cognizance of offences under this Act unless it is based on a complaint from the Central Government, the National Authority and Competent Authority or officers authorised on their behalf. By excluding NGOs, unions, labourers or even residents of areas surrounding ship recycling yards, this ensures that only a few complaints can come through.

| CONCLUDING REMARKS

Despite the significant revenue it generates and the scope for sustainability it has, the ship recycling industry has several environmental and labour policy implications that need to be better addressed. Focusing on the nature of the industry as well as analysing the relevant legislation and international conventions helps us understand the status quo. With dismantling at Alang forecasted to see tremendous growth over the next few years, the next part of this paper will focus on the question of whether short-term economic gains justify the long-term environmental losses.

BIBLIOGRAPHY

Barley, Shanta, (2012). “Exxon Valdez Laid to Rest.” *Nature* August 13 2012.

<https://www.nature.com/news/exxon-valdez-laid-to-rest-1.11141>.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal adopted by the Conference of Plenipotentiaries on 22 March 1989, 1992.

https://www.env.go.jp/en/recycle/basel_conv/files/conv_e.pdf

Demaria, Frederico, (2010). “Shipbreaking at Alang-Sosiya (India): An Ecological Distribution Conflict”. *Ecological Economics* 70: 250–60.

https://www.researchgate.net/publication/223707497_Shipbreaking_at_Alang-Sosiya_India_An_ecological_distribution_conflict

Fang, Ying, and Maximo Q Mejia Jr, (2012). “Reinforcing the Legal Framework for the Environmentally Friendly Recycling of Ships: A Brief Look at the Hong Kong Convention”. *International Proceedings of Economic Development and Research* 48 (20): 91-95.

<http://www.ipedr.com/vol48/020-CHHSS2012-A00048.pdf>.

Grantham Research Institute on Climate Change and the Environment - LSE, (2018). “What Is the Polluter Pays Principle?” Accessed June 10 2020.

<http://www.lse.ac.uk/GranthamInstitute/faqs/what-is-the-polluter-pays-principle/>.

Gopinath, Gita, (2020). ‘The Great Lockdown: Worst Economic Downturn Since the Great Depression’. *IMF Blog* April 14 2020.

<https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression/>.

Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009.

<https://www.mofa.go.jp/mofaj/files/000343354.pdf>

Jayakumar, P. B., (2017). “The Return of Alang”. *Business Today* April 23 2017.

<https://www.businesstoday.in/magazine/features/the--return-of--alang/story/249159.html>.

Jeftic, Ljubomir, Seba Sheavly and Ellik Adler, (2009). *Marine Litter: A Global Challenge*. Nairobi, Kenya: United Nations Environment Program.

http://wedocs.unep.org/bitstream/handle/20.500.11822/7787/-Marine%20Litter_%20A%20Global%20Challenge%20%282009%29-2009845.pdf?sequence=3&isAllowed=y

Kapadia, Sarosh Homi, (2007). *Writ Petition (Civil) No. 657/1995*. Supreme Court of India.

Leahy, Stephen, (2019). “Exxon Valdez Changed the Oil Industry Forever-but New Threats Emerge.” *National Geographic* March 22 2019.

<https://www.nationalgeographic.com/environment/2019/03/oil-spills-30-years-after-exxon-valdez/>.

- Mandaviya, Mansukh. (2019). "Ship Recycling Bill Will Boost Indian Economy". *The Statesman* December 16 2019 .
<https://www.thestatesman.com/opinion/ship-recycling-bill-will-boost-indian-economy-1502834117.htm#:~:text=The%20steel%20recovered%20from%20the,annually%20at%20Alang%20in%20Gujarat.>
- Manoj, P., (2010). "Alang Ship-Breaking Yard Flourished in Slowdown". *Livemint* April 8 2010.
<https://www.livemint.com/Companies/J95SpfP71QVfJNVJfF8TFO/Alang-shipbreaking-yard-flourished-in-slowdown.html>.
- Manoj, P., (2020). "The Flight of Migrant Workers Creates a Tsunami at Alang". *The Hindu Business Line* May 14 2020.
<https://www.thehindubusinessline.com/economy/logistics/flight-of-migrant-labourers-hit-alang-ship-recycling-yards/article31580270.ece>.
- Mikelis, Nikos, (2010). "The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships". *UNCTAD Multi-Year Expert Meeting on Transport and trade Facilitation*. Geneva, Switzerland.
<http://www.imo.org/en/KnowledgeCentre/PapersAndArticlesByIMOSTaff/Documents/UNCTAD%20on%20the%20Hong%20Kong%20Convention%20-%20N%20Mikelis.pdf>.
- Mishra, Shreya, (2018). "Non-Entry into Force of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009: An Analysis from the Perspective of India, Pakistan and Bangladesh". *Journal of International Maritime Safety, Environmental Affairs, and Shipping* 2 (1): 22–30.
<https://www.tandfonline.com/doi/full/10.1080/25725084.2018.1490240>.
- National Institute of Occupational Health, (2007). *Annual Report (2006-2007)*. India: National Institute of Occupational Health.
- NGO Ship Breaking Platform, (2019). "2018 List of All Ships Scrapped Worldwide - Facts and Figures". NGO Ship Breaking Platform.
https://www.shipbreakingplatform.org/wp-content/uploads/2019/01/Stats-Graphs_2018-List_FINAL.pdf.
- NGO Ship Breaking Platform, (2019). "Press Release - Platform Publishes List of Ships Dismantled Worldwide in 2018". Accessed May 30 2020.
<https://www.shipbreakingplatform.org/platform-publishes-list-2018/>.
- Pathak, Maulik, (2019). "Gujarat: Pinning Hopes on Slowdown to Keep Business Afloat". *The Times of India* September 29 2019.
<https://timesofindia.indiatimes.com/city/ahmedabad/pinning-hopes-on-slowdown-to-keep-business-afloat/articleshow/71355263.cms>.
- Poddar, Paridhi and Sarthak Sood, (2015). "Revisiting the Shipbreaking Industry in India: Axing Out Environmental Damage, Labour Rights' Violation and Economic Myopia". *NUJS Law Review* 8: 245-279.
<http://nujlawreview.org/wp-content/uploads/2016/12/Paridhi-Poddar-Sarthak-Sood.pdf>

Prakash, Satya, (2006). "Health Alarm Bells Toll in Alang". *The Hindustan Times* September 7 2006. <https://www.hindustantimes.com/india/health-alarm-bells-toll-in-alang/story-WsiqBe7iz3unZoFpvg9RN.html>.

Press Trust of India, (2019). "India Eyes 60% Share of Global Ship Recycling Business Says Minister". *The Hindu* December 26 2019. <https://www.thehindu.com/business/india-eyes-60-share-of-global-ship-recycling-business-says-minister/article30398072.ece#:~:text='Contribution%20from%20such%20activities%20to,Minister%20Man-sukh%20Lal%20Mandaviya%20said>.

Reddy, Nanda Gopal K, and N Manoharan, (2014). "Ship Recycling: An Important Milestone for India". *Indian Journal of Science and Technology* 7 (6): 15–21. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.878.7999&rep=rep1&type=pdf>.

Sahu, Geetanjoy, (2014). "Challenges for the Implementation of Workers' Rights in Hazardous Industries: A Critical Analysis of Alang-Sosiya Ship Breaking Yard, Bhavnagar, Gujarat from 1983-2013". *National Human Rights Commission*. https://nhrc.nic.in/sites/default/files/study_alang_sosiya_ship_breaking_yard_drgeetanjoy_TISS_05062018.pdf.

Sahu, Geetanjoy, (2014). "Workers of Alang-Sosiya: A Survey of Working Conditions in a Ship-Breaking Yard, 1983-2013." *Economic and Political Weekly* 49(50): 52-59.

The Recycling of Ships Act 2019. <http://egazette.nic.in/WriteReadData/2019/214694.pdf>

United Nations Conference on Trade and Development, (2014). *Review of Maritime Transport 2014*. Geneva, Switzerland:United Nations Conference on Trade and Development. https://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf.

United Nations Conference on Trade and Development, (2018). *Review of Maritime Transport 2018*. Geneva, Switzerland: United Nations Conference on Trade and Development. <https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2245>

