

SAFE & ENVIRONMENTALLY SOUND RECYCLING OF SHIPS:
A STOCKTAKING OF THE CURRENT STATE OF INTERNATIONAL LAW

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ABSTRACT

Ship-breaking is one of the most dangerous occupations in the world and widely known as a pollution-heavy industry. This industry is currently concentrated primarily in three South Asian developing countries, namely Bangladesh, India and Pakistan. Ensuring the safe and environmentally sound recycling of ships remains a global concern. There are many international regulations which apply to the activities of ship-breaking, but none of them address the issue in a comprehensive manner. The most relevant international instrument governing ship recycling, the 2009 Hong Kong Convention remains unenforceable due to non-ratification by the chief ship recycling states. The only enforceable international instrument closely relevant to ship recycling activity is the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and their Disposal adopted in 1989. However due to its exceedingly pro-environmental character, its applicability over End of Life ships remains uncertain. As a stop-gap measure, this article will attempt to explore other currently enforceable international laws that can potentially be utilized to govern the industry in the face of uncertainty with these two mainstream legal instruments. This article postulates that a prompt solution to this controversial global activity is unlikely to occur anytime soon.

INTRODUCTION

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Ship-breaking is a process of dismantling End of Life (“EOL”)¹ vessels after their useful lives are over. This activity has no direct or operative connection to maritime trade and commerce, navigation of ships, interests of shipowners or connection to inland or sea waters. Traditionally these factors have been the hallmark for invoking maritime jurisdictions.² Admiralty and maritime jurisdiction can be classified in two groups. First, acts involving or committed on the high seas or other navigable waters. Second, those involving contracts and transactions associated with shipping employed on the seas or navigable waters.³ The first category is determined by the locality of the act. In the second category, the subject matter is the primary determinative factor. Specifically, contract cases including suits by seamen for wages, actions for towage⁴ or pilotage⁵ charges, cases arising out of marine insurance policies actions on bottomry⁶ or respondentia⁷ bonds, actions for repairs on a vessel already used in navigation, contracts of affreightment⁸, compensation for temporary

¹ End-of-life (EOL) vessel is a term used with respect to a ship at the end of its useful life.

² Marilyn Raia, *Admiralty Jurisdiction – What Does That Mean?*, BULLIVANTHOUSER, (Nov. 2013) <http://www.bullivant.com/Admiralty-Jurisdiction>.

³ *Cases of Admiralty and Maritime Jurisdiction*, LEGAL INFO. INST. para. 1, <https://www.law.cornell.edu/constitution-conan/article-3/section-2/clause-1/cases-of-admiralty-and-maritime-jurisdiction#fn925art3>.

⁴ *Towage*, BLACK’S LAW DICTIONARY (11th ed. 2019). Towage is the drawing of a ship or barge along the water by another ship or boat.

⁵ *Pilotage*, BLACK’S LAW DICTIONARY (11th ed. 2019). Pilotage is a process of directing the movement of a ship or aircraft by visual or electronic observations of recognizable landmarks.

⁶ *Bottomry*, BLACK’S LAW DICTIONARY (11th ed. 2019). Bottomry is a system of merchant insurance in which a ship is used as security against a loan to finance a voyage, the lender losing the investment if the ship sinks.

⁷ *Respondentia*, BLACK’S LAW DICTIONARY (11th ed. 2019). Respondentia is a loan upon a ship’s cargo rather than on the ship itself, which is repaid with interest if the ship reaches its destination, and if the ship does not, the loan is not repaid.

⁸ *Contract of Affreightment*, BLACK’S LAW DICTIONARY (11th ed. 2019). A contract of affreightment is a binding agreement which sets forth the obligations and rights of the owner of a vessel.

wharfage,⁹ agreements of consortship¹⁰ between the masters of two vessels engaged in wrecking,¹¹ and marine surveys¹² of damaged vessels. It can be argued from the above classifications that interests associated with shipowners among others have been a cardinal or common factor to stumble on maritime jurisdiction. To wit, even a purely land-based activity of ship mortgage while building a ship at a shipbuilding facility or product liability of ship builders or its component manufacturers, without controversy, are considered maritime activities because of the functioning interest of shipowners is necessarily attached to it.¹³ The lack of direct and operative connection to these necessary maritime elements, mostly associated to shipowner's interest, arguably inhibited the international communities from invoking maritime jurisdiction over ship-breaking matters.

The history of maritime trade is several thousand years old, but to date the international community is struggling to arrive at consensus about this jurisdictional issue. As a result, there is still no enforceable international law that comprehensively covers this area of outright international activity. To control this international industry of ship-breaking, a purposefully designed international convention namely the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships ("HKC") was adopted in 2009. However, the HKC has incorporated a typical three stage entry-into-force criteria. The convention specifies that it will enter into force (i) 24 months after ratification by no less than 15 States, (ii)

⁹ *Wharfage*, BLACK'S LAW DICTIONARY (11th ed. 2019). Wharfage is a charge assessed by a shipping terminal or port when goods are moved through the location.

¹⁰ *Consortship*, BLACK'S LAW DICTIONARY (11th ed. 2019). Consortship is a term used in maritime law. It refers to the agreement between salvors, in which they agree to work together to salvage wrecks.

¹¹ *Shipwreck*, BLACK'S LAW DICTIONARY (11th ed. 2019). Shipwreck means the destruction of a ship at sea by sinking or breaking up, e.g., in a storm or after running aground.

¹² *Who We Are*, INT'L INST. OF MARINE SURVEYING [IIMS] (2020), <https://www.iims.org.uk/about/who-we-are> (Marine Surveying is the service provided to the maritime and transport organizations in general and the production of guidance reports for all other bodies connected with maritime operations or maritime trade.).

¹³ *Contract for Purchase and Sale of Vessel*, US LEGAL, <https://admiralty.uslegal.com/jurisdiction-of-subject-matter-involved/contracts-for-purchase-and-sale-of-vessels/>.

representing 40 percent of world merchant shipping by gross tonnage, (iii) with a combined maximum annual ship recycling volume not less than 3 percent of their combined tonnage.¹⁴ As of today, 15 countries have already acceded to the convention whose combined shipping tonnage is 30.21% of the global tonnage.¹⁵ After India's ratification of the convention recently in November 2019, the combined annual ship recycling tonnage of the contracting states during the preceding 10 years has figured 13,948,274¹⁶ which is 2.6% percent of the combined merchant shipping tonnages of these ratifying states.¹⁷ Because of the lop-sided historic track record of shipping and ship-breaking business over the last three decades, fulfillment of the third entry into force provision of this convention has been a significant challenge.

The European Ship Recycling Regulation of 2013 ("EUSRR")¹⁸ has opened the door for 28 European Union ("EU") states to ratify the convention altogether. However, the other two conditions do not seem to be easy to satisfy because of the need for the state parties to both fulfill the prescribed tonnage and recycling capacities. Although the largest flag state,¹⁹ Panama, ratified the convention in September 2016, even the second condition requiring no less than 40 percent of the world's fleet by gross tonnage will be harder

¹⁴ Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, Int'l Mar. Org. [IMO], art. 17.1, May 19, 2009, [hereinafter HKC].

¹⁵ *Status of IMO Treaties Comprehensive information on the status of multilateral Conventions and instruments in respect of which the International Maritime Organization or its Secretary General performs depositary or other functions*, IMO, 536 (June. 13, 2020), <http://www.imo.org/en/About/Conventions/StatusOfConventions/Documents/Status%20-%202020%20May.pdf>.

¹⁶ *Id.*

¹⁷ *India Ratifies Hong Kong Convention*, INDUSTRYALL (Nov. 29, 2019), <http://www.industrialunion.org/worlds-largest-shipbreaking-country-ratifies-hong-kong-convention>.

¹⁸ 2013 O.J. (L 330) 1, (The European Parliament and the Council of the European Union adopted the Ship Recycling Regulation (EUSRR) on 20 November 2013. The objective of the Regulation is to reduce the negative impacts linked to the recycling of ships.)

¹⁹ *Flag State*, BLACK'S LAW DICTIONARY (11th ed. 2019). The flag state of a merchant vessel is the jurisdiction under whose laws the vessel is registered or licensed, and is deemed the nationality of the vessel. A merchant vessel must be registered and can only be registered in one jurisdiction but may change the register in which it is registered.

to achieve without the support of at least two or three more of the nations with the highest number of ship registries such as Liberia, Marshall Islands, Singapore, and Bahamas.²⁰ Although the combined fleet registered in these top five states makes up 50.1 percent of the world's fleet,²¹ most ships are beneficially owned²² by residents of the Global West.²³ The combined fleet of the 28 EU States including the various dependent territories that are often excluded when states ratify conventions forms 20 percent of the world fleet, while China together with Hong Kong make up 11.4 percent of the world fleet.²⁴ Besides, the fulfillment of the last, but not least requirement of three percent Light Displacement Tonnage (LDT), annual maximum recycling capacity of the joining states in last 10 years is only possible when any two of the three giant South Asian recycling states namely Bangladesh, India and Pakistan ratify the convention along with China²⁵ or else a combination of one of these three with the rest of the world will be

²⁰ Nikos Mikelis, *EU Moves Ahead on Ship Recycling Convention*, MAR. EXEC. (July 7, 2014, 6:58 AM), https://maritime-executive.com/article/EU-Moves-Ahead-on-Ship-Recycling-Convention-2014-07-07#gs.MrNgj_4.

²¹ *Id.*

²² Shrikant Pareshnath Hathi & Binita Hathi, *Ship Arrest in India and Admiralty Laws of India*, ADMIRALTY PRACTICE (2019), <http://admiraltypractice.com/chapters/NS12.htm>. Under the international maritime law, a shipowner may choose to register a ship in the registry of a third country than his or her country of origin. These may be known as open registry or flag of convenience. In such a case the ship may acquire the nationality of the open registry but for all practical purposes the shipowner remains the beneficial owner of that ship. Beneficial owner also means in equity as the owner of something because use and title belong to that person, even though legal title may belong to someone else; esp., one for whom property is held in trust. - also termed equitable owner. Beneficial owner refers to the natural person(s) who ultimately owns or controls a customer and/or the person on whose behalf a transaction is being conducted.

²³ *The Global Fleet Revealed*, MAR. EXEC. (Nov. 5, 2017, 10:11 AM), https://www.maritime-executive.com/article/the-global-fleet-revealed#gs.L2Z=8_w.

²⁴ Mikelis, *supra* note 20 (All fleet data according to the 2013 World Fleet Statistics published by IHS.).

²⁵ Ishtiaque Ahmed, *Ungovernable Ships at the End of Their Lives and the Response of the Hong Kong Convention: A Critical Appraisal of the Treaty on Shipbreaking from the Perspective of South Asian Ship-Breaking Nations*, SANTA CLARA J. OF INT'L L., 135 (2020), <https://digitalcommons.law.scu.edu/scujil/vol18/iss2/3/> (Noting that Bangladesh, India, Pakistan, and China share 94.9% of all global ship-breaking.).

required.²⁶ Almost 94 percent of the world's obsolete ships are currently recycled in only 4 countries: Bangladesh (24%), India (32%), Pakistan (18%), and China (20%).²⁷ Turkey and the rest of the world have market share of approximately four and two percent respectively.²⁸

It seems from the above, the fate of the convention clearly depends on the policy choice of one of these three giant ship recycling states. There is also a consensus among the ship recyclers association in India, Pakistan, and Bangladesh to work hand in hand about any possible move regarding the Hong Kong Convention.²⁹ Hence, any uncertainty in the choice of policy of the governments and the stakeholders of these three countries with regard to the HKC may be fatal for its success. As per the current Chinese legal and political position, ratification of the convention is extremely unlikely given the Chinese government's recent ban on importing foreign EOL ships for recycling.³⁰ By taking this move, China to a great extent has denied the international character of this global convention. Moreover, as per the HKC, a member state is not allowed to discriminate between the party and non-party ships in their treatment in ship recycling.³¹ On ratification of the convention, how China would address the issue of

²⁶ *India Prepares to Ratify the Hong Kong Convention*, MAR. EXEC. (Dec. 2, 2018, 4:32 AM), <https://www.maritime-executive.com/article/india-prepares-to-ratify-the-hong-kong-convention#gs.LOH=I4>.

²⁷ Nikos E Mikelis, *A statistical overview of ship recycling*, IMO (2006), <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.535.3401&rep=rep1&type=pdf> [hereinafter Mikelis II].

²⁸ *Id.*

²⁹ *Ship breakers from India, Pak and Bangla plan united front*, THE ECONOMIC TIMES (Mar. 2, 2010, 12:00 PM), <https://economictimes.indiatimes.com/industry/transportation/shipping/-/transport/shipbreakers-from-india-pak-and-bangla-plan-united-front/articleshow/5629449.cms?inttarget=no> (Although there has been no coordinating approach has been apparent between the government of these three countries, in a recent ship recycling conference in Dubai, Pravin Nagarsheth, president of Iron Steel Scrap & Ship breakers' Association of India expressed the following to *The Economic Times*, "We had an internal meeting between the three countries and decided to work together against the IMO Convention. We are also planning to make one body of the three countries to work against the new stipulation.").

³⁰ *China bans scrapping of foreign ships at its yards*, SAFETY4SEA (May 8, 2018), <https://safety4sea.com/china-bans-scrapping-of-foreign-ships-at-its-yards/>.

³¹ HKC art. 3.4, *supra* note 14.

discrimination between the state parties to the convention is open to debate. Furthermore, China is not only an exclusive ship recycling state but also among the top five ship owning states.³² Ratification by China will add another 8.8 percent of the world's fleet.³³ This would likely satisfy the second entry into force condition of the HKC³⁴ but would at the same time make the fulfillment of third entry into force condition more onerous than it is now.³⁵ For the same reason, Liberia and Marshall Islands, the second and third largest ship owning states respectively³⁶ have been restrained to accede to the HKC unless China or Bangladesh ratifies the convention first.³⁷ Given the current legal and political position, it is extremely unlikely for China to accede to the HKC.

On the other hand, Pakistan has a rudimentary legal mechanism that is specifically designed to deal with the safety and health in ship-breaking.³⁸ This giant ship recycling state has only domestic instruments dealing with provisions on tariff and custom duties applicable to EOL ships when imported in Pakistan for recycling and allocation of ship recycling plots by the government. The industry of ship recycling in Pakistan currently relies absolutely on the general laws applicable to any other heavy industries.³⁹ It is very unlikely therefore for Pakistan to utilize these un-mellowed legal instruments to accede to the HKC any time soon.

³² *UNCTAD reveals top 5 ship-owning countries*, SAFETY4SEA (Nov. 11, 2017), https://safety4sea.com/unctad-reveals-top-5-ship-owning-countries-2utm_source=safety4seautm_medium=majors/.

³³ Nikos Mikelis, *Two Roads for Hong Kong Convention to Enter into Force*, MAR. EXEC. (Mar. 31 2019, 4:36 AM), <https://www.maritime-executive.com/editorials/two-roads-for-hong-kong-convention-to-enter-into-force> [hereinafter Mikelis III].

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Top 10 Flag States 2019*, LLOYDS LIST, (Dec. 3, 2019), <https://lloydslist.maritimeintelligence.informa.com/LL1129840/Top-10-flag-states-2019>.

³⁷ Mikelis III, *supra* note 33.

³⁸ Kanwar Muhammad Javed Iqbal and Patrizia Heidegger, *Pakistan Shipbreaking Outlook: The Way Forward for a Green Ship Recycling Industry—Environmental, Health and Safety Conditions*, NGO SHIPBREAKING PLATFORM (2013), 16, <https://www.shipbreakingplatform.org/wp-content/uploads/2019/01/SDPI-NSP-Pakistan-Position-Paper-For-Printing.pdf>.

³⁹ *Id.*

It therefore appears that the HKC would hardly see the light of success, without the involvement of Bangladesh, the largest ship recycling state currently in the world.⁴⁰ Through its Ship Recycling Act of 2018, Bangladesh has undertaken a commitment to build technical and legal capacity to ratify the convention in five years from the date of its commencement.⁴¹ However, this commitment is largely contingent on a similar determination by its other competitors. A recent discovery on the gap analysis between the domestic ship recycling regime of Bangladesh and the HKC reveal substantial discrepancy between the mandate of the HKC and the current condition and infrastructure of the ship recycling industry in Bangladesh.⁴² For example, it's an essential requirement under the HKC to have affiliation with a recognized trade body on the Treatment Storage and Disposal Facility ("TSDF") before authorizing any ship recycling facility by the competent authority of the recycling state.⁴³ There are nearly 150 ship recycling facilities existing in the country⁴⁴ and at least 50 are operating.⁴⁵ TSDF is highly sophisticated and expensive undertaking for a developing country.⁴⁶ HKC has made no

⁴⁰ Monira Munni, *Bangladesh Top Dumping Ground For Ships*, THE FINANCIAL EXPRESS (Feb. 7, 2020, 10:53 AM), <https://thefinancialexpress.com.bd/trade/bangladesh-top-dumping-ground-for-ships-1581051205>.

⁴¹ Bangladesh Ship Recycling Act 2018, § 7.2, <http://bdlaws.minlaw.gov.bd/act-1229/section-46441.html>.

⁴² The SENSREC Phase II Report submitted to IMO Head Quarter through the Ministry of Industry (MoI) Bangladesh. (on file with author).

⁴³ Sec 18(iv), Ship-Breaking and Recycling Rule 2011 (Bangladesh).

⁴⁴ Economic Impact Study, IMO-NORAD SENSREC Project 2017 at 4, <http://www.imo.org/en/OurWork/PartnershipsProjects/Documents/Ship%20recycling/WP1a%20Economic%20Impacts%20Study.pdf>.

⁴⁵ Ishtiaque Ahmed, *Unravelling Socio-economic and Ecological Distribution Conflicts in Ship Breaking in Bangladesh for Addressing Negative Externalities in Law and Policy Making*, MINN. J. INT. LAW, (University of Minnesota Law School, USA. Forthcoming in Spring 2020).

⁴⁶ Shyam R. Asolekar, *Document for Implementation of Phase-II of SENSREC Project in Chittagong, Bangladesh*, CTR. FOR ENVTL. SCIENCE & ENGINEERING INDIAN INST. OF TECH. BOMBAY (2017), 21, <http://www.imo.org/en/OurWork/PartnershipsProjects/Documents/Ship%20recycling/WP5b%20Documents%20for%20Implementation%20of%20Phase%20II%20of%20SENSREC%20Project.pdf> [hereinafter *Project Document*]. Noting that for establishing the TSDF adequate for 10-year life, USD 16.1 million and the land area of 7.8 hectare (i.e. 19.3 acre) would be required to conduct all the required studies and investigations and for construction and erection of the facility and if the

reference to the matter of funding.⁴⁷ How Bangladesh would meet this challenge in next three years without any assistance from any sources is utterly questionable. To date no such TSDF exists in the country.⁴⁸

In the absence of any legally enforceable international instrument, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (“Basel Convention”) though adopted in an era when ship recycling was not a global concern, remains the only major international law that is currently enforced⁴⁹ and can be helpfully utilized to govern this international activity. This convention was designed to ensure environmentally sound management of hazardous waste by restricting its cross-border movement.⁵⁰ Under the prior informed consent requirements of this convention, an EOL ship must not only obtain permission from the exporting state but also all other coastal and transit states.⁵¹ The Basel Convention therefore imposes severe restrictions on the cross-border movement of hazardous waste which, oftentimes, given the nature of the international business of shipping, become economically impractical to observe for the shipowners.⁵² As such, considerable controversy exists about the applicability of this international law over EOL ships⁵³ and that remains a challenging exercise. Within the confines of mainstream ship recycling jurisdiction as discussed above, this article will attempt to review the extent other

TSDF life-span is to be extended by another 10 years; additional USD 37.8 million and the additional land area of 7.2 hectare (i.e. 17.8 acre) will have to be invested at that time in order to conduct all the required studies and investigations as well as for the construction and erection of the suitable additional landfills and for the replacement of the 10-year old incinerator by a new incinerator of higher capacity.

⁴⁷ Ahmed, *supra* note 25, at 172-174.

⁴⁸ Ahmed, *supra* note 45.

⁴⁹ Ishtiaque Ahmed, *The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal: A Legal Misfit in Global Ship Recycling Jurisprudence*, 29 WASH. L. REV. 412 (2020), <https://digitalcommons.law.uw.edu/wilj/vol29/iss2/7>.

⁵⁰ *What is the relationship between the OECD Multilateral Waste Agreement and the Basel Convention?* ENVTL. PROTECTION AGENCY [EPA] (2020), <https://www.epa.gov/hwgenerators/frequent-questions-international-agreements-transboundary-shipments-waste>.

⁵¹ CTR. FOR INT’L ENVTL. LAW, SHIPBREAKING AND THE BASEL CONVENTION: ANALYSIS OF THE LEVEL OF CONTROL ESTABLISHED UNDER THE HONG KONG CONVENTION 21 (2011).

⁵² Ahmed, *supra* note 49 at 423.

⁵³ *Id.* at 452.

enforceable international laws can be helpfully utilized to address the problems arising from ship-breaking activities. This paper intends therefore to analyze the efficacy of the currently enforceable international laws, excluding the Basel and the Hong Kong Convention, having potential jurisdiction over EOL ships and their recycling activities.

I. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

As a comprehensive regime, the United Nations Convention on the Law of the Sea (“UNCLOS”) covers all the interconnected issues about the sea, although most of its provisions are drafted in broader terms. It has, however, been widely accepted among the scholars as the constitution for the oceans,⁵⁴ which encompasses almost all aspects of the ocean management.⁵⁵ The Convention incorporates various issues, including importantly the rights and jurisdictions of the states over maritime matters, economic activities at sea,⁵⁶ the preservation and protection of marine environment, issues of maritime boundaries, marine scientific research and technological issues,⁵⁷ the rights, authority and the responsibility of the port, flag or the coastal states, and the resolution of any dispute arising in connection to all the above matters.⁵⁸

UNCLOS has imposed a general obligation upon the party nations to protect and preserve the marine environment.⁵⁹ To this effect, the states must take all measures that are necessary to prevent, reduce and control pollution of the marine environment from any source, using the best practicable means at their disposal and according

⁵⁴ Tommy T.B. Koh, *A Constitution for the Oceans, Remarks by T.B. Koh, President of the Third United Nations Conference on the Law of the Sea* (Dec. 1-11, 1982),

http://www.un.org/depts/los/convention_agreements/texts/koh_english.pdf.

⁵⁵ TONY GEORGE PUTHUCHERRIL, *FROM SHIP BREAKING TO SUSTAINABLE SHIP RECYCLING EVOLUTION OF A LEGAL REGIME* 116 (Leiden, Boston, & Martinus Nijhoff publishers, 2010).

⁵⁶ MICHAEL GALLEY, *SHIP BREAKING: HAZARDS AND LIABILITIES*, 70 (Springer, London Publishers, 2014) (ebook).

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ United Nations Convention on the Law of the Sea art. 192, Dec. 10, 1982, 1833 U.N.T.s 397 [hereinafter UNCLOS].

to their capabilities.⁶⁰ The states are obliged to take all measures necessary to ensure that pollutants do not spread beyond the areas where they exercise sovereign rights under this convention.⁶¹ Accordingly, UNCLOS obliges states not only to protect the nation from marine pollution⁶² but also requires that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment. This means pollution arising from incidents or activities under a state's jurisdiction or control must not spread beyond the areas where the member states exercise sovereign rights.⁶³ This accountability makes real sense as the spread of marine or atmospheric pollution does not recognize either state sovereignty or physical boundary. Stopping or minimizing coastal as well as sea contaminations is the only option to confront this threat.

UNCLOS measures cover all sources of pollution⁶⁴ of marine environments, which include the release of toxic, harmful or noxious substances, especially those which are persistent,⁶⁵ from land-based sources, from or through the atmosphere or by dumping.⁶⁶ Ship recycling is undoubtedly a coast-based activity, and the persistent organic pollutant ("POP")⁶⁷ is one of the major threats currently being

⁶⁰ *Id.* art. 194.1.

⁶¹ *Id.* art. 194.2.

⁶² *Id.* art.194.1.

⁶³ *Id.* art. 194.2.

⁶⁴ *Id.* art. 1(4). Pollution of the marine environment means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to maritime activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

⁶⁵ Wenjing Guo et al., *Persistent Organic Pollutants in Food: Contamination Sources, Health Effects and Detection Methods*, 16 INT'L J. ENVTR. RES. AND PUBLIC HEALTH (2019),

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6888492/> (Persistent organic pollutants (POPs) are carbon-based chemicals that have some unique characteristics. They last for many years in the environment, extremely harmful to the environment, wildlife, and people, accumulate in the food chain and are passed through it and can be transported for very long distances, all over the world.).

⁶⁶ UNCLOS art. 194.3(a), *supra* note 59.

⁶⁷ *Persistent organic pollutant*, WORLD HEALTH ORGANIZATION [WHO] (June 13, 2020.), https://www.who.int/foodsafety/areas_work/chemical-risks/pops/en/ww (Persistent organic pollutants (POPs) has the ability to bio-

faced by the ship recycling countries across the South Asian regions. Under UNCLOS, states are also obliged to act in such a way as not to transfer, directly or indirectly,⁶⁸ damage or hazards from one area to another or transform one type of pollution into another.⁶⁹

There is a dedicated provision in UNCLOS on land-based marine pollution.⁷⁰ The sovereignty of a coastal state, under the UNCLOS, extends beyond its geographical or land territory.⁷¹ It is a duty upon the states to prevent, reduce and control pollution of marine environment from land-based sources,⁷² minimize, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those persistent in the marine environment,⁷³ and to prevent, reduce, and control pollution of the marine environment through the atmosphere.⁷⁴

States also must keep under surveillance the effects of all activities which they permit,⁷⁵ and assess the potential impact of such events on the marine environment.⁷⁶ The states must endeavor, as far as practicable, directly or through the competent international organizations, to observe, measure, evaluate, and analyze, by recognized scientific methods, the risks or effects of pollution of the marine environment.⁷⁷ States must also adopt laws and regulations and prevent, reduce, and control pollution of the marine environment by dumping,⁷⁸ considering the matter in which other states might be

magnify and bio-accumulate in ecosystems, as well as their significant negative effects on human health and the environment).

⁶⁸ The word 'indirectly' could also be interpreted as contributing to such polluting acts.

⁶⁹ UNCLOS art. 195, *supra* note 59.

⁷⁰ *Id.* art. 207.1.

⁷¹ *Id.* art. 2.1.

⁷² *Cf.* Nivedita M. Hosanee, *A Critical Analysis of Flag State Duties as Laid Down Under Article 94 of the 1982 United Nations Convention of the Law of the Sea*, DIVISION FOR OCEAN AFFAIRS U.N. N.Y. (2009). In international law, a ship is considered a floating piece of a sovereign territory where flag state has primary jurisdiction. It's also undisputedly a state territory for that flag state of whose flag it flies.

⁷³ UNCLOS art. 207.5, *supra* note 59.

⁷⁴ *Id.* art. 212.

⁷⁵ *Id.* art. 204.2.

⁷⁶ *Id.* art. 205.

⁷⁷ *Id.* art. 204.1.

⁷⁸ *Id.* art. 210.1.

adversely affected because of their geographical situations.⁷⁹ The UNCLOS measures are directed to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.⁸⁰ The convention has explicitly guaranteed the developing countries, on a preferential basis, the allocation of necessary funds, technical assistance, and specialized services through international organizations to combat the threat of pollution pervading their territories and beyond.⁸¹

It should be noted that UNCLOS does not cover pollution from ship recycling per se,⁸² but it does broadly address marine pollution from land-based sources,⁸³ and ship recycling is necessarily a typical form of land-based activity.⁸⁴ The convention does not use the titles waste or hazardous waste, and it does not give any clear indication as to when a ship ceases to operate at sea and becomes waste or hazardous waste.⁸⁵ This distinction is vital as the UNCLOS jurisdiction extends over a ship during its operative life and while the vessel is in commercial operation.⁸⁶ Under international law, an EOL ship remains operational until touches the beachhead in a beaching facility and all international laws applicable to an ordinary sailing ship remain equally applicable.⁸⁷ So, by law, an EOL ship is simultaneously both an operating ship and a hazardous waste and both regimes apply concurrently.⁸⁸

⁷⁹ *Id.* art. 210.5.

⁸⁰ *Id.* art. 194.5.

⁸¹ *Id.* art. 203.

⁸² GALLEY, *supra* note 56 at 71.

⁸³ UNCLOS art. 207.5, *supra* note 59.

⁸⁴ URS DANIEL ENGELS, EUROPEAN SHIP RECYCLING REGULATION: ENTRY –INTO-FORCE IMPLICATION OF THE HONG KONG CONVENTION, SPRINGER 2013, 110-111 (Noting that UNCLOS was adopted in 1982 after 14 years of negotiation which predates the era when the ship recycling and the controversial beaching methods were not international concerns.).

⁸⁵ GALLEY, *supra* note 56 at 71.

⁸⁶ *Id.*

⁸⁷ Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22 1989, 28 I.L.M., 1673 U.N.T.S. 125 [hereinafter Basel Convention] (Decision VII/26 Conference of the Parties of the Basel Convention noting that that an EOL ship may become waste as defined in art. 2 of the Basel Convention and simultaneously, it may be defined as a ship under other international rules, UNEP/CHW.7/33.).

⁸⁸ *Id.* (COP of the Basel Convention vide decision VII/26 have decided that an EOL ship may become waste as defined in art. 2 of the Basel Convention

Under UNCLOS, all states, whether coastal or land-locked, enjoy the right of innocent passage⁸⁹ through the territorial sea.⁹⁰ Some writers have argued that the movement of EOL ships to the ship recycling facilities usually is considered innocent.⁹¹ However, a coastal state may take necessary steps in its territorial sea to prevent the passage of an EOL ship which may not be considered innocent under UNCLOS.⁹²

The passage is innocent so long as it is not prejudicial to the peace, good order or security of the Coastal State.⁹³ Such passage must take place in conformity with UNCLOS and with other rules of international law. Under UNCLOS, the passage of a foreign ship is considered to be prejudicial to the peace, good order or security of the coastal state in the territorial sea under a few specific criteria.⁹⁴ A relevant ground that might be used to deny an EOL ship's entry into the territory is because the ship is causing willful and serious pollution contrary to this convention.⁹⁵ This incident is a real possibility, as old decommissioned ships naturally catches on many leakages in the engine room and may contribute marine and atmospheric pollution through discharging excessive bilge waters including the development of excessive black smoke due to faulty main and auxiliary engine and exhaust systems.⁹⁶ It may also happen that contaminated, worn out, damaged, leaking, dead and rusty ships may be towed across the oceans to the ship-breaking facilities, posing a severe threat to the

and simultaneously, it may be defined as a ship under other international rules, UNEP/CHW.7/33.).

⁸⁹ UNCLOS art. 19, *supra* note 59 (Innocent passage is a concept in the law of the sea that allows for a vessel to pass through the territorial waters of another state, subject to certain restrictions.).

⁹⁰ *Id.* art. 17.

⁹¹ PUTHUCHERRIL *supra* note 55, at 118.

⁹² UNCLOS art. 21.1, *supra* note 59.

⁹³ *Id.* art. 19.

⁹⁴ *Id.* art. 19.2(a)-19.2 (l).

⁹⁵ *Id.* art. 19.2(h).

⁹⁶ Bell Performance, *Diesel engine problems: black smoke explained*, BELL PERFORMANCE (June 20, 2013), <https://www.bellperformance.com/blog/bid/115989/diesel-engine-problems-black-smoke-explained>; *see also* Georges Havelka, *Accidental Oil Spill Due to Oil Separator's Malfunction*, 1, <http://www.ifsma.org/tempannounce/aga33/OilSpill.pdf> (Noting that one of the major causes of oil pollution from ships at sea is the use of faulty oily water separator onboard.).

marine environment of the coastal states through which the ships are required to pass.⁹⁷ Moreover, taking a toxic ship under the authority of a flag state to a recycling state for beaching and breaking while knowing about its incapability to manage pollution in a sound manner may amount to a willful blindness on the part of the shipowner and the flag state. Such willful blindness could be considered as a deliberate intention to cause pollution, not only to the recycling states but also, to the surrounding areas including the adjacent states. Even if a recycling state does not object, the coastal states adjacent to that recycling state may consider the passage of that EOL ship non-innocent and invoke jurisdiction to prevent potential degradation to their marine environment. The coastal state may require foreign ships exercising the right of innocent passage through its territorial water to use separate sea lanes and traffic separation schemes.⁹⁸ UNCLOS, however, does not make it clear whether a violation of coastal state laws could render the passage non-innocent and accordingly empower the coastal states to take necessary steps to prevent the passage.⁹⁹ Again, foreign EOL nuclear-powered ships will need to carry documents and observe special precautionary measures in default of which their passage may not be considered as innocent.¹⁰⁰

Ship recycling on the beach, namely the breaking at the intertidal zone of the coastal water, was not a widely controversial phenomenon in the international maritime community during the late seventies or early eighties when the UNCLOS was finally drafted and adopted. However, this action might come within the broader definition of dumping¹⁰¹ already known to maritime law and covered by the London Convention of 1952.¹⁰² Dumping at sea is illegal under UNCLOS if done without express permission from the state under

⁹⁷ PUTHUCHERRIL, *supra* note 55, at 117.

⁹⁸ UNCLOS art. 22.1, *supra* note 59.

⁹⁹ William K Agyebeng, *Theory in Search of Practice: The Right of Innocent Passage in the Territorial Sea*, 39 CORNELL INT'L L. J. 383-384 (2006).

¹⁰⁰ UNCLOS art. 23, *supra* note 59.

¹⁰¹ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, art. III (1)(a) Dec. 29, 1972, IMO [hereinafter London Convention] ("Dumping" means any deliberate disposal at sea of wastes or other matters from vessels, aircraft, platforms or other human-made structures at sea. Dumping also includes any deliberate disposal at sea of ships, airplanes, platforms or other human-made structures at sea. Sea contains territorial sea but not inland water.).

¹⁰² *Id.* art. I.

whose territory the action took place.¹⁰³ As for recycling, the consent of the recycling state may be a difficulty in establishing an argument of illegal dumping of EOL vessels. Ship recycling is a land-based activity.¹⁰⁴ UNCLOS deals with pollution from land-based sources, asserts jurisdiction over the marine and coastal pollution flowing from ship recycling.¹⁰⁵ Moreover, Article 194 of UNCLOS arguably covers both beaching maneuvering and the act of beaching itself. The beaching maneuvering is a part of the process of ship recycling activity in South Asia. In a beaching process, more than one state party is necessarily involved. Primarily they are the flag state and the recycling state. Recycling state gives permission for beaching in their coastal territories and the flag state holds jurisdiction over the vessel till the ship remains afloat.¹⁰⁶ UNCLOS, however, does not specify the duties and responsibilities ascribed from activities such as ship recycling upon all the respective stakeholders or entities potentially responsible for marine pollution. For example, the country ascribed the liability ensuing from the specific controversial act of beaching, when carried out deliberately under the authority of the flag state with the consent of the recycling state, is unclear. So long as this deliberate joint enterprise leads to an obvious threat to the marine environment and human health in the recycling state, the flag state arguably cannot disassociate itself from any liability arising from such harmful transactions.¹⁰⁷ Under Article 194.2 of UNCLOS, a state must control pollution of the marine environment and ensure that it does not extend beyond its territorial jurisdiction.¹⁰⁸ Under international law, a ship is considered as an extension or a floating territory of the sovereign state

¹⁰³ UNCLOS art. 210.5, *supra* note 59.

¹⁰⁴ SAIFUL KARIM, PREVENTION OF POLLUTION OF THE MARINE ENVIRONMENT FROM VESSELS, 100 (Springer, London Publishers, 2014) (ebook).

¹⁰⁵ UNCLOS art. 207, *supra* note 59.

¹⁰⁶ *Id.* art. 94 (A flag state enjoys uninterrupted jurisdiction over the ship whether the ship is at the high seas, at the coastal territory of a foreign country or even at the port of a foreign territory, so long as it flies the flag of that state. In case of beaching, the flag state, till the ship touches the beachhead, remains therefore under the active jurisdiction of the state whose flag the vessel is flying while beaching.).

¹⁰⁷ Author noting that the same specific act would have been apparently considered as dumping had there been no consent of the coastal state under the London Convention 1952.

¹⁰⁸ UNCLOS art. 194.2, *supra* note 59.

of which it is registered.¹⁰⁹ It is the flag state registration that creates the bridge between the ship and the mainland of the registering state.¹¹⁰ Even if a landlocked state confers registration to a foreign owned vessel, it invokes jurisdiction to govern that ship in all social, administrative, and technical matters pertaining to that ship.¹¹¹ On the other hand, an EOL ship is already recognized as hazardous waste by international law.¹¹² An act of beaching, therefore, arguably constitutes a transfer of hazardous waste from one jurisdiction to other which places a flag state in potential violation of the Article 194.1 of UNCLOS for introducing a recognized hazardous waste (the EOL ship) to other jurisdictions. The recycling state merely is the victim of this transaction, and, arguably, this is an incident that Article 194.1 of UNCLOS had attempted to prevent given an EOL ship itself is a piece of hazardous waste and a floating piece of a foreign jurisdiction under whose flag it flies. Moreover, Article 194 of UNCLOS is a general obligation upon the contracting states, and Article 194.3 confirms that the sources of pollution under this Article are non-exhaustive and may be land source, ship source, installations or whatsoever; the fundamental tenet is pollution sources coming from another jurisdiction.¹¹³

The question of consent of the recycling state may be a critical issue which might lessen the strength of this argument. However, under UNCLOS, there is no suggestion that the consent of the victim state will exonerate the polluter state from liability. Moreover, when the injury to the interest of the other state is grave and patently foreseeable, this silence in the convention cannot be deliberately misapplied. Hence, it can be argued that chasing the act of beaching,

¹⁰⁹ Ademun Odeke, *An Examination of Bareboat Charter Registries and Flag of Convenience Registries in International Law*, 36 *OCEAN DEV. AND INT'L L.* 339, 341 (2005).

¹¹⁰ *Id.*

¹¹¹ Albania Declaration Recognizing the Right to a Flag of States Having No Sea Coast, Apr. 20, 1921, LNTSer 95, 7 LNTS 73.

¹¹² Basel Convention, *supra* note 87 (COP of the Basel Convention decision VII/26).

¹¹³ UNCLOS art. 194.2, *supra* note 59 (It may be argued that the mere act of beaching is not a polluting act, but the basic recycling activity is. This argument is flimsy because under the Duping Convention, mere act of deserting the vessel at sea or territorial sea of other jurisdictions is a polluting action. Please note that the beaching is done in the intertidal zone which is clearly within territorial sea of the recycling state.).

willfully by the flag state, knowing the obvious and deadly consequences upon the environment and health creates a severe good faith issue. It is noteworthy that the concept of good faith in conduct does not necessarily mean an absence of bad faith. It demands the existence of an affirmative duty to act in the best interest of the other, not in self-interest with an implied sense of loyalty.¹¹⁴ Professor Braucher¹¹⁵ has opined that the duty of good faith can be violated even if the actor believes his conduct to be justified if there is presence of an evasion or subterfuge in conduct.¹¹⁶ This again implies a sense of objectivity in performance.¹¹⁷

Hence, it is apparent that the good faith duty necessarily requires the actor to be proactive in eliminating avoidable harm to the other party. Arguments of such a standard of conduct are compelling when an instrument of international law expressly incorporates good faith in its provision. Although the concept of good faith has not yet been widely tested in international law,¹¹⁸ there is consensus among the jurist that it's an indispensable principle of international law.¹¹⁹ Moreover, there is no dispute that the presence of a duty of good faith can curtail the inherent sovereign right of a state to act freely in the absence of any express stipulation of international law established under the Lotus Principle.¹²⁰ Therefore, the good faith duty can restrict the traditional sovereign rights of a state to consent and act freely. It is

¹¹⁴ Leo E. Strine et al., *Loyalty's Core Demand : The Defining Role of Good Faith in Corporation Law*, DISC. PAPER NO. 630, HARV. CTR. FOR L., 20, ECON., AND BUS., Mar. 2009.

¹¹⁵ Robert S. Summers, *The General Duty of Good Faith - Its Recognition and Conceptualization*, 67 CORNELL L. REV.(NO.4) 810, 820 (1982), <https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=4287&context=clr> (Robert Braucher, was a Professor of Law at Harvard Law School. He drafted the Section 205 of the Restatement (Second) of Contracts, adopted by the American Law Institute in 1979 and published in final form in 1981. He was the Reporter for the Restatement Second during the years when section 205 was in embryo.).

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ Steven Reinhold, *Good Faith in International Law*, 2 U. C. L J. OF L. & JURIS. 40 (2013).

¹¹⁹ *Id.* at 63.

¹²⁰ Louis de Gouyon Matignon, *The Lotus Principle*, SPACE LEGAL ISSUES BLOG (Apr. 24, 2020, 9:51 AM), <https://www.spacelegalissues.com/the-lotus-principle/> (The Lotus principle or Lotus approach, usually considered a foundation of Public International Law, says that sovereign states may act in any way they wish so long as they do not contravene an explicit prohibition.).

important to note that UNCLOS imposes a duty of good faith for the fulfillment of all its provisions.¹²¹ In relevant part, it reads that “[s]tate [p]arties shall fulfill in good faith the obligations assumed under this Convention and shall exercise the rights, jurisdiction, and freedoms recognized in this Convention in a manner which would not constitute an abuse of right.”¹²²

The International Law Commission (“ILC”)¹²³ report suggests that the performance of treaty obligation is judged on the intention and purpose of the state’s action not on the principle of *stricti juris*.¹²⁴ The beaching action under the command and jurisdiction of the flag state with a sophism to abide by laws as discussed heretofore raises a definite question of the abuse of right clearly prohibited by the UNCLOS.

It appears that flag state participation in the act of beaching under the current circumstances seems quite inconsistent with the general provision under Article 194.1 and 194.2 of the UNCLOS. Notably, UNCLOS requires every state to use the best predictable means under their disposal to take all measures consistent with the convention that are necessary to prevent, reduce and control of marine pollution.¹²⁵

On the other hand, the same arguments apply to the recycling states for violating the good faith duty when they knowingly welcome services of the controversial FOC¹²⁶ states, blacklisted by the global

¹²¹ UNCLOS art.300, *supra* note 59.

¹²² *Id.*

¹²³ INT’L L. COMMISSION [ILC], <https://legal.un.org/ilc/> (The International Law Commission was established by the General Assembly, in 1947, to undertake the mandate of the Assembly, under article 13 (1) (a) of the Charter of the United Nations to "initiate studies and make recommendations for the purpose of ... encouraging the progressive development of international law and its codification".).

¹²⁴ Reinhold, *supra* note 118, at 63, (cited in ILC, *Yearbook of the International Law Commission* II, 7 (1964)); *Stricti juris Law and Legal Definition*, US LEGAL (2019), <https://definitions.uslegal.com/s/stricti-juris/> (Stricti juris is a Latin term which means according to strict right of law. It is a legal rule of interpretation. The rule of stricti juris requires the strict, narrow and close interpretation of the rights.).

¹²⁵ UNCLOS art. 194, *supra* note 59.

¹²⁶ *What is a Flag of Convenience?*, HG LEGAL RESOURCES (2020), <https://www.hg.org/legal-articles/what-is-a-flag-of-convenience-31395> (When registering a vessel for international travel, one must choose a nation under the flag

community for their proven track record of failed, awful and dishonest performance. Any provable deleterious consequence to the other states, flowing from the negligence of such FOCs, may be interpreted as an abuse of right and have a strong bearing upon the good faith duty under Article 300 of UNCLOS.¹²⁷ This may lead to the ultimate violation of the recycling state's general obligation under Article 192 and Article 194.1 of the Convention which deals with measures to prevent, reduce and control pollution of the marine environment.

It should also be mentioned here that there is a clear distinction in the state relationship under international law when dealing with hazardous waste. The Basel Convention, one of the most widely ratified international conventions in the world,¹²⁸ has imposed a direct prohibition upon member states exporting hazardous waste to other contracting states who cannot soundly handle those wastes.¹²⁹ Under this convention, the consent of the importing state, incapable of managing the hazardous waste in its territory, is irrelevant.¹³⁰ In fact, to avoid causing pollution to the importing countries through the introduction of hazardous waste, an affirmative obligation has been imposed upon the exporting states of the hazardous waste. The state of export must ensure that the importing country not only has consented the matter in writing but also is well capable of managing the waste in a sound manner.¹³¹

of which that vessel will sail. The term FOC or "flag of convenience" refers to registering a ship in a sovereign state different from that of the ship's owners.).

¹²⁷ Reinhold, *supra* note 118, at 53.

¹²⁸ Noah M. Sachs, *Out of Sight, Out of Mind: Ratifying the Basel Convention on Transboundary Waste*, CPRBLOG (May 1, 2012), <http://progressivereform.org/cpr-blog/out-of-sight-out-of-mind-ratifying-the-basel-convention-on-transboundary-waste/>.

¹²⁹ Basel Convention art. 4.10, *supra* note 87.

¹³⁰ *Id.* art. 4.2 (e).

¹³¹ *Id.* art. 4.8.

II. UNCLOS AND THE FLAG STATE, PORT STATE, AND THE COASTAL STATE JURISDICTION OVER EOL SHIPS

The authority of the flag state,¹³² port state¹³³ and the coastal state¹³⁴ granted under the UNCLOS can also be relevant in ship recycling. These three state administrations individually and jointly work to combat the marine pollution arising from any land source activity that necessarily includes ship recycling.¹³⁵ As noted above, a ship can be considered hazardous waste and an operating vessel at the same time and therefore subject to ordinary maritime law rule at sea and in port; therefore, the general maritime law jurisdictions of the flag state and the port state and the coastal state apply to the EOL ship in its last journey to the recycling facility.¹³⁶

The laws and regulations for the prevention, reduction, and control of pollution of the marine environment by dumping are enforced by the coastal state within its territorial sea, or in its exclusive economic zone or on its continental shelf.¹³⁷ Jurisdiction over the ship is exercised by the flag state while the vessel flies its flag and by all states in whose territories the acts of loading of wastes or other matters occur.¹³⁸ However, the primary jurisdiction over the ship to enforce general international maritime regulations remains vested upon the flag state only.¹³⁹

¹³² Ahmed, *supra* note 107. The flag state of a merchant vessel is the jurisdiction under whose laws the vessel is registered or licensed and is deemed the nationality of the vessel. A merchant vessel must be registered and can only be registered in one jurisdiction.

¹³³ *Id.* Port state control is an inspection regime for countries to inspect foreign-registered ships in port other than those of the flag state and take action against ships that are not in compliance.

¹³⁴ *Id.* A Coastal State is a state situated by the ocean. The Coastal State has full sovereignty within its territorial waters, and, as we have seen, it enjoys certain sovereign rights on the continental shelf and in the exclusive economic zones off its coast.

¹³⁵ *Id.* Yet a same country, however, may be a flag state, port state, coastal state or the recycling state at the same time for a ship.

¹³⁶ UNCLOS art. 94.1, *supra* note 59.

¹³⁷ *Id.* art. 210.

¹³⁸ *Id.* art. 216.

¹³⁹ *Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization*, IMO Doc. LEG/MISC.8, 64 (Jan. 30, 2014), <http://www.imo.org/en/OurWork/Legal/Documents/LEG%20MISC%208.pdf>.

It is important to note that the flag state enjoys uninterrupted jurisdiction¹⁴⁰ under the nationality principle,¹⁴¹ and unlike the coastal and the port states, no state is obliged to institute proceedings when another state has already initiated actions on the same matter.¹⁴² In other words, if a flag state already invokes jurisdiction on a ship at the port about any reported violation, the port state may not exercise control on the self-same matter although the vessel is well within the concurrent jurisdiction of the port state. In such a situation, the authority is parallel, and the possibility of the invocation of power upon the EOL ship by the port state is always open but discretionary.¹⁴³ An EOL ship during its last voyage to the Ship Recycling Facility (“SRF”) can, therefore, be subjected to jurisdiction by the port and the coastal state who may attempt to prevent violation of applicable international law or their domestic laws giving effect to such international rules and standards,¹⁴⁴ including the seaworthiness of the vessel.¹⁴⁵

As the jurisdiction of the port state control is discretionary and the standard of enforcement of flag states notoriously varies between countries, many states have adopted Memorandum of Understanding (“MOU”) on Port State Control to ensure a concerted and uniform approach of application of international maritime rules.¹⁴⁶ The risk of pollution from dilapidated or unseaworthy EOL vessels is potentially higher than the risk from ships in normal operations. This factor might

¹⁴⁰ UNCLOS art. 94, *supra* note 59.

¹⁴¹ *Id.* (The nationality principle recognizes that a sovereign can adopt criminal laws which govern the conduct of the sovereign's nationals while outside of the sovereign's borders.).

¹⁴² UNCLOS art. 216, *supra* note 59.

¹⁴³ *Id.* art. 219.1.

¹⁴⁴ *Id.* art. 220.3.

¹⁴⁵ *Id.* art. 219.

¹⁴⁶ Mohit Kaushik, *What lead to the formation of Paris Memorandum of Understanding (MOU) in the shipping Industry?*, MARINE INSIGHT (Oct. 13, 2019), <https://www.marineinsight.com/maritime-law/what-lead-to-the-formation-of-paris-memorandum-of-understanding-mou-in-the-shipping-industry/> (Because of the oil spill by the grounding of the oil tanker named Amoco Cardiz in 1978, 12 European Maritime authorities and the European commission decided to develop a harmonized system to inspect foreign ship for defects and deficiencies in their ports. An agreement was concluded in 1982 which is famously known as Paris Memorandum of Understanding on port state control (Often referred as the Paris MOU). Under this act, each administration decided to inspect at least 25 % of the foreign ships visiting their ports.); *see also* GALLEY, *supra* note 56, at 71.

have a definite bearing on this discretionary jurisdiction of the port and the coastal states if they could be informed before the arrival of such defunct ships into their territories.

III. THE LONDON CONVENTION

The Inter-Governmental Conference on the Convention on the Dumping of Wastes at Sea adopted the London Convention in 1975 (“London Convention”). This instrument is one of the first international conventions for the protection of the marine environment from human activities and came into force on August 30, 1975.¹⁴⁷

The convention contributes to the global control and prevention of marine pollution by prohibiting the dumping of specific hazardous materials including dumping of waste or other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.¹⁴⁸ Dumping has been defined in the London Convention as the deliberate disposal at sea of wastes or other matters from vessels, aircraft, platforms or other human-made structures, as well as the intentional disposal of these ships or platforms themselves.¹⁴⁹ It’s annexes include a list of wastes which cannot be dumped and those for which a particular dumping permit would be required.¹⁵⁰

Although this convention covers many types of wastes, not only hazardous waste, it includes ships in the list of permitted items of dumping.¹⁵¹ As noted earlier, the adoption of the London Convention predates the era when the ship recycling became an international concern. However, a shipowner may choose to dump the ship at sea subject to some bounding requirements of law. Some recent papers note that the dumping of vessels and particularly the offshore

¹⁴⁷ *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, IMO (2020), <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx> [hereinafter *London Protocol Adoptions*].

¹⁴⁸ *Id.* art. I.

¹⁴⁹ *Id.* art. III sec. 1.

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

installations are expanding nowadays,¹⁵² but many argue that this is a precise form of ocean pollution.¹⁵³

In 1996, the London Convention was revised and superseded by the London Protocol, premised on the polluter pays¹⁵⁴ and precautionary principles.¹⁵⁵ It did not substantially change the scope of the original convention, but integrated consideration of abandonment or toppling of platforms or other human-made structures for the sole objective of deliberate disposal.¹⁵⁶ This amendment reflected the provision of Article 60 of the UNCLOS convention relating to the artificial islands, structures, and installations in the exclusive economic zone.¹⁵⁷ Under the London Protocol, dumping is sanctioned, subject to obtaining of special permission if the waste or other matter is listed in the Annex II. Prior general permission is required for all other wastes.¹⁵⁸ However, the dumping of materials has been prohibited if they are listed in the Annex I of the convention.¹⁵⁹

The 1996 Protocol has not substantially altered the basic structure of the convention but introduced a reverse listing scheme by which it prohibits all dumping except for approved lists. Article 4 states that contracting parties shall prohibit the dumping of any waste or other matter apart from those listed in Annex I.¹⁶⁰ The vessels and

¹⁵² PUTHUCHERRIL, *supra* note 55, at 122.

¹⁵³ *Id.* (Cited in ALDO CHIRCOP & OLOF LINDEN, eds., PLACES OF REFUGE FOR SHIPS: EMERGING CONCERNS OF A MARITIME CUSTOM 231, 254-55 (2006)).

¹⁵⁴ Grantham Research Institute & Duncan Clark, *What is the 'polluter pays' principle?*, THE GUARDIAN (July 2, 2012), <https://www.theguardian.com/environment/2012/jul/02/polluter-pays-climate-change> (The 'polluter pays' principle is the commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.).

¹⁵⁵ *Welcome to the Precautionary Principle Website*, THE PRECAUTIONARY PRINCIPLE, (The Precautionary Principle is a strategy to cope with possible risks where scientific understanding is yet incomplete.), <http://www.precautionaryprinciple.eu/>.

¹⁵⁶ GALLEY, *supra* note 56, at 73.

¹⁵⁷ *Id.* (The exclusive economic zone is an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this part under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of this Convention, UNCLOS art. 55, *supra* note 59.).

¹⁵⁸ PUTHUCHERRIL, *supra* note 55, at 123.

¹⁵⁹ London Convention annex I, *supra* note 101.

¹⁶⁰ *London Protocol Adoptions*, *supra* note 147.

platforms or other human-made structures at sea are within the approved substances under this new protocol.

The deliberate sinking of a ship, also called scuttling, is not frequently practiced nowadays as exceedingly gainful methods of ship-breaking are already available in developing countries. However, scuttling is still prevalent in some locations, such as in the USA,¹⁶¹ where this method is mostly used to decommission naval ships and other government-owned vessels.¹⁶² This practice was introduced in the wake of substantial public outrage in the U.S. after a failed attempt to send those ships first to South Asian beaches.¹⁶³ Currently, because of the U.S. policy and the regulatory requirement, it is prohibited to export U.S. naval and government-owned vessels to the beaches of South Asia.¹⁶⁴ The U.S.A. does not have sufficient capacity to dispose of their own naval and government vessels in dry-docks,¹⁶⁵ and the project of disposal of EOL ships owned by US navy is already subsidized, and oftentimes dismantling contracts are awarded to a few local yards on “cost-plus”¹⁶⁶ basis because of uncertainty in their outcome.¹⁶⁷ It was observed that scrapping in a dry-docking facility necessarily involves a much higher cost than dumping the ship into the

¹⁶¹ GALLEY *supra* note 56, at 73.

¹⁶² Andrew Moseman, *The Navy's Old Ships Get a Second Life... As Fish Residences*, DISCOVER MAGAZINE (Aug. 19, 2008), <http://blogs.discovermagazine.com/discoblog/2008/08/19/the-navys-old-ships-get-a-second-life-as-fish-residences/#.Wn-opUxFydI> (accessed Aug. 4, 2016).

¹⁶³ WILLIAM LANGEWIESCHE, *THE OUTLAW SEA: A WORLD OF FREEDOM, CHAOS, AND CRIME* 209 (2004).

¹⁶⁴ *Id.* at 210-12 (Note the double standard; as per the Government policy, sending the US flagged commercial vessels to the substandard shores of South Asia is not banned. Noting that the US Maritime Administration (MARAD) sent defunct naval ships (called ‘ghost ships’) to India in 1997 After severe criticism and protests over their environmental hazard, the United States government decided to stop exporting their defunct naval ships to South Asia.); *see also* Ramapati Kumar, *SHIP DISMANTLING: A status report on South Asia*, 15, https://www.shipbreakingplatform.org/wp-content/uploads/2018/11/ship_dismantling_en.pdf.

¹⁶⁵ John Frittelli, *Shipping Under the Jones Act: Legislative and Regulatory Background*, CONG. RESEARCH SERV. (Nov. 21, 2019), 23, <https://fas.org/sgp/crs/misc/R45725.pdf>.

¹⁶⁶ *Cost-plus*, COLLINS COBUILD Advanced American English Dictionary (9th Ed., 2018). A cost-plus basis for a contract about work to be done is one in which the buyer agrees to pay the seller or contractor all the cost plus a profit. All vessels were to be broken on a cost-plus basis.

¹⁶⁷ LANGEWIESCHE, *supra* note 163, at 211.

sea in such a way.¹⁶⁸ However, to choose the option under dumping convention, the vessel must be pre-cleaned as far as practicable at the cost of the owner.¹⁶⁹ This can cost US \$ 20 Million for only one ship in the U.S., which raises questions about the economic feasibility of this operation.¹⁷⁰

Under the new protocol, the owner of the waste is liable to pay the entire cost of dumping operations, which may prove less expensive than scrapping under a strict environmental regime in a dry-dock. Although this could be a choice of the shipowner, permission is not automatic. It requires an assessment by the competent authority under whose jurisdiction the dumping operation is being proposed.¹⁷¹

The state authority liable to authorize dumping requires an impact hypothesis, a report of potential consequences of dumping, and a pollution obviation plan.¹⁷² The assessment is made under the Specific Guidelines of Assessment of Vessel (“SGAV”).¹⁷³ The guidelines permit dumping of vessels for creating artificial reefs, marine habitat enhancement and for recreational diving sites.¹⁷⁴ In most cases, the cleaning cost of EOL ship is three to four times higher than the income generated from these recreational sites.¹⁷⁵

The dumping guidelines also set out the factors to be addressed when considering disposal of the decommissioned vessels at sea, with emphasis on the need to evaluate alternatives to sea disposal before it being determined as the preferred option.¹⁷⁶ Reuse of the ship, reuse of parts of vessels, and recycling at appropriate facilities are always preferred alternatives to disposal at sea.¹⁷⁷

¹⁶⁸ GALLEY, *supra* note 56, at 73.

¹⁶⁹ LONDON PROTOCOL, §.3.2, 3, *infra* note 181 (considering the approach that the polluter should, in principle, bear the cost of pollution).

¹⁷⁰ Moseman, *supra* note 162 (US Navy had to spend 20 Million dollars before deliberate sinking of its Naval vessel, U.S.S Oriskany in 2006.).

¹⁷¹ GALLEY, *supra* note 56, at 73.

¹⁷² *Id.*

¹⁷³ *Specific Guidelines for Assessment of Vessels [SGAV], Annex 7, §1.1, 1996 PROTOCOL TO THE LONDON CONVENTION 1972,1, <http://www.imo.org/en/OurWork/Environment/LCLP/Publications/wag/Documents/2016%20Rev%20Specific%20Guidelines%20for%20vessels.pdf>; PUTHUCHERRIL, *supra* note 55, at 125.*

¹⁷⁴ *SGAV, Annex 7, §1.1, supra* note 173.

¹⁷⁵ Moseman, *supra* note 162.

¹⁷⁶ *SGAV, Annex 7, §1.6, supra* note 173, at 5.

¹⁷⁷ *Id.*

Dumping permission may not be sanctioned if the authority determines that suitable opportunities exist to reuse, recycle or treat the vessel without incurring unwarranted risks to human health and the environment or unreasonable costs.¹⁷⁸ The availability of other means of disposal should be considered in the light of a comparative risk assessment involving both dumping and the alternatives. This duty must be exercised given the general obligation to apply a precautionary approach to dumping and the objective of protecting the marine environment from all sources of pollution.¹⁷⁹

The comparative evaluation of risk should bear on the factors such as the potential impact upon the environment, human health, technical and practical feasibility and the economic consequences.¹⁸⁰ However, the IMO¹⁸¹ observes that, recycling and reuse of vessel or its part remain the preferred options, unless these are technically or economically feasible for any reason based on its specific situation.¹⁸²

It is noted that the dumping regulation does not come up with a profit-making window for the shipowner where the primary concern is to protect the marine environment from such human actions. Both the cleaning and the cost of the dumping are borne by the person or the organization who holds the proprietary interest in the vessel.

Although small naval and medium-sized vessels these days are dumped in limited cases, dumping of commercial ships of ultra large dimension¹⁸³ is nonexistent and may not be commercially feasible.

¹⁷⁸ *Terms of Reference for the Scientific Group Under the London Protocol, Annex 2, 2*, [http://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/London-Convention-London-Protocol-\(LDC-LC-LP\)/Documents/LP.2\(2\).pdf](http://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/London-Convention-London-Protocol-(LDC-LC-LP)/Documents/LP.2(2).pdf) [hereinafter *TOR London Protocol*].

¹⁷⁹ *SGAV, Annex 7, § 3.4, supra* note 173 at 5.

¹⁸⁰ *Id.* § 3.5.

¹⁸¹ *Introduction to IMO, IMO*,

<http://www.imo.org/en/About/Pages/Default.aspx>. (IMO – the International Maritime Organization is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.)

¹⁸² *SGAV, Annex 7, § 3.6, supra* note 173 at 6.

¹⁸³ *VLCC and ULCC, MARITIME CONNECTOR*, (VLCC or Very Large Crude Carriers and ULCC or Ultra Large Crude Carriers are the largest operating cargo vessels in the world. With a size in excess of 250,000 Dead Weight Tonnage (DWT), these giant ships are capable of carrying huge amount of crude oil in a single trip. Known as Supertankers, these vessels are primarily used for long-haul

However, dumping of vessels may still be considered a suitable option for some offshore installations that have no self-propulsive power. From the perspective of the shipowners, dumping is very unlikely if it remains an expensive task. However, this may sometimes prove more economically advantageous than recycling in a dry-dock under a strictly controlled environment.

Therefore, sending ships to the recycling facilities on the beach seems to be the easiest and the most lucrative option for the shipowners around the world in the current *laissez-faire* ship recycling marketplace. Instead of incurring cost, it generates guaranteed large-scale revenue for shipowners with virtually no cost of cleaning involved, at least when exported to the South Asian beaches.¹⁸⁴

Sometimes the shipowners may consider abandonment of ships in a port or land. This may happen when a shipowner finds that the vessel is no longer seaworthy or has become a constructive total loss due to the seizure by a port authority for noncompliance of any international or domestic rule, criminal allegation, lack of financial capacity to maintain the ship and bring back to its normal condition, or other similar reasons. In this situation, the shipowner may merely disembark the crew before abandoning the entire vessel at the port or near land as the case may be.¹⁸⁵ The ILO¹⁸⁶/IMO¹⁸⁷/Basel Convention¹⁸⁸ Working Group on Ship Scrapping decided in its first

crude transportation from the Persian Gulf to countries in Europe, Asia and North America.) <https://maritime-connector.com/wiki/vlcc/>.

¹⁸⁴ *Ship Owners Still Prefer South Asian Ship-breaking Practices*, OFFSHORE ENERGY (Feb. 4, 2016), <https://www.offshore-energy.biz/shipowners-still-prefer-south-asian-shipbreaking-practices/> (accessed 5 June 2017).

¹⁸⁵ PUTHUCHERRIL, *supra* note 55, at 126.

¹⁸⁶ Will Kenton, *International Labor Organization (ILO)*, INVESTOPEDIA (last visited April 23, 2020), <https://www.investopedia.com/terms/i/international-labor-organization.asp> (The International Labor Organization (ILO) is a United Nations (UN) agency that aims to promote decent work throughout the world.).

¹⁸⁷ *Introduction to the IMO*, *supra* note 181.

¹⁸⁸ *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Overview*, U.N. ENVIRONMENTAL PROGRAMME (2011), <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx> (last visited April 18, 2020). The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted on 22 March 1989 by the Conference of Plenipotentiaries in Basel, Switzerland, in response to a public outcry following the discovery, in the 1980s, in Africa and other parts of the developing world of deposits of toxic wastes imported from abroad.

session that the question of abandonment of ship on land or in port is a matter for the domestic law and not necessarily a subject of international treaty.¹⁸⁹

However, according to the decision of the fourth session of the Open-Ended Working Group¹⁹⁰ OEWG IV/6 and OEWG IV/7, deliberate abandonment of a ship at sea constitutes uncontrolled dumping and is a violation of the 1996 Protocol and subject to enforcement under this international regulation.¹⁹¹ It is noted that the 1996 Protocol to the London Convention may include the dumping of a ship in the internal waters of a State if that State has chosen to apply the “opting-in” provisions of the Protocol to its internal waters.¹⁹²

The London Protocol stresses the “precautionary approach,” which requires that appropriate preventative measures are taken when there is a reason to believe that wastes or other matters introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal link between the inputs and their effects.¹⁹³ It also states that the polluter should, in principle, bear the cost of pollution and emphasizes that contracting parties should ensure that the protocol does not merely result in contamination being transferred from one part of the environment to another.¹⁹⁴

The abandonment of a ship in such a way raises potential adverse effects upon the health and environment and has been a cause

¹⁸⁹ GALLEY, *supra* note 56, at 77.

¹⁹⁰ *Joint ILO/IMO/BC Working Group on Ship Scrapping*, IMO, <http://www.imo.org/en/OurWork/Environment/ShipRecycling/Pages/JointILOIMOBCWorkingGroupOnShipScrapping.aspx> (last visited April 18, 2020). To cooperate with the task of IMO on ship recycling matters, a Joint Working Group on Ship Scrapping was established by IMO, the International Labour Organization and the Conference of Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal concluded its third meeting in Geneva in October 2008. The overall task set by the three Organizations for the Group was to act as a platform for consultation, coordination and cooperation in relation to their work programs and activities with regard to issues related to ship scrapping or ship recycling.

¹⁹¹ Secretariat of the IMO, *Abandonment of Ships*, 3, U.N. Doc. UNEP/CHW/OEWG/4/INF/3 (April 11, 2005).

¹⁹² 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, art. 7, 1972, IMO 4, <http://www.imo.org/en/ourwork/environment/lclp/documents/protocolamended2006.pdf> [hereinafter LONDON PROTOCOL] (amended in 2006).

¹⁹³ *Id.* art.3.

¹⁹⁴ *London Protocol Adoptions*, *supra* note 147.

for concern for international communities. The 2007 Nairobi International Convention on the Removal of Wrecks, which was adopted in May 2007,¹⁹⁵ may have some relevance to the recycling of ships, but the jurisdiction of the convention only extends to vessels when they are abandoned because of accidents.¹⁹⁶ The matter of deliberate abandonment of ship at land or port is still far from settled in the international arena as it is believed that it's a matter for the port state to deal with domestically. There are cash-strapped countries that offer their coasts around their peninsulas as a dumping ground for dilapidated foreign ships solely for money.¹⁹⁷

IV. 2007 NAIROBI INTERNATIONAL CONVENTION ON THE REMOVAL OF WRECKS

The 2007 Nairobi International Convention on the Removal of Wrecks is relevant to cover the case of abandonment if the incident takes place involuntarily due to any maritime casualty.¹⁹⁸

The Convention applies to wrecks posing a danger or impediment to navigation or which may be expected to result in significant harmful consequences to the marine environment or damage to the coastline or related interests of one or more states.¹⁹⁹ A wreck is defined as a sunken or stranded ship consequent to a maritime

¹⁹⁵ *Nairobi International Convention on the Removal of Wrecks*, IMO (2018), <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Nairobi-International-Convention-on-the-Removal-of-Wrecks.aspx> [hereinafter *NICRW Adoptions*] (last visited Apr. 18, 2020).

¹⁹⁶ United Nations Environmental Programme, Letter from the Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal to the Secretary General for Legal Affairs, U.N. Doc. 2.10.6/MT/300 (Feb. 12, 2008), http://www.un.org/depts/los/general_assembly/study/study_files/unep_basel_convention.pdf.

¹⁹⁷ David Goran, *The port of Nouadhibou: World's largest ship graveyard with over 300 rotting ships*, THE VINTAGE NEWS (Aug. 16, 2016), <https://www.thevintagenews.com/2016/08/16/priority-11/> (last visited April 18, 2020).

¹⁹⁸ The Nairobi International Convention on the Removal of Wrecks, art. 2.1, Nov. 19, 2007, TSO 3, 5 [hereinafter *Nairobi International Convention*].

¹⁹⁹ *Id.* at 3; *id.* art. 1.5(b).

casualty.²⁰⁰ The Convention provides the legal basis for states to remove shipwrecks that may have the potential adverse impact on the safety of lives, goods, and property at sea, as well as the marine environment and which are located beyond the territorial sea. It also includes an optional clause enabling state parties to apply specific provisions to their territory including their territorial sea.²⁰¹ Furthermore, the wreck must be in the geographic area of application of the treaty, which, under an opt-in provision of the convention, might extend to a contracting party's territory, including its territorial sea.²⁰²

Importantly, the Nairobi Convention requires the shipowners to remain financially liable for this removal.²⁰³ The shipowners are required by the Convention to take out insurance or provide other financial security to cover the costs of wreck removal.²⁰⁴ The convention also provides states with a right of direct action against the shipowners' insurers.²⁰⁵

The convention has been enforced since 2015.²⁰⁶ Many ships falling under the definition of wreck may undergo recycling processes in the state where it has been abandoned. However, this convention does not seem to cover the typical situation when a ship is disposed of voluntarily by its owner after its end of life.

V. THE CONVENTION ON CONTROL OF HARMFUL ANTI-FOULING SYSTEMS FOR SHIPS 2001

Anti-fouling systems used in ship's hull can bring serious consequences to environment when they are dealt with at the stage of recycling, particularly on the beaches. Anti-fouling system is defined

²⁰⁰ *Id.* art. 1.4. (Maritime Casualty means a collision of vessels, stranding or other incident of navigation, or other occurrence on board a vessel or external to it resulting in material damage or imminent threat of material damage to a vessel or cargo); *see also* UNCLOS art. 221, *supra* note 59.

²⁰¹ *Guidance on dealing with abandonment of ships on land or in ports*, U.N. ENVTL. PROGRAMME, <http://www.basel.int/Portals/4/Basel%20Convention/docs/ships/abandonment/GuidanceOnDealingWithAbandonmentOfShips.English.pdf> (last visited April 18, 2020).

²⁰² *Id.*

²⁰³ Nairobi International Convention art. 10.1, *supra* note 198.

²⁰⁴ *Id.* art. 12.1.

²⁰⁵ *NICRW Adoptions*, *supra* note 195.

²⁰⁶ *Id.*

in the Convention on Control of Harmful Anti-Fouling System for Ships 2001 (“AFC 2001”) as the coating, paint, surface treatment, surface or device that is used on a ship to control or prevent attachment of unwanted organisms developed in the bottom part of ship’s hull.²⁰⁷ The purpose of using an anti-fouling system on the bottom part of the ship's hull is to keep away the ship from marine fouling. Ships travel faster through water and consume less fuel when their hulls are clean and smooth, free from fouling organisms, such as barnacles, algae, or mollusks.²⁰⁸ These creatures attach themselves to the hull and quickly cover parts of the ship that are submerged below the water line. This accumulation seriously affects the hydrodynamics of the ship²⁰⁹ and increase fuel consumption and the expense of navigation.²¹⁰

A ship with such fouling organisms unintentionally acts as vector facilitating the spread of aquatic organism and pathogens from one ecosystem to another.²¹¹ To combat this, in the early days of sailing ships, lime and later arsenical and mercurial compounds, dichlorodiphenyltrichloroethane (“DDT”)²¹² were used to coat ships’ hulls to act as anti-fouling systems.²¹³ However, the active ingredient

²⁰⁷ *Anti-Fouling Systems*, IMO (2020), <http://www.imo.org/en/OurWork/Environment/Anti-foulingSystems/Pages/Default.aspx>.

²⁰⁸ IMO, Knowledge Centre, *Anti-Fouling Systems*, 3, (2002), [http://www.imo.org/en/KnowledgeCentre/ReferencesAndArchives/FocusOnIMO\(Archives\)/Documents/Focus%20on%20IMO%20-%20Anti-fouling%20systems%20\(2002\).pdf#search=antifouling](http://www.imo.org/en/KnowledgeCentre/ReferencesAndArchives/FocusOnIMO(Archives)/Documents/Focus%20on%20IMO%20-%20Anti-fouling%20systems%20(2002).pdf#search=antifouling) (last visited April 18, 2020).

²⁰⁹ PUTHUCHERRIL, *supra* note 55, at 128 (Without antifouling system applied, a vessel's bottom can attract 150 KG of fouling per square meter in just six months and a large ship for about 40,000 square meters underwater surface area. This accumulation could be up to 6000 metric tons of fouling.).

²¹⁰ IMO, Knowledge Centre, *supra* note 208 (Just a small amount of fouling can lead to an increase of fuel consumption of up to 40%, and possibly as much as 50% since the resistance to movement will be increased. A clean ship can sail faster and with less energy. An effective anti-fouling system can save shipowner money in many ways: Direct fuel savings by keeping the hull free of fouling organisms; Extended dry-docking interval, when the anti-fouling system provides several years of use; Increased vessel availability since it does not have to spend so much time in dry dock.).

²¹¹ PUTHUCHERRIL, *supra* note 55, at 128.

²¹² IMO, Knowledge Center, *supra* note 208, at 3 (Dichloro Diphenyl Trichloroethane (DDT), a pesticide, banned from agricultural use in the United States since 1973 and also prohibited in most other countries.).

²¹³ *Id.*

biocide leached out of the paint and required the shipowners to repaint in just after 18 to 24 months in dry-dock.²¹⁴ Dry-docking in almost every year traditionally had proven to be an expensive venture and simply a heavy burden for the shipowners to discharge. However, during the 1960s the chemical industry developed efficaciously, and a breakthrough came with cost-effective anti-fouling paint using metallic compounds that last about five years once painted. The organotin compound used was tributyltin (“TBT”). By the 1970s, most ocean-going vessels had TBT painted on their hulls.²¹⁵

As a biocide in anti-fouling paint, it proved extremely effective at keeping the hulls of ships and boats smooth and clean.²¹⁶ However, it was quickly realized that there was high price to pay for the efficient anti-fouling paints containing TBT. TBT has been found to be the most toxic substance ever deliberately introduced into the marine environment by human beings.²¹⁷ This problem was further complicated by its long persistence in the marine environment as a stock pollutant.²¹⁸

Environmental studies provided ample evidence that organotin compounds persist in the water and sediments, killing marine life other than that attached to the hulls of ships and entering the food chain.²¹⁹ Specifically, TBT was shown to cause shell deformations in oysters; sex changes in whelks; and immune response, neurotoxic and genetic effects in other marine species.²²⁰ In the 1970s and 1980s, high concentrations of TBT in shellfish on the coast of France caused the collapse of commercial shellfisheries in at least one area, prompting many states to act and enforce some restrictions on the use of TBT in anti-fouling paints.²²¹

Studies have shown that TBT reduces resistance to infection in fish, such as flounder and other flatfish which live on the seabed and

²¹⁴ *Id.*

²¹⁵ *Id.* at 1.

²¹⁶ *Id.* at 5.

²¹⁷ S.M. EVANS, T. LEKSONO & P.D. MCKINNELL, *TRIBUTYLTIN POLLUTION: A DIMINISHING PROBLEM FOLLOWING LEGISLATION LIMITING THE USE OF TBT BASED ANTI-FOULING PAINTS*, 14, 30 *MARINE POLLUTION BULLETIN* (no.1 141995).

²¹⁸ IMO Knowledge Center, *supra* note 208, at 5.

²¹⁹ *Id.* at 1.

²²⁰ *Id.*

²²¹ *Id.*

are exposed to relatively high levels of TBT, especially around areas with silty sediments like harbors and estuaries.²²²

Scientists began to find increasingly high concentrations of TBT in areas with high concentrations of boats and ships, such as marinas, ports, and harbors.²²³ TBT contamination from boats was linked in the 1970s to high mortalities of oyster larvae and such severe malformations of the shells of adults that they were unmarketable in the west coast of France.²²⁴ In south-west England, TBT poisoning was linked to the decline of the population of the dog whelk in the 1980s.²²⁵ Studies showed that female dog whelks develop the condition known as imposex in response to TBT poisoning wherein females develop male sexual organs and become sterile.²²⁶ In the 1980s, high concentrations of TBT were reported in coastal areas around the world.²²⁷

There is unequivocal evidence worldwide that TBT and their organotin compounds were seriously harmful to aquatic organisms. As a result, many countries introduced controls to limit the use of TBT in the anti-fouling paint on small vessels.²²⁸ France prohibited the use of TBT based paints on ships less than 25 meters in length in 1982,²²⁹ and other countries followed suit.²³⁰ Japan imposed strict regulations on the use of TBT in anti-fouling paints in 1990 and prohibited the production of the chemical in 1997.²³¹ The AFC 2001 sought a total ban by 2008 on the use of such substances on the hull of vessels flying

²²² *Id.* at 7.

²²³ *Id.* at 6.

²²⁴ *Id.*

²²⁵ *Id.* (Cited in Bryan et al., *The Effects Of Tributyltin (TBT) Accumulation on Adult Dog-Whelks, Nucella Lapillus: Long-Term Field and Laboratory Experiments*, 67 J. OF THE MARINE BIOLOGICAL ASS'N OF THE U.K. NO.3 525-544 (2009)).

²²⁶ *Id.* at 6.

²²⁷ *Id.*

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Id.*

the flag²³² as well as on ships that enter its ports, shipyards, or terminals using the ports of participating parties.²³³

According to the AFC 2001,²³⁴ an anti-fouling system on the hull and other external parts of a ship must not contain organotin compounds.²³⁵ Ships that do have coating comprising organotin are required to have a barrier to prevent their leaching.²³⁶

In tidal beaching practices in South Asia, when the ship is beached and dragged further up the beach during the dismantling process, due to the effect of friction, the anti-fouling paint naturally scraps off from the hull of the vessel and mixes with the sand and surrounding environment in the turbulence of sea water.²³⁷ The entire ship is cut on the beach and scrap paint with rainwater and tidal water washes away.²³⁸ As a result, a significant amount of paint chips get mixed with the marine environment.²³⁹

²³² International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001 art. 3 (1) (a), Oct. 5, 2001, T.S. No. 13 1, 3 [hereinafter Int'l Anti-fouling Convention].

²³³ *Id.* art. 3(1) (C).

²³⁴ *Id.*

²³⁵ *Id.* at 3.

²³⁶ Adoption of the Final Act of the Conference and any Instruments, Recommendations and Resolutions Resulting from the Work of the Conference International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001, Annex I, IMO Doc. No. 26 1, 15 [hereinafter Int'l Anti-fouling Convention Adoption].

²³⁷ *How to prevent ship's corrosion by Application of Marine paints*, GENERAL CARGO.COM (210-2016), <http://www.generalcargoship.com/paint-application.html> (Noting that the paint system applied to any part of a ship will be dictated by the environment to which that part of the structure is exposed.) (Noting also the past maritime experience of the author as certified Marine Officer on board ocean going merchant vessels and direct first-hand experience while visiting 20 plus shipyards in Chittagong Bangladesh during May 2016 to August 2016.).

²³⁸ Interview with Md. Shahin, Coordinator in Bangladesh, NGO Ship-Breaking Platform, (Aug. 10, 2016).

²³⁹ Claus Nordahl et al., *Maersk and the Hazardous Waste*, DANWATCH, (Oct. 13, 2016), <https://old.danwatch.dk/en/undersogelse/maersk-and-the-hazardous-waste/> (Depending on the size ranging from 5,000 to 40,000-ton unladen weight a ship may contain ten to one hundred tons of paint in its hull. Noting also that there are no physical safeguards that can prevent this from happening. It is estimated that breaking a 10000-ton ship in an intertidal zone using torch cutting will release around 120 tons of molten steel and two or three tons of paint).

The AFC 2001 mandates overcoating of existing TBT²⁴⁰ paint with a sealer coat to reduce the leaching of biocides into the seawater, but this makes it very difficult to remove the bottom layer of TBT paint.²⁴¹ Cleaning these paints from a ship's hull before it is sent for beaching is an option, but the process is time consuming and expensive, involving silica sand and other blasting media in dry-dock.²⁴² Cleaning the ships involves divers using rotating brushes or high-pressure hoses.²⁴³ When ship-cutting takes place using gas torches without first cleaning of these paints from the surface of ship's hull, toxic gases are produced.²⁴⁴ The fumes produced from this source are incredibly harmful to the workers involved in cutting and others in the vicinity.²⁴⁵

VI. INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIP'S BALLAST WATER AND SEDIMENTS 2004

The international communities have in detail, addressed environmental concerns about heavy metals, PCB,²⁴⁶ asbestos and

²⁴⁰ *Id.* at 6-7 (Tributyltin or TBT is used as an antifouling agent in paints applied to boats and fishnets; its use on commercial vessels, pleasure craft and maricultural equipment has spread the compound widely within the marine environment. Dibutyltin or DBT is used as a polyvinyl chloride stabilizer and as a catalyst in some industrial processes (Maguire, 1987). TBT is hazardous to a wide range of marine organisms. Mariculture denotes the cultivation of marine organisms in their natural environment).

²⁴¹ PUTHUCHERRIL, *supra* note 55, at 130 (cited in comment submitted by India on the document MEPC 48/3, in Marien Environment Protection Committee 48th Session Agenda, Item 3 MEPC 48/3/2, 9 August. 2002, Sec 2.4 (KR-CON)).

²⁴² *Abrasive Blasting Hazards in Shipyard Employment*, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, US DEPARTMENT OF LABOR (Dec. 2006), https://www.osha.gov/dts/maritime/standards/guidance/shipyard_guidance.html.

²⁴³ *Id.* (Table 3).

²⁴⁴ Juho Vuori, *Environmental Impacts of Ship Dismantling*, Bachelor Thesis, TURKU UNIV. OF APPLIED SCIENCES (2013), 16, <https://core.ac.uk/download/pdf/38091096.pdf>.

²⁴⁵ PUTHUCHERRIL, *supra* note 55, at 130 (cited in *Recycling of Ships: Report of the Correspondence Group*, Submitted by the Coordinator of the Correspondence Group, IMO/MEPC 46/7, 18 January Sec. 7.1.6 (KR-Con)).

²⁴⁶ PCB, DICTIONARY.COM (2020), <https://www.dictionary.com/browse/pcb>. PCBs, or polychlorinated biphenyls, are industrial products or chemicals. PCB a family of highly toxic chemical compounds consisting of two benzene rings in which chlorine takes the place of

additional toxins and chemicals regularly released by ship-breaking.²⁴⁷ However, ballasting and de-ballasting²⁴⁸ of ocean-going ships threaten to wreak greater, although less acknowledged, havoc on marine biodiversity,²⁴⁹ at least according to the International Convention For the Control and Management of Ship's Ballasts Water and Sediment ("BMW Convention 2004"). Many ships on their last voyage carry cargos that are offloaded before they are taken to the recycling facility. Unless a vessel is fully loaded, it carries ballast water which is required to be stripped off before a ship proceeds to the beaching facility to reduce its draft as low as possible and ensure a successful beaching operation.²⁵⁰ It is important to reflect how the ballast water from EOL ships can cause a significant threat to the marine environment

Since the introduction of steel-hulled vessels around 120 years ago, water has been used as ballast to stabilize ships at sea.²⁵¹ Ballast water is pumped in, to maintain safe operating conditions throughout the voyage of a ship.²⁵² This practice reduces stress on the hull,

two or more hydrogen atoms: known to cause skin diseases and suspected of causing birth defects and cancer.

²⁴⁷ Emily Clemens, *The Deadly Toll of Shipbreaking*, MESOTHELIOMA (Apr. 28, 2014), <https://www.mesothelioma.com/blog/the-deadly-toll-of-shipbreaking/>.

²⁴⁸ Anish, *What is Ballasting and De-ballasting ?* MARINE INSIGHT (Nov. 8, 2019), <https://www.marineinsight.com/guidelines/what-is-ballasting-and-de-ballasting/> (Ballasting or de-ballasting is a process by which sea water is taken in and out of the ship when the ship is at the port or at the sea. The sea water carried by the ship is known as ballast water.).

²⁴⁹ International Convention for the Control and Management of Ships Ballast Water and Sediment art. 1.3, Feb. 13, 2004, I.L.M. 1, 4 [hereinafter BWM Convention] ("Ballast Water Management" means mechanical, physical, chemical, and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of Harmful Aquatic Organisms and Pathogens within Ballast Water and Sediments.).

²⁵⁰ Interview with Captain Anam Chowdhury, Master Mariner (UK) Beaching Master and Advisor, Bangladesh Ship Breakers Association (BSBA) (Aug. 4, 2016).

²⁵¹ *Ballast Water Management*, IMO (2020), <http://www.imo.org/en/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx>.

²⁵² BWM Convention art. 1.2, *supra* note 249, at 4 ("Ballast Water" means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship.).

provides transverse stability,²⁵³ improves propulsion and maneuverability, and compensates for weight changes in various loading and unloading stages of ships cargo and due to ongoing changes in fuel and water consumption.²⁵⁴

While ballast water is essential for the safe and efficient modern shipping operations, it may pose serious ecological, economic and health problems due to the multitude of marine species found therein including bacteria, microbes, small invertebrates, eggs, cysts and larvae of various species.²⁵⁵ During ballasting operations, millions of marine species are pumped along with the water into the ship's ballast tanks.²⁵⁶ As ships move from port to port, they take in water from one location and discharge it into the new environment at another part of the world. The transferred species may survive to establish a reproductive population in the host environment, becoming invasive, out-competing native species and multiplying into pest populations.²⁵⁷

The spread of invasive species is now recognized as one of the most significant threats to the ecological and the economic well-being of the planet.²⁵⁸ These species are causing enormous damage to the biodiversity and the valuable natural resources of the earth.²⁵⁹ Direct and indirect health effects are becoming increasingly severe and the damage to the environment is often irreversible.²⁶⁰ Quantitative data has shown that the rate of bio-invasions is continuing to increase at an alarming rate and new areas are being adversely affected at all times.²⁶¹

There is a vast global economic impact of invasive aquatic species ("IAS"). In late 2004, the GloBallast program – a cooperative initiative by the IMO, the Global environmental facility and the United Nations Development Program ("UNDP") undertook an initial study

²⁵³ *Transverse Stability, Part 1: Fundamentals*, NORDKYN DESIGN (2013-2020), <http://nordkyndesign.com/transverse-stability-part-1-fundamentals/> (Transverse stability is the ability of a vessel to resist and recover from heeling over. It important in the sense that this is what prevents a vessel rolling over and capsizing.).

²⁵⁴ *Ballast Water Management*, *supra* note 251.

²⁵⁵ *Id.*

²⁵⁶ *Id.*

²⁵⁷ *Id.*

²⁵⁸ *Id.*

²⁵⁹ *Id.*

²⁶⁰ *Id.*

²⁶¹ *Id.*

of the global economic impact of IAS.²⁶² The study revealed the current state of knowledge in relation to both direct economic impacts and the cost of responding to IAS.²⁶³ It estimated, the direct economic impact from all the current IAS might be of the order of US \$100 billion a year.²⁶⁴ The cost of responding was estimated at up to around four percent of the total global economic impact.²⁶⁵ Severe human health problems can also be caused by the transfer and spread of harmful aquatic organisms and pathogens, algae and bacteria in ships ballast water.²⁶⁶

In 1991, a cholera epidemic struck Peru, the first in Latin America for more than a century that was ultimately traced to ballast water carried from Bangladesh.²⁶⁷ Several million people were infected, and more than 10,000 people died.²⁶⁸ Over the next four years, Latin American governments poured more than US\$200 billion into emergency repairs of sewage and drinking water systems.²⁶⁹ Peru lost US\$1 billion in seafood exports and tourist income.²⁷⁰

The control of the alien species and the protection from its dangerous impact on human health and marine environment are

²⁶² Dandu Pughiuc, *Invasive Species: Ballast Water Battles*, SEAWAYS 5, (Mar. 2010), <http://www.imo.org/en/KnowledgeCentre/PapersAndArticlesByIMOSTaff/Documents/Invasive%20species%20by%20DP.pdf> (Noting that the direct economic impacts are the actual monetary cost caused by the species in their invaded environment, including loss from reductions in fisheries production, closure or reductions in aquaculture, physical impacts on coastal infrastructure (Fouling), decline in economy of shipping (Fouling) and closure of recreational and tourism business.).

²⁶³ *Id.* (Noting that the response cost determined by the survey were the cost incurred by the society in returning to the problem, including prevention control and eradication, research and monitoring, education and communication, compliance monitoring and enforcement and effort to develop new ballast water treatment technologies.).

²⁶⁴ *Id.*

²⁶⁵ *Id.*

²⁶⁶ BWM Convention art. 1.8, *supra* note 249, at 3 ("Harmful Aquatic Organisms and Pathogens" means marine microorganisms or pathogens which, if introduced into the sea including estuaries, or into freshwater courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas.).

²⁶⁷ PUTHUCHERRIL, *supra* note 55, at 132.

²⁶⁸ *Id.*

²⁶⁹ *Id.*

²⁷⁰ *Id.*

already covered as specific and general state obligations under UNCLOS,²⁷¹ and also under the 1992 Convention on Biological Diversity.²⁷² However, the need to precisely regulate the IAS, is considered to be the most dangerous environmental hazard on the planet. IAS discharged through ballast has now become a crucial issue.²⁷³

After more than 14 years of complex negotiations between the IMO Member States, the BWM Convention²⁷⁴ was adopted by consensus at a diplomatic conference held at IMO headquarters in London on February 13, 2004.²⁷⁵ The adoption of all the required guidelines for the uniform implementation of the BWM Convention and the approval and certification of modern ballast water treatment technologies have removed the significant barriers to the ratification of the instrument. Consequently the BWM Convention was entered into force recently on September 8, 2017.²⁷⁶ The convention has emphasized the precautionary principle and gives due and practical consideration to environmental benefit, technological achievability, and, most importantly, global equality.²⁷⁷

The BWM Convention imposes restrictions as to where a ship can exchange ballast water to meet the standard.²⁷⁸ The ballast water exchange standard contained in regulation D-1 requires ships to transfer a minimum of 95 percent ballast water volume in the open sea,

²⁷¹ UNCLOS arts. 196.1, 192, 194.1, 194.5, 195.2, *supra* note 59.

²⁷² Convention on Biological Diversity art. 8(h), 1992, U.N.T.S. 1, 6 [hereinafter CBD].

²⁷³ Pughiuc, *supra* note 262, at 5.

²⁷⁴ *Ballast Water Management - the control of harmful invasive species*, IMO, <http://www.imo.org/en/MediaCentre/HotTopics/BWM/Pages/default.aspx> (last updated 2020) [hereinafter *BWM IMO*] (The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted in 2004 to introduce global regulations to control the transfer of potentially invasive species. With the treaty now in force, ships need to manage their ballast water.).

²⁷⁵ *Id.*

²⁷⁶ *International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM)*, IMO (2018), [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships%27-Ballast-Water-and-Sediments-\(BWM\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships%27-Ballast-Water-and-Sediments-(BWM).aspx) [hereinafter *BWM Convention Adoptions*] (accessed 1 January 2018).

²⁷⁷ Pughiuc, *supra* note 262, at 6.

²⁷⁸ *BWM IMO*, *supra* note 274.

and the ballast water performance standard contained in regulation D2 requires that the ballast water discharge meets specific organism concentration below specified limits.²⁷⁹ Ballast water is to be exchanged at least 200 nautical miles from the nearest land and in water at least 200 meters in depth.²⁸⁰ Where the ship is unable to do this, the exchange can be conducted in areas at least 50 nautical miles from the nearest land and in water at least 200 meters in depth.²⁸¹

A number of technical methods based on active substances²⁸² and non-active substances have been devised for on-board treatment of ballast water and have been approved by the IMO.²⁸³ Active substances accomplish their intended purpose through action on aquatic organism and pathogens in ships ballast water and sediments.²⁸⁴ Alternative methods are also made available and in the process of development.²⁸⁵ These would introduce different environmentally sound methods including precautionary water uptake practice, mid ocean exchange methods, use of alternative discharge zone, retention of ballast water, use of reception facilities or a process of continuous flow-through of ballast water which would eliminate the need to use the traditional reserved ballast water in the tank.²⁸⁶ Such alternative design would not only significantly reduce the threat of invasive species but also displace the need for investment in ballast cleaning systems, address the problem of corrosion in ballast tanks and

²⁷⁹ IMO Res. MEPC.288(71), 2017 Guidelines for Ballast Water Exchange (G6), IMO, July 7, 2017 (referencing § 1.1) [hereinafter MEPC.288(71)]; BWB Convention § D, reg. D-1, *supra* note 249.

²⁸⁰ BWB 2004§ B, reg.B-4, *supra* note 249; MEPC.288(71) § 1.1.

²⁸¹ MEPC.288(71)§ 1.2, *supra* note 279.

²⁸² BWB 2004 § A, reg. A-1, cl. 7, *supra* note 249 (“active substance” means a substance or organism, including a virus or a fungus, that has a general or specific action on or against harmful aquatic organisms and pathogens).

²⁸³ *Table 1: List of ballast water management systems that make use of Active Substances*, IMO (2017), <http://www.imo.org/en/OurWork/Environment/BallastWaterManagement/Documents/Table%20of%20BA%20FA%20TA%20updated%20August%202017.pdf> (last visited 4 March 2018).

²⁸⁴ Pughuic, *supra* note 262, at 6.

²⁸⁵ *Ballast, Updated Alternate Management Systems for Ballast Water Treatment*, SAFETY4SEA (June 27, 2013), <https://safety4sea.com/updated-alternate-management-systems-for-ballast-water-treatment/>.

²⁸⁶ *What is Ballast Water?*, YOUTUBE (Nov. 24, 2016), <https://www.youtube.com/watch?v=Sr2nCvOdGvE>.

reduce the loading and discharging time in port.²⁸⁷ However, since the convention has only recently come into force, it is predicted that implementation of these new management systems would take several decades for the ocean-going ships to be equipped.²⁸⁸

Under the 2003 IMO Guidelines, it is the responsibility of the shipowners to follow the international regulations required for ballast before the ship is delivered to the beaching facility.²⁸⁹ As the guidelines are non-mandatory, it is up to the discretion of the shipowners to follow it. However, the recent enforcement of the BWM Convention would impact on the current practice of de-ballasting operations close to the beaching facility.

VII. INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS

Sustainability of the ocean environment is vital to preserve irreplaceable natural resources. Yet all kinds of waste, including foodstuffs, packaging materials, timber, ship's gear or damaged cargo, have been routinely discharged overboard.²⁹⁰ More recently, oils, chemicals, toxic substances, plastic debris and various other materials which may float in water and are not biodegradable in the marine environment have begun to be similarly discharged.²⁹¹ Many of these are forever chemicals or stock pollutants and remain in the atmosphere persistently for several thousand years or more.²⁹² Vast volumes of

²⁸⁷ GALLEY, *supra* note 56, at 76.

²⁸⁸ *Id.*

²⁸⁹ 962(23) *IMO guidelines on ship recycling (A.980(24))*, HUMAN ENVTL. AND TRANSPORT INSPECTORATE (2005), 19, https://puc.overheid.nl/nsi/doc/PUC_1362_14/2/ (follow "Maakeen PDF" hyperlink) (referencing art. 8.3.3.5).

²⁹⁰ John R. Lethbridge, *MARPOL 73/78 (Int'l Convention for the Prevention of Pollution from Ships)*, INFRASTRUCTURE NOTES TRANSP., WATER AND URB. DEV. DEP'T THE WORLD BANK, (1991), <http://siteresources.worldbank.org/INTTRANSPORT/Resources/336291-1119275973157/td-ps4.pdf> (last visited July 5, 2017).

²⁹¹ *Id.*

²⁹² *Id.* (Noting that persistent organic pollutants (POPs), sometimes known as "forever chemicals" are organic compounds that are resistant to environmental degradation through chemical, biological, and photolytic processes.).

such materials from the operational discharges of ships can still be found on the world's coastlines.²⁹³

The International Convention for the Prevention of Pollution from Ships ("MARPOL") is the principal international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.²⁹⁴ The convention was adopted on November 2, 1973 at IMO with its six separately enforced annexes covering pollution by oil,²⁹⁵ pollution by noxious liquid substances in bulk,²⁹⁶ pollution by harmful substances carried by sea in packaged form,²⁹⁷ pollution by sewage,²⁹⁸ pollution by garbage,²⁹⁹ and air pollution from ships.³⁰⁰

MARPOL applies to oil tankers, cruise ships, general cargo and container vessels, tugs, ferries, yachts and small pleasure craft.³⁰¹ The objective of the convention is to reduce the volumes of harmful materials connected with ship's operations entering the world's ocean and the marine environment.³⁰² MARPOL requires that countries provide adequate reception facilities in all of their ports, harbors and

²⁹³ *Id.*

²⁹⁴ *Office of Commercial Vessel Compliance (CG-CVC) International Convention for the Prevention of Pollution by Ships - MARPOL 73/78*, U.S. COAST GUARD U.S. DEP'T OF HOMELAND SECURITY, <https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance/Domestic-Compliance-Division/MARPOL/>.

²⁹⁵ *Int'l Convention for the Prevention of Pollution from Ships (MARPOL)*, IMO (2020), [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx) [hereinafter MARPOL Convention Amendments] (citing Annex I, Oct. 2, 1983).

²⁹⁶ *Id.* (citing Annex II, (Oct. 2, 1983)).

²⁹⁷ *Id.* (citing Annex III, (July 1, 1992)).

²⁹⁸ *Id.* (citing Annex IV, (Sept. 27, 2003)).

²⁹⁹ *Id.* (citing Annex V, (Dec. 31, 1988)).

³⁰⁰ *Id.* (citing Annex VI, (May 19, 2005)).

³⁰¹ Lethbridge, *supra* note 290.

³⁰² *Id.* at 2 (There are four basic categories of ship-generated wastes: Oily waste. Usually, some oil mixed with much larger quantities of sea water, but also fuel residues and sludge, Chemicals. Noxious liquid substances carried in bulk in parcel tankers, dry bulk carriers or portable containers, Sewage; Generated by passengers and crew, Garbage; Originating from the crew and passengers, the maintenance of the ship, cargo and fishing activities.).

anchorage facilities.³⁰³ The reception of oily wastes and residue from vessels requires a facility that can remove the water from the received waste and then dispose of the resulting oils.³⁰⁴

Oily wastes are processed in an adjacent refinery where they are separated from the water, and the remains are sent for disposal.³⁰⁵ Usually, the sewage and garbage are integrated into their land-based system.³⁰⁶ However, not all developing countries have organized systems to dispose of these types of waste in an environmentally sound manner.³⁰⁷

Cost recovery is another issue. To make the system efficient and reduce the risk of the ship discharging wastes at sea, some scholars have suggested that the waste reception facilities should be perceived by the ship operators as a free service or an integral part of port fees.³⁰⁸ The lack of such a system has made the enforcement of the convention difficult.³⁰⁹ MARPOL has been the catalyst for reforming ship recycling practices through its timetable to phase-out single hull vessel.³¹⁰ Under the revised Regulation 13G annex I to MARPOL, the final phase-out date for category one tanker (Pre –MARPOL tankers) was brought forward to 2005 from 2007.³¹¹ The final phase-out date for category two and three tankers (MARPOL tanker and smaller tankers) was also brought forward to 2010 from 2015.³¹²

IMO Guidelines and the Hong Kong Convention require EOL ships to prepare a list before the vessel is delivered to the SRF for recycling, keeping an inventory of hazardous materials.³¹³ Part II of the list includes operationally generated waste.³¹⁴ MARPOL requires

³⁰³ MARPOL Convention Amendments, *supra* note 295

³⁰⁴ Lethbridge, *supra* note 290, at 2.

³⁰⁵ *Id.*

³⁰⁶ *Id.*

³⁰⁷ *Id.* at 3 (It has been noted that in some developing nations land-based disposal system includes discharging waste into the sea such as Manilla, Philippine.).

³⁰⁸ *Id.*

³⁰⁹ *Id.*

³¹⁰ *Construction Requirements for Oil Tankers - Double Hulls*, IMO (2020), <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/OilPollution/Pages/constructionrequirements.aspx>.

³¹¹ *Id.* at 4.

³¹² *Id.* at 5.

³¹³ HKC reg. 24, *supra* note 14.

³¹⁴ *Id.* reg. 5.4.

states to have sufficient reception facilities to discharge oily wastes and residues at oil loading terminals, repair port and other ports.³¹⁵ This obligation has been extended to all ports having ship repair yards and tank cleaning facilities.³¹⁶ MARPOL did not, however, mention the term, ‘ship recycling facility,’ except in Regulation 17(1) (c) that deals with the requirement to have ozone-depleting substances at the ship recycling facility.³¹⁷ This seems to be an omission and there should be no reason not to extend this Annex I obligation to the ship recycling facilities given the EOL ship contains necessarily all such oily wastes contemplated by MARPOL and in most cases in a higher degree than an operational vessel. Moreover, all those oily wastes and residues are generated while the ship was in operation.³¹⁸ It is vital to figure out whether these open beach recycling facilities which are not part of an integral part of harbor system would be considered within the legal definition of port or not.³¹⁹ There appears to be controversy in this area.³²⁰ There are nearly 150 beach breaking facilities registered in both in India and Bangladesh³²¹ To set up and manage the reception facilities as required by Annex I of MARPOL, in all those beach

³¹⁵ Lethbridge, *supra* note 290, at 2.

³¹⁶ International Convention for the Prevention of Pollution from Ships, 1973 reg. 12.2 (c), Annex I, Oct. 8, 1973, IMO [hereinafter MARPOL].

³¹⁷ *Annex VI- Regulations for the Prevention of Air Pollution from Ships*, MARPOLTRAINING.COM, http://www.marpoltraining.com/MMSKOREAN/MARPOL/Annex_VI/r17.htm (MARPOL Reg. 17(1) (c)).

³¹⁸ GALLEY, *supra* note 56, at 74.

³¹⁹ Chowdhury, *supra* note 250 (Beaching facilities in ‘Shitakundu’ are almost 25 km away from the Chittagong Port area.).

³²⁰ *Id.* (It is claimed by the industry of ship recycling of Bangladesh that the beaching areas of Shitakundu, Chittagong are outside the Chittagong Port Area. Also, there is a clear difference between the ‘Port Authority’ as an entity and the ‘Port State Authority’ and their responsibility. The Port State Authority is the National Maritime Administration of Bangladesh. It appears that the MARPOL imposes an obligation upon the Government to implement these rules on reception facility at the port and repair facilities within the port only. Regarding port, it is mentioned in UNCLOS art. 11 that, to delimit the territorial sea, the outermost permanent harbor works which form an integral part of the harbor system are regarded as forming part of the coast. Off-shore installations and artificial islands shall not be considered as permanent harbor works. It is unlikely that the beaching facilities in Chittagong would be considered as permanent harbor works.).

³²¹ *Dirty and dangerous shipbreaking in Chittagong, Bangladesh*, EJATLAS.COM (Mar. 24, 2020), <https://ejatlas.org/print/dirty-and-dangerous-shipbreaking-in-chittagong>.

breaking yards, would likely pose an intractable challenge for these developing countries. It is noted that these nations to date could not even ensure a basic set up to collect and process those oily wastes in their limited number of traditional port facilities used by the foreign ocean-going vessels.³²²

CONCLUSION

The above discussion suggests that a considerable number of international instruments are available to be applied to the activities of ship-breaking but that none of the instruments address the issue in a comprehensive manner. There are many areas of concern in ship-breaking activities such as allocation of responsibility of the stakeholders, duty of shipowners, duty of the cash buyers;³²³ the intermediary between shipowners and the ship recyclers, duty of ship recyclers, responsibility of the government of the recycling states, exporting states, procedure of the import of ships, procedure of ship recycling, and disposal of waste generated from the recycling of end of life ships. These are not addressed in any international legal instruments discussed above. Collectively, however, these instruments offer some piecemeal solutions to the problem. As an umbrella legislation, UNCLOS covers the subject but in much broader terms. Any specific violation, by any stake holder, would probably be difficult to establish using UNCLOS. The HKC is a purposefully built international legal instrument to govern ship recycling in a comprehensive manner, but its exceedingly pro-business character³²⁴ has created a great uncertainty about its timely ratification. On the other hand, as a convention governing the cross-border movement of hazardous waste, jurisdiction under the Basel Convention severely

³²² *List of Ports in Bangladesh*, SEA ROUTES (Mar. 24, 2020), <https://www.searoutes.com/country-ports/Bangladesh>; *Chittagong Port Authority*, CPA (Mar. 24, 2020), <http://www.cpa.gov.bd/> (The maximum permissible draught in the biggest port of the country, Chittagong is only from 8.5 to 9.2 meters.); USDA FOREIGN AGRIC. SERVES, GAIN REP., REP. NO. BG 6001 2 (2016), https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Chittagong%20Port%20Overview%20and%20Other%20Inland%20Transportation_Dhaka_Bangladesh_1-22-2016.pdf (accessed 4 July 2017).

³²³ Ahmed, *supra* note 49, at 424 (Cash buyers purchase vessels with 100% cash from shipowners and then sell the vessel to a recycler in any one of the ship-recycling countries.).

³²⁴ Ahmed, *supra* note 45.

restricts the movement of EOL ships proceeding to the recycling yards in another jurisdiction.³²⁵ Overwhelming support exists in asserting that the convention does not govern movement of EOL ships at sea, but only governs the hazardous substances when they are separated from ship's structure after recycling at a ship recycling facility.³²⁶ Ship-breaking is inherently and by necessity a global industry,³²⁷ but comprehensive and prompt solution to this controversial activity does not seem to be very straightforward or likely to occur anytime soon.

³²⁵ Ahmed, *supra* note 49, at 423-24.

³²⁶ *Id.* at 420.

³²⁷ Ahmed, *supra* note 45.