HUMAN RIGHTS & THE OCEAN

SHIPBREAKING AND TOXINS

Schmidt, R. 2012, Pakistan.

ABSTRACT: *Many environmentally destructive activities entail serious damage to the human beings who perform the activities and to their families and neighbors. Mining and agriculture are two large scale industries where the welfare of workers, the environment in which they work and live, and the practices to which they are subjected can be considered not only harmful, but a fundamental violation of both historic human rights frameworks and recent integration of environmental and human rights in international agreements. The well-being of the who work in the shipbreaking industry may be less well known. The practice of shipbreaking – the dismantling of oceangoing commercial vessels – inflicts serious harms on the shoreline environments where the dismantling occurs, on the deeper ocean ecosystems that border the shorelines, and on the human beings who do the work or live nearby. Shipbreaking is the immediate cause of massive losses of coastal vegetation, chemical pollution of the oceans, critical food species extinction, and the bio-accummulation of dangerous toxins in a broad spectrum of species, humans included. Less than ten percent of all the shipbreaking operations in the world comply with minimal environmental, labor, and human-health standards. The harm to ocean environments and to human communities would be mitigated by enforcement of existing standards and remediation and improvement of harmful operations.*

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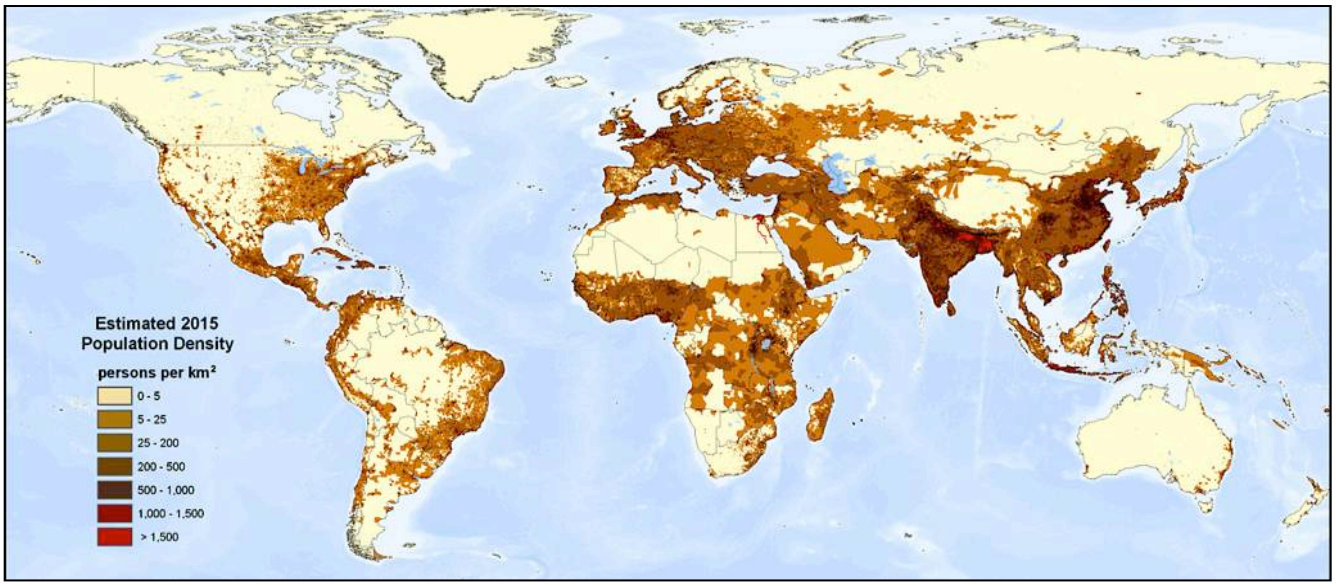
INTRODUCTION:
THE IMPORTANCE OF THE OCEAN

Covering over 71 percent of the planet and holding 97 percent of its water, the global ocean is the foundation for life on Earth.[1] Eighty percent of life is found in seawaters.[2] All life is supported by the sea. As the great absorber of carbon dioxide and a primary producer of oxygen, the ocean is responsible for regulating global climate and weather systems.[3] However, the supply of clean air, the absorption of our emissions, and the generator of life giving rain are not the only reasons humans depend on the ocean.

Since the beginning of civilization, humans have flocked to the ocean for nourishment, livelihood, trade, and adventure. Today, one in two people live within 100 kilometers of the coast, and an estimated 350 million rely on fishing, aquaculture, coastal and marine tourism, and research for a living.[4]



Maps on the Web. Estimated 2015 Population Density

[1] Herr, D., Isensee, K., & Turley, C. (2013). Overview of the international policy landscape and activities on ocean acidification. International Atomic Energy Council. Retrieved from https://www.iaea.org/ocean-acidification/download/OA Policy white paper_final.pdf
[2] Spalding, M. (2014). Mapping Ocean Wealth. The Nature Conservancy. Retrieved from http://www.nature.org/ourinitiatives/habitats/oceanscoasts/mapping-ocean-wealth-white-paper-pdf.pdf
[3] Hoegh-Guldberg, O. et al. (2015). Reviving the Ocean Economy: the case for action-2015. WWF International, Gland, Switzerland., Geneva, 60 pp. Retrieved from http://www.unep.org/NairobiConvention/docs/Reviving_Ocean_Economy_REPORT_low_res.pdf.
[4] The World Bank. (2014, April 12). Sustainable Development - The Living Oceans. Retrieved from http://go.worldbank.org/A2MYFIUQM0

The ocean and coasts are key drivers not only of local coastal economies, but also of national and global economies. Thousands of ships ply our ocean transporting goods, people, and raw materials from one port to another. In 2014 alone, fisheries contributed over $100 billion to the global economy.[5] The importance of the ocean cannot be overstated, especially when it comes to developing countries. Of the people who derive livelihoods from fishing, 90 percent live in developing countries.[6] With the fish trade in developing counties valued at $25 billion per year, more than twice the value of trade in coffee, fish have come to represent these countries' most significant traded food product.[7] Moreover, at least one billion people in developing countries depend on fish for their primary source of protein.[8] Unfortunately, it is exactly these same countries, which depend so heavily on the ocean and all of its remarkable goods and services, that are experiencing the brunt of its degradation. The more the world's waters are exploited and degraded at the hand of man, the more it is apparent that the ocean's fate is intertwined with that of mankind— that the fulfillment of fundamental human rights is dependent upon the continued health of the waters that bind all things.

ABOUT OCEAN POLLUTION

So vast and so powerful, the ocean seemed to exist out of the realm of human control or influence. Historically, people felt they could never take too many natural resources out of, or put too much waste into, the world's ocean. This centuries-old belief is undermined by increasing evidence that human activities have taken a devastating toll on the health of the very waters they depend on. A combination of the sheer number of people who use and depend on the ocean and the innumerable unsustainable practices people have and continue to adopt has bred a plethora of problems that plague the ocean on a global scale. Overfishing, pollution, climate change, habitat loss, and ocean acidification stress the world's ocean systems.

Because civilization naturally developed along coastlines, adjacent marine ecosystems suffer disproportionately from extensive habitat loss. In fact, as a consequence of growing coastal population hubs, over 20 percent of coral reefs, 35

Marine pollution defined:
"The introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water, and reduction of amenities."
United Nations Convention on the Law of the Sea, 1982.

[5] Spalding, M. (2014). Mapping Ocean Wealth.
[6] The World Bank. (2014, April 12). Sustainable Development - The Living Oceans. Retrieved from http://go.worldbank.org/A2MYFIUQM0
[7] Ibid.
[8] Ibid.

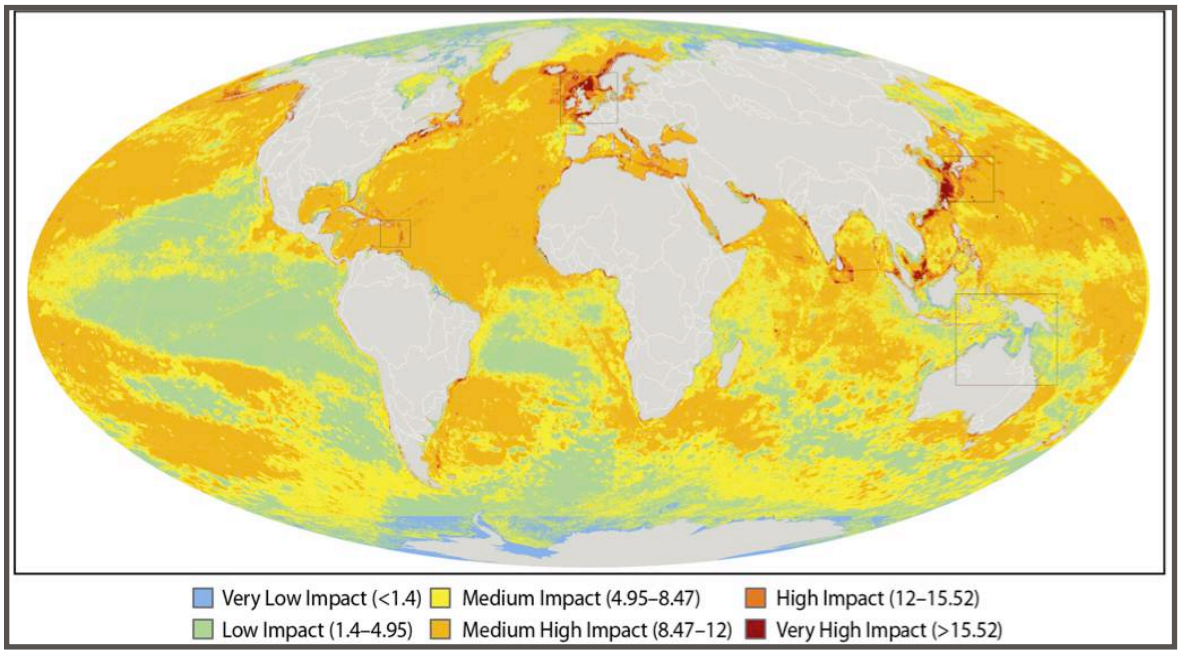
percent of global mangroves, and 30 percent of sea grass beds have already been destroyed— most of the remaining portions are severely threatened.[9] In addition to appropriating surrounding habitats to effectively eradicate existing and important ecosystem services, development concentrates human activities, their byproducts, and thus, their consequences on natural systems.

Viewing the ocean as endless, people from every corner of the Earth dumped their waste to be washed away with the tides or carried it far offshore from where they lived. Little did they realize, there was no 'away.' Centuries of garbage, sewage, hazardous materials, and other waste have flowed through the world's waterways only to accumulate in bottom sediments, or in five swirling gyres where ocean currents meet. Too late did people realize that the byproducts of manufacturing, global extraction activities, and the industrialization of agriculture were harming the balance of the systems on which we depend— with the most extreme symptoms being lifeless areas on land and sea, suffocating algae blooms, nutrient-lacking produce, and toxin-infested organisms.[10]

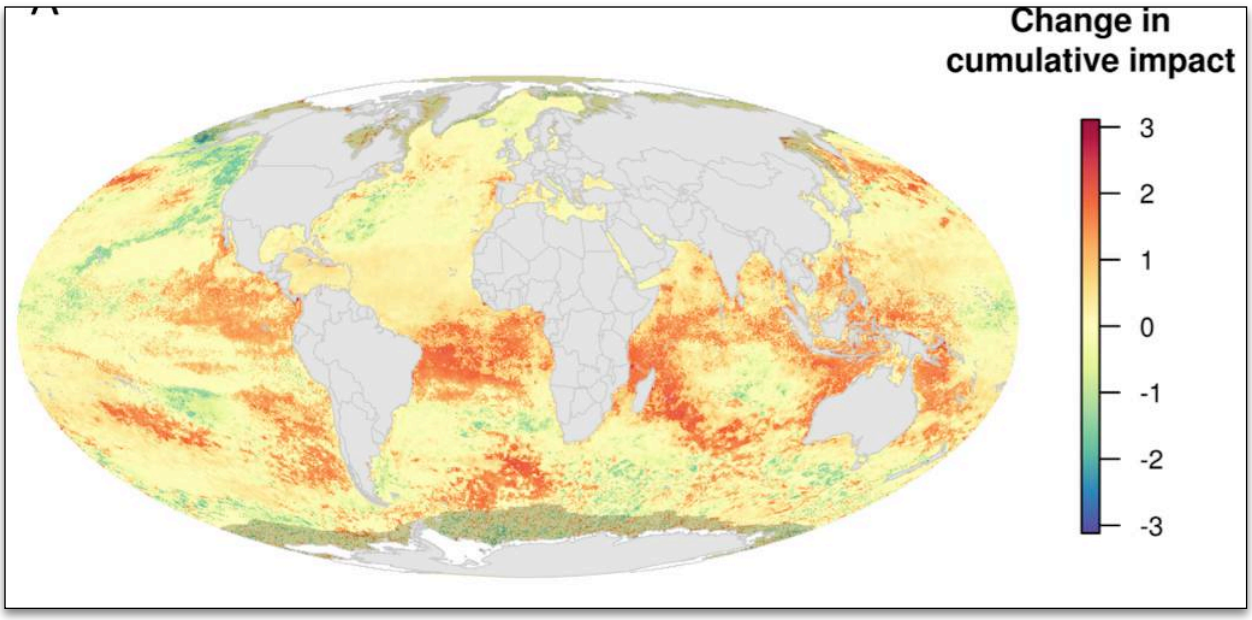
As human activities evolved and spread, the capacity and scope of those activities to affect the global ocean also expanded. Not one drop of water has escaped the taint of pollution, whether it be from industrial, agricultural, or urban processes. In fact, a July 2015 study published by the University of California, Santa Barbara revealed that 66 percent of the ocean has been subjected to increased human activities over the last five years, with five percent being "heavily impacted."[11] Less than 10 percent of the oceans have experienced relatively low levels of impact.[12]

[9] The World Bank. (2014). Sustainable Development - The Living Oceans.
[10] Halpern, B. et al. (2015, July 14). Spatial and temporal changes in cumulative human impacts on the world's ocean *Nature Communications* 6 (7615).
[11] Ibid.
[12] Revkin, A. (2008, February 26). Human Shadows on the Seas. The New York Times. Retrieved from http://www.nytimes.com/2008/02/26/science/earth/26coas.html

Human Impact on Global Ocean 2008, Halpern et. al.



Areas Exhibiting Change in Human Impact 2008-2015, Halpern et al. 2015



POLLUTION AS A HUMAN RIGHTS ISSUE

Article 3. Everyone has the right to life, liberty and security of person.

A healthy, productive ocean is essential for maintaining food security, sustainable livelihoods, and overall quality of life on Earth. Pollution cripples the ocean's ability to provide its incalculable services and resources.

In 1948, the United Nations adopted the **Universal Declaration of Human Rights**, which consists of 30 articles that outline the basic rights to which every human being is inherently entitled. While the declaration is not legally binding, it represents the first global expression of fundamental human rights and has been accepted widely throughout the world.

United Nations, 1948. Universal Declaration of Human Rights.

Pollution compromises the fundamental human rights to a safe food supply, to health, and to security of person. While it is true that when the ocean suffers, everyone suffers, people in developing countries often bear most of the burden, being the least equipped to deal with pollution and all of its related problems. Characterized by continued environmental mismanagement, extensive resource exploitation and strain, an underdeveloped industrial base, and an overall low Human Development Index (HDI), low-income coastal counties have limited coping capacity to prevent or mitigate ocean pollution. According to the United Nations Commission for Human Rights, pollution in soil, air, and water causes an estimated 13 million deaths per year and is responsible for around one quarter of the global burden of disease.[13] That's over four times more deaths than those caused by malaria, tuberculosis, and HIV/AIDS combined. Ergo, pollution is the leading cause of death in low- and middle- income countries.[14]

A polluted ocean translates to heightened human health risks and diminished opportunities for socio-economic growth, and jeopardizes the right and ability of future generations to thrive. And, when individual nations choose to export the toxic consequences of their own activities, the burden is shifted to less capable communities, where the short and long term consequences will be borne by the most vulnerable. Thus, protecting the ocean's health means supporting the fulfillment of basic human rights everywhere.

[13] Celaya, X. (Ed.). (2015, May 20). More efforts needed to protect people from exposure to toxic substance- UN experts urges WHO. Retrieved from http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=15983&LangID=E

[14] Ibid.

World Shipping Council. ***Container Ship.***

POLLUTION & THE SHIPPING INDUSTRY

Since as early as 50,000 BC, humans have taken to the sea to quench their hunger and curiosity. Technological advancements enabled humans to travel further and further from land, opening the portal for faster and broader communication and trade between nations, along with the potential for more widespread environmental impact. While the transport of goods by sea represents a host of potential benefits from more energy efficient transport, shipping also poses environmental challenges: Air, water, and noise pollution and habitat loss among them.

Part of that is the sheer scale of the industry from construction to use to disposal. Viewed as the most cost-effective way to move en masse goods and materials around the planet, the shipping industry has established itself as a key driver of the global economy.[15] Over the last few decades, the shipping industry has grown exponentially— both in number and in physical size of the ships.

In the 2014 *Review of Maritime Transport*, the United Nations reported that following an annual growth of 4.1 percent in 2013, the global liner[16] vessel fleet reached a total of 1.69 billion deadweight tons (dwt[17]) by the start of 2014.[18] In a breakdown of the total tonnage, bulk carriers accounted for 42.9 percent, oil tankers for 28.5 percent, and container ships for 12.8 percent.[19] There are also a diverse array of seafood factory ships, trawlers, and other specialty

[15] International Chamber of Shipping. (2014). Shipping, World Trade and the Reduction of CO2 Emissions. United Nations Framework Convention on Climate Change (UNFCCC). Retrieved from http://www.ics-shipping.org/docs/default-source/resources/environmental-protection/shipping-world-trade-and-the-reduction-of-co2-emissions.pdf?sfvrsn=6

[16] Liner shipping refers to the transport of goods by means of high-capacity, ocean-bound vessels that transit regular route on timed schedules

[17] Deadweight tonnage (dwt) indicates the carrying capacity of a ship in tonnes

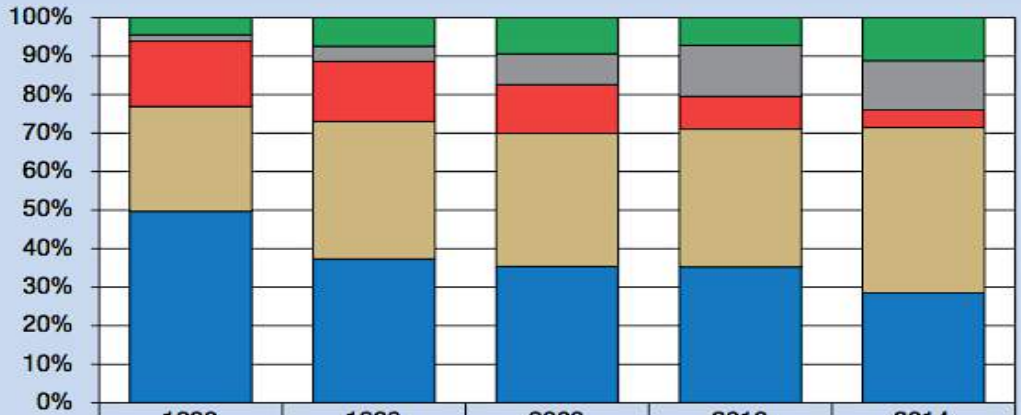
[18] Hoffmann, J., Juan, W., Rubiato, J. et al. (2014). Review of Maritime Transport 2014 (J. Rogers, Ed.). United Nations Conference on Trade and Development. Retrieved from http://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf

[19] Ibid.

vessels navigating ocean waters today. Not only are more ships being built, but also, ships are being made to carry more per voyage and with less fuel required.

VESSEL CLASSIFICATION *SOURCE: Review of Maritime Transport 2014*			
CONTAINER SHIPS	**BULK CARRIES**	**TANKERS**	**SPECIALIST SHIPS**
carry most of the world's manufactured goods/products, usually through scheduled liner services	the work horses of the fleet; transport raw materials like iron ore and coal	transport chemicals, petroleum products, and crude oil	includes anchor handling and supply vessels for offshore oil, salvage tugs, ice breakers, and research vessels

Figure 2.2. World fleet by principal vessel types, 1980–2014 (Beginning-of-year figures, percentage share of dwt)



	1980	1990	2000	2010	2014
Other	4.5	7.5	9.4	7.2	11.2
Container	1.6	3.9	8.0	13.3	12.8
General cargo	17.0	15.6	12.7	8.5	4.6
Dry bulk	27.2	35.6	34.6	35.8	42.9
Oil tanker	49.7	37.4	35.4	35.3	28.5

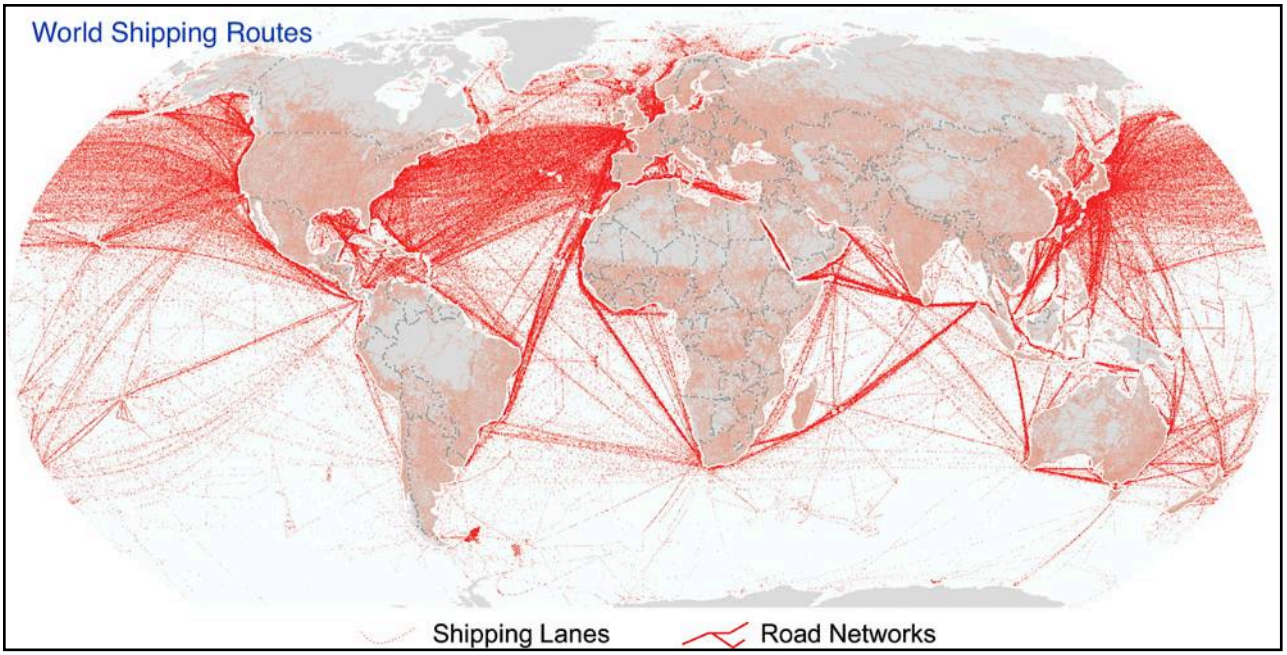
Source: Compiled by the UNCTAD secretariat, on the basis of data supplied by Clarkson Research Services and previous issues of the *Review of Maritime Transport*.

Note: All propelled seagoing merchant vessels of 100 GT and above, excluding inland waterway vessels, fishing vessels, military vessels, yachts, and offshore fixed and mobile platforms and barges (with the exception of FPSOs and drillships).

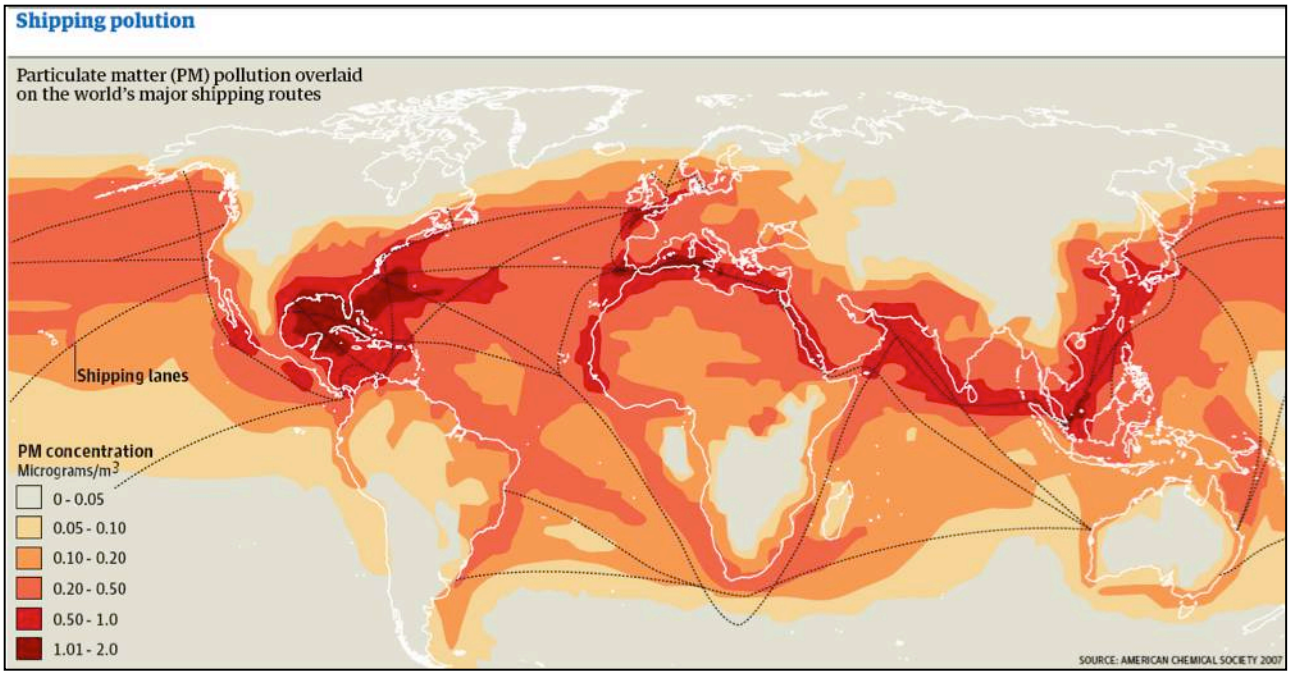
Take container ships, for example. At 52 percent, container ships represent the greatest value in world seaborne trade.[20] According to the World Shipping Council, there are over 5,000 container ships currently in the global fleet and 445 new vessels on order. From 1976 to 2015, container ships have grown in carrying capacity from just 1,500 Twenty-foot Equivalent Units (TEU[21]) to over 12,000 TEU.[22] Some container ships on order will be capable of carrying 18,000 TEU.

As the world's liner vessel fleet grows, so does its potential to be both the most cost-effective and environmentally conscious way to transport goods around the Earth. Unfortunately, the shipping industry of today can seem to do more harm than good. Smokestacks tirelessly pumping exhaust, destructive port dredging and pier construction, accidental groundings resulting in cargo and fuel oil spills, the assisted spread of invasive species, deadly collisions with marine mammals, chronic noise pollution from propellers churning, as well as the discharged ballast, grey, and black water— ships have undeniably made their mark on the planet's environments.[23]

[20] Hoffmann, J., et al. (2014). Review of Maritime Transport 2014.
[21] Twenty-foot Equivalent Unit (TEU) is the standard container used to transport goods worldwide, 20x8x8 feet
[22] World Shipping Council - Partners in Trade. (2015). Retrieved from http://www.worldshipping.org/
[23] Gerostergiou. (n.d.). What is Shipbreaking? Retrieved from http://digilib.lib.unipi.gr/dspace/bitstream/unipi/4633/1/Gerostergiou.pdf



Human Impact on Global Ocean 2008, Halpern et. al.



Developing countries are becoming more and more active in the maritime transport industry. In 2013, developing and transition economies made up 66.6 percent of goods loaded and 61.4 percent of goods unloaded by world seaborne trade.[24] This is a reflection of developing countries' growing participation in global trade networks along with their rising demand for raw

[24] Hoffmann, J., et al. (2014). Review of Maritime Transport 2014.

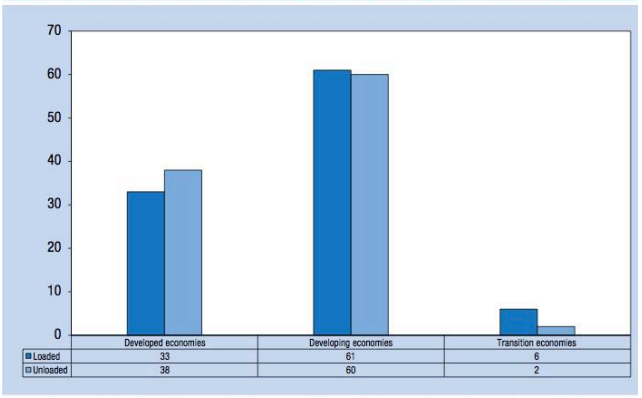
commodities and commercial goods, as their populations expand and urbanize.[25] Another factor behind developing countries' growing presence in maritime trade may be the fact that the more stringent regulations in developed countries has made the low taxes, limited enforcement, and flexible operating standards of developing countries a more appealing place to conduct business.

In 2014, the flags of registration for the top five largest fleets (dwt) are those of Panama (21.21 percent of the total world fleet), Liberia (12.24 percent), the Marshall Islands (9.08 percent), Hong Kong (8.24 percent), and Singapore (6.17 percent). Together, these five registries account for roughly 57 percent of world tonnage.[26]

As of 2014, the five largest ship-owning countries are Greece, Japan, China, Germany and the Republic of Korea. Together, these five countries own 58.5 percent of the tonnage delivered over the last five years.[27]

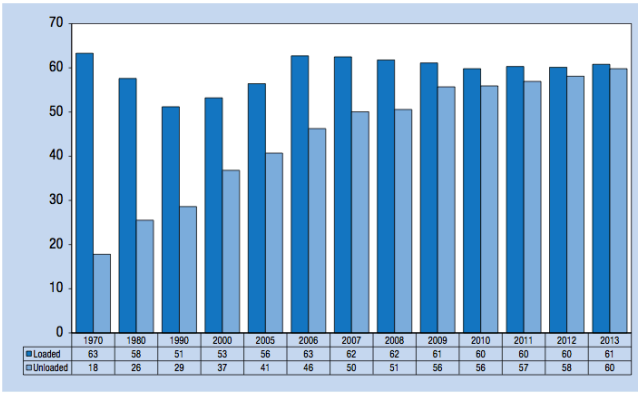
The discrepancies between the top countries owning ships and the top countries registered for ships are mainly due to increase number of ships flying a "Flag of Convenience" (FOC). Historically, a ship would fly the same flag as the nationality of its owner to indicate its country of origin.[28] Whichever nation's flag a ship is registered under, it is required to abide by the laws and regulations of that country.

Figure 1.3 (a). World seaborne trade, by country group, 2013 (Percentage share in world tonnage)



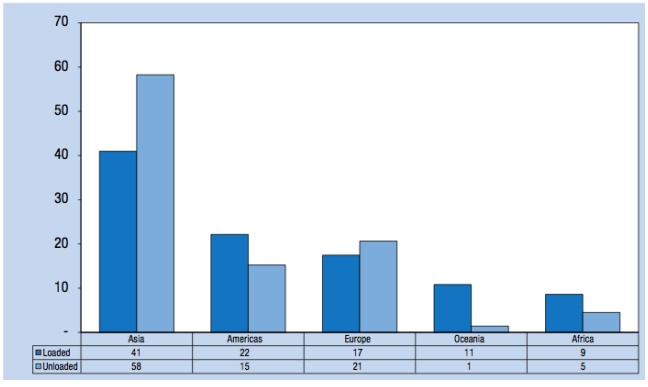
Source: Compiled by the UNCTAD secretariat on the basis of data supplied by reporting countries and as published on the relev government and port industry website, and by specialist sources. Estimated figures are based on preliminary data or on last year for which data were available.

Figure 1.3 (b). Participation of developing countries in world seaborne trade, selected years (Percentage share in world tonnage)



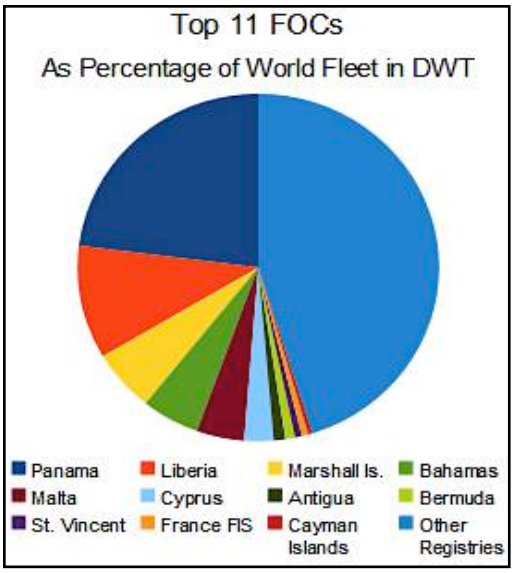
Source: UNCTAD *Review of Maritime Transport*, various issues.

Figure 1.3 (c). World seaborne trade by geographical region, 2013 (Percentage share in world tonnage)



Source: Compiled by the UNCTAD secretariat on the basis of data supplied by reporting countries and as published on the relevant government and port industry websites, and by specialist sources. Estimated figures are based on preliminary data or on the last year for which data were available.

[25] United Nations. (2013). Recent developments and trends in international maritime transport affecting trade of developing countries. United Nations Conference on Trade and Development, 5th session. Retrieved from http://unctad.org/meetings/en/SessionalDocuments/cid30_en.pdf
[26] Hoffmann, J., et al. (2014). Review of Maritime Transport 2014.
[27] Ibid.
[28] Ibid.



Haus, 2010.

An FOC is the practice of registering a ship in a country different from that of the ship's owner and is typically done to reduce operating costs or avoid the regulations of the true country of origin.[29] Today, approximately 73 percent of the world fleet flies a FOC.[30] Consequently, developing countries, with their minimal regulations and cheap operating costs, account for over 75 percent of the global fleet registration.[31] In fact, more than 81 percent of the world's dry-bulk fleet is registered in developing countries.[32]

The flags of Panama, Liberia, and the Marshall Islands account for the greatest percentage of the global shipping capacity because they are the three largest

Ship breaking yards from above. (Google Maps, 2015).

[29] Kateshiya, G. (2015, January 14). Japan pushes for ratification of Hong Kong Convention, ship recyclers agree. The Indian Express. Retrieved from http://indianexpress.com/article/cities/ahmedabad/japan-pushes-for-ratification-of-hong-kong-convention-ship-recyclers-agree/

[30] Hoffmann, J., et al. (2014). Review of Maritime Transport 2014.

[31] Ibid.

[32] Ibid.

"open registry" nations.[33] The open registry system has created a myriad of ways to disguise the true origin of a vessel and its owner and has made it easier for the shipping industry to exploit both the ocean's resources and poor developing countries. While ships can cause a lot of harm in their lifetime, they can cause even more damage when it comes time to dispose of them. FOCs not only allow shipowners to evade certain taxes and operating regulations, they also allow shipowners to more easily circumvent any requirements for proper ship dismantling and hazardous waste disposal.[34] As more and more vessels fly FOCs, more are able to navigate around stringent European Union (EU) rules and find their way to the dangerous shipbreaking yards of South Asia.

WHAT IS SHIPBREAKING?

Torset, P. *Shipbreakers in Bangladesh.*

After 25 to 30 years of navigating the world's seas, commercial ships reach the end of their operational life and, no longer economical to insure, must be dismantled. Ships are sold and taken apart either for a source of parts, which can be reused, or for the recovery of raw

[33] Ibid.
[34] Heidegger, P., Jenssen, I., Reuter, D., Mulinaris, N., & Carlsson, F. (2015, April). What a Difference a Flag Makes. NGO Shipbreaking Platform. Retrieved from http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2015/04/FoCBriefing_NGO-Shipbreaking-Platform_-April-2015.pdf

materials, such as the steel that makes up 90 percent of their structure.[35] Shipbreaking allows for the materials on and in a ship to be recycled into new products, thereby reducing the demand for new parts and overall energy use. While shipbreaking, in theory, is sustainable, in practice, it has become quite costly and unsafe.

According to a 2010 World Bank Report on the shipbreaking and recycling industry,

> Although the industry is beneficial from a life-cycle assessment point of view, over the years it has gravitated toward countries with low labor costs, weak regulations on occupational safety, and limited environmental enforcement. The "global shift" in the industry to countries with comparatively weaker regulatory systems is of particular concern as ships contain many hazards that can have significant detrimental effects on humans and the environment if not dealt with properly.[36]

Compared to sinking or abandoning them, shipbreaking and recycling is the most economical and environmentally sensible way to deal with old vessels. Shipowners basically have two options when it comes to getting rid of an old ship: (1) have it properly dismantled by a modern ship recycling facility, or (2) sell it to a broker who in turn sells it to shipbreaking yards in places such as Bangladesh or Pakistan.[37]

Because the sale for demolition represents the last chance for maritime transport companies to profit off an obsolete vessel, shipowners want to sell for maximum profit. Unfortunately, the clean and safe recycling of ships means greater costs for infrastructure investments, proper

Reichmann, M. 2005. *Cable Gana*, Chittagong

[35] Heidegger, P. et al. (Ed.). (2014). NGO Shipbreaking Platform - Annual Report 2013. Retrieved from http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2014/06/NGO-Shipbreaking-Platform-annual-report-2013.pdf

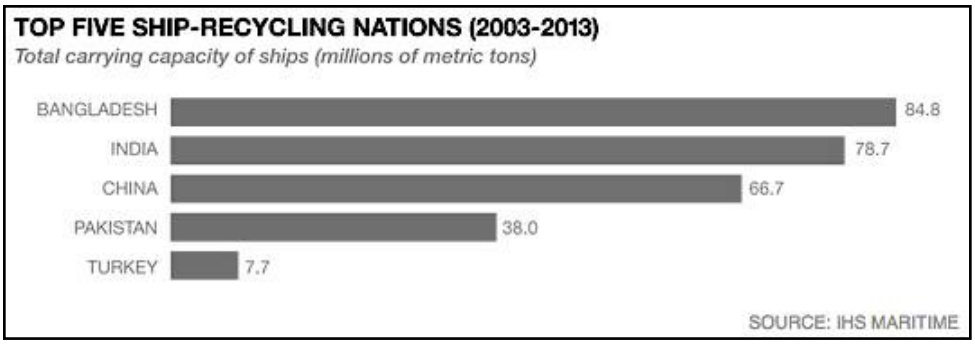
[36] Sarraf, M., Stuer-Lauridsen, F., Dyoulgerov, M., Bloch, R., Wingfield, S., & Watkinson, R. (2010). The Ship Breaking and Recycling Industry in Bangladesh and Pakistan. (Report no. 58275-SAS). The World Bank. Retrieved from http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1296680097256/Shipbreaking.pdf

[37] Heidegger, P. et al. (2014). NGO Shipbreaking Platform - Annual Report 2013.

hazardous waste disposal, and measures to protect the environment and workers' health.[38] The modern ship recycling facilities of Europe, North America, and East Asia that enforce such strict environmental codes as well as health and safety provisions are quite expensive. Thus, few shipowners consciously choose to sell to modern ship recycling facilities, where they not only have to pay more, but are also evaluated by EU standards and are forced to bear greater responsibility in the recycling process.[39]

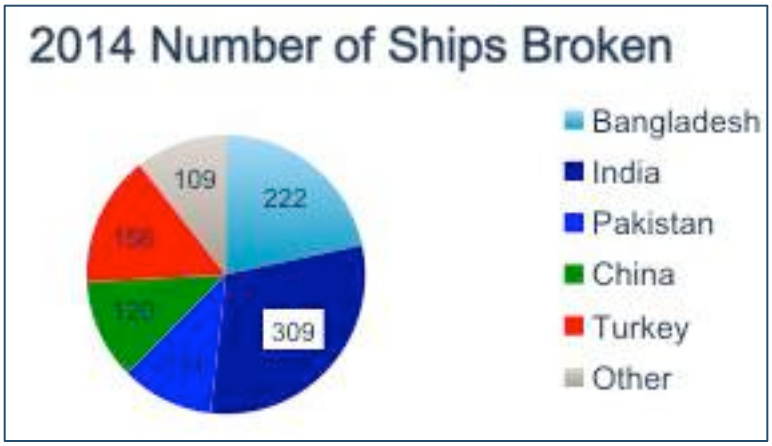
By asking for the highest price, shipowners tend to act without consideration for what it may cost the workers, local communities, or environment. The 2008 financial crisis and consequential low freight rates created an overcapacity of commercial ships that made the scrapping of certain types of vessels more profitable than their continued operation.[40] With shipping companies acting with regard to the challenging and competitive market conditions and still seeking the highest market prices, the majority of obsolete vessels have ended up in the substandard facilities of South Asia, where labor is cheap and oversight is minimal.[41] Bangladesh, India, and Pakistan specifically have become the preferred dumping ground for most shipowners seeking to make the highest possible profits.[42]

Increasingly more shipowners are finding that they can sell their end-of-life vessels to beaching yards— a practice outlawed in the EU and other developed nations— for considerably more money than modern ship recycling facilities could provide. In 2014, of the 1,026 commercial vessels (bulk carriers, cargo and container ships, tankers, and passenger vessels) dismantled around the world, 641 ships concluded their operational life on the beaches and mudflats of Bangladesh, India, and the more sophisticated pier facilities in China and Turkey accounting



[38] Ibid.
[39] Heidegger, P. et al. (2014). NGO Shipbreaking Platform - Annual Report 2013..
[40] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014. Retrieved from http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2015/06/NGO-Shipbreaking-Platform-Annual-Report-2014.pdf
[41] Gwin, P. (2014, May 1). The Ship-Breakers. National Geographic. Retrieved from http://ngm.nationalgeographic.com/2014/05/shipbreakers/gwin-text
[42] Greenpeace and The International Federation for Human Rights. (2005, December). *End of Life Ships: The Human Cost of Breaking Ships.* A Greenpeace and FIDH Joint Report. Pg. 5-7. Retrieved from http://www.greenpeace.org/international/Global/international/planet-2/report/2006/4/end-of-life-the-human-cost-of.pdf

for most of the rest.[43] In fact, less than 10 percent of the global volume of ocean-bound vessels is scrapped outside of Bangladesh, China, India, Pakistan, and Turkey.[44]



NGO Shipbreaking Platform - Annual Report 2014

Most of the ships beached in Bangladesh, India, and Pakistan were owned by companies based in Europe (particularly Greece, Germany, and Norway) or East Asia (notably, China, South Korea, Japan, and Singapore)—many flying FOCs to be able to gain access to the yards.[45] This means that the maritime industry is increasingly externalizing the real costs of proper ship recycling to poorer migrant communities in South Asia.[46] Externalized costs should not be limited to those relating to the economy, but to those felt by the coastal environments and communities. So far, none of the shipbreaking yards located in Bangladesh, India, or Pakistan comply with international standards for safe and environmentally sound recycling, which is partly the reason they are able to maintain such competitive prices.[47] Yet, their inability to meet basic standards has rippling repercussions for the health of the adjacent coasts and ocean, surrounding ecosystems, and local populations.

[43] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[44] Sarraf, M.,et al. (2010). The Ship Breaking and Recycling Industry in Bangladesh and Pakistan.
[45] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[46] Jenssen, I. (2007). NGO Platform on Shipbreaking Comments. Retrieved from http://ban.org/library/NGO_Platform_Comments.pdf.
[47] Ibid.

HUMAN AND ENVIRONMENTAL RISKS

Shipbreaking and recycling is dirty work even under the best circumstances. Ocean-bound vessels have to be built tough in order to withstand the many stressors involved in crossing vast, turbulent waters whilst loaded with thousands of tons of valuable cargo.[48] The dismantling of the world's largest moveable objects requires high safety standards to protect workers from falling steel parts, fires, explosions, and exposure to toxins— it is no wonder the International Labour Organisation (ILO) labeled shipbreaking one of the world's most dangerous jobs.[49]

Hettwer, Mike. *The Ship-Breakers.*

[48] Gwin, P. (2014, May 1). The Ship-Breakers. National Geographic.
[49] Greenpeace and The International Federation for Human Rights. (2005, December). *End of Life Ships*

Shipbreaking Practices & Worker Health

In 2014, 74 percent of end-of-life vessels (in terms of tonnage) were dismantled in the shipbreaking yards of South Asia, where labor rights and environmental legislation are either poorly enforced or non-existent.[50] In all South Asian yards, ships are simply run ashore at high tide, and workers begin dismantling them at low tide. The process begins with the stripping of every possible sellable item (from engines and lifts to brass fittings and electric cables to doors, toilets, and other fixtures). Then all liquids are siphoned off for sale or dumping—leftover fire suppressant, fuel, lubricants, paints, and other materials. Once everything is stripped down to the structure (including insulation), the ship is ready to be dismantled.[51]

NGO Shipbreaking Platform activist Muhammed Ali Shahin insists he's not blind to his country's desperate need for the jobs shipbreaking creates:
"I do not say shipbreaking must stop entirely… But it must be done cleaner and safer with better treatment for the workers."
His criticism isn't reserved just for Bangladeshi ship-breakers:
"In the West you don't let people pollute your countries by breaking up ships on your beaches. Why is it OK for poor workers to risk their lives to dispose of your unwanted ships here?"
-The Ship-Breakers, National Geographic

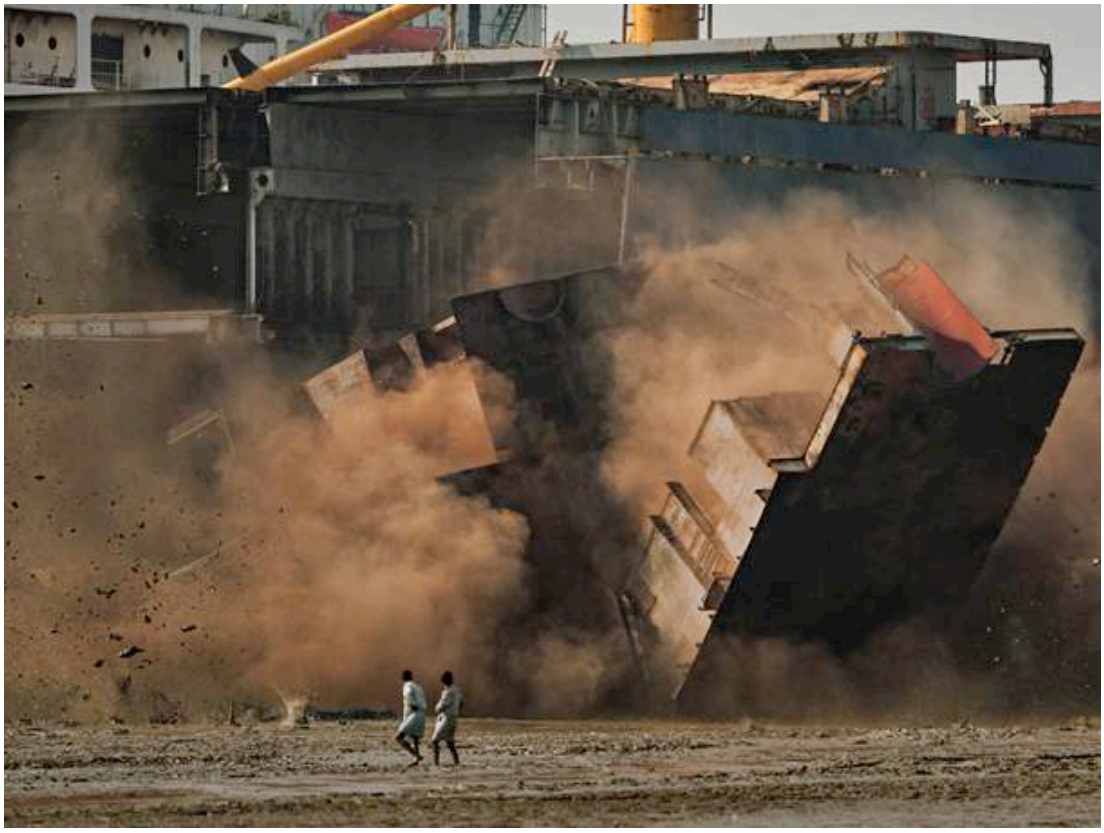
Muhammed Ali Shahin, 2007.

With little or no protective equipment and inadequate training, poor and vulnerable migrant workers begin manually breaking down the gargantuan structures from top to bottom with blowtorches. Workers in India do not wear respiratory protection, while many in Bangladesh go barefoot.[52] The sands on the beaches are unable to support heavy lifting, so shipbreaking yards use the gravity method— that is, large steel parts of the ship are severed and dropped

[50] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[51] Gwin, P. (2014, May 1). The Ship-Breakers. National Geographic.
[52] Shahin, M. (Ed.). (2012). Overview of Shipbreaking in Bangladesh. Retrieved from http://www.shipbreakingbd.info/overview.html

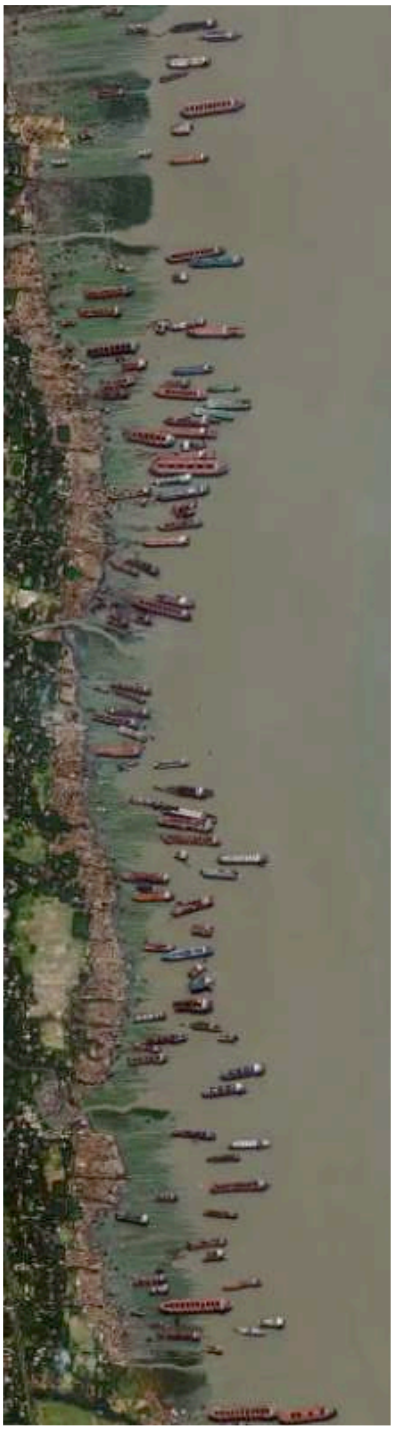
down to the beach below.[53] Workers do not wear safety harnesses as they use rope ladders to climb great heights and are not protected from the toxic fumes and dusts that are released when the heavy steel parts hit the ground. The workers, unable to demand better conditions out of fear of losing their families' source of income, are in constant danger of being crushed or maimed by the heavy steel plates, or suffocated by gases trapped within the ship, or burned in an explosion caused when sparks from their blow torches meet toxic fumes in the holds.[54]

What's more is that shipbreaking beaches are not directly accessible to firefighters or medical teams in the event of an accident.[55] Between the lack of basic safety precautions, training, and emergency response equipment, countless casualties occur every year— many going unreported. Disabled or injured workers do not receive any support to find a new source of livelihood, and their families are often cast back into crippling poverty.[56] Even if workers survive physically unharmed, they frequently suffer from fatal occupational diseases like asbestosis or cancer due to being regular exposed to toxins.[57]



Hettwer, Mike. *The Ship-Breakers.*

[53] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[54] Greenpeace and The International Federation for Human Rights. (2005, December).
[55] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[56] Heidegger, P. et al. (Ed.). (2014). NGO Shipbreaking Platform - Annual Report 2013.
[57] Ibid.



DigitalGlobe. (Satellite Photograph). A Maritime Graveyard

When ships are beached for dissembling, they contain thousands of tons of hazardous materials, such as asbestos, lead, plastic waste, polychlorinated biphenyls (PCBs), oil residues, and heavy metals.[58] Even when extracted and disposed of properly, these hazardous materials pose a danger to the workers and to the surrounding ecosystems and communities. In South Asia, shipbreaking occurs primarily in the intertidal zone of beaches and mudflats— here, there is no possibility for proper waste containment, disposal, or sediment dredging.[59] In fact, it is standard practice in shipbreaking countries to either resell the large amounts of hazardous waste from obsolete vessels in local markets or dump it in unmarked areas.

Both the shipbreaking industry in Bangladesh and Pakistan lack any sort of hazardous waste management system— no landfills for safe asbestos disposal or treatment facilities for materials tainted with heavy metals or oil residue. The shipbreaking industry in India permits the reselling of asbestos-containing products. Not one of these three countries has a PCB destruction facility.[60] Everyday, yard workers inhale toxic fumes from burning materials, are exposed to asbestos, oil sludge, and lead paints, and are at constant risk of death or injury from accidental explosions between toxic vapors and fluids. But the practices of shipbreaking yards means the danger is not limited only to workers. The unsound management of hazardous waste over the years has resulted in pollution streams that cannot be tracked or contained.[61]

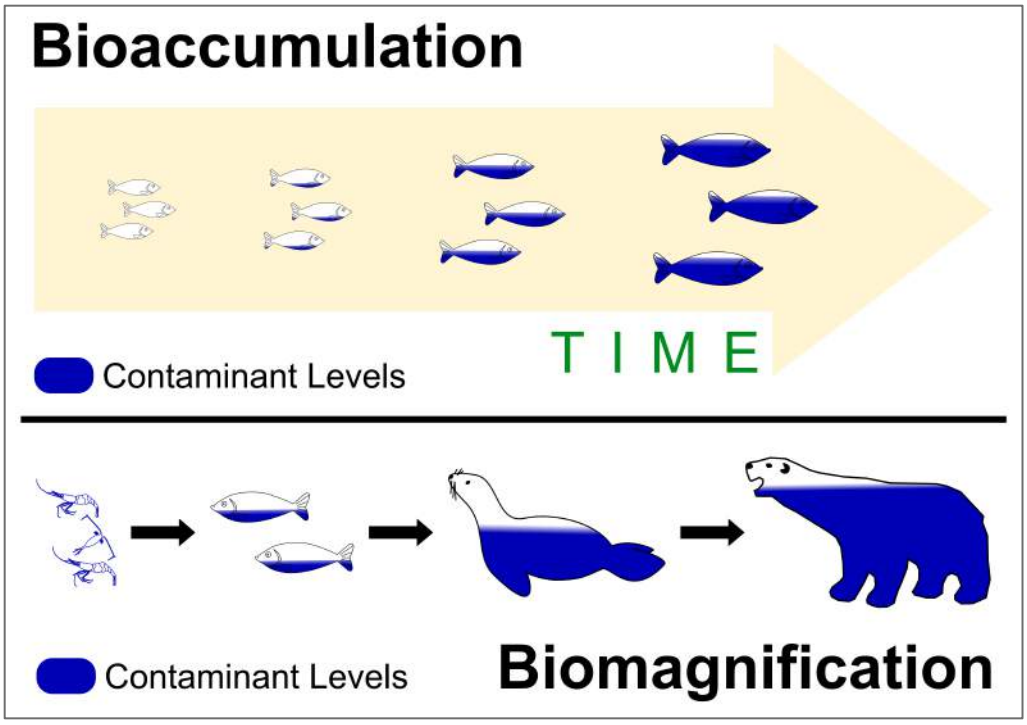
So, not only are the practices of shipbreaking yards violating the fundamental human rights of the workers, they are also threatening the rights of all surrounding populations and future generations.[62]

Impact on Coastal & Marine Environments

Shipbreaking has progressively established itself as a cause for great environmental concern. In order to make room for dissembling yards, the shipbreaking industry has to destroy large areas of coastal vegetation. This greatly increases the vulnerability of nearby

[58] Greenpeace and The International Federation for Human Rights. (2005, December).
[59] Heidegger, P. et al. (Ed.). (2014). NGO Shipbreaking Platform - Annual Report 2013.
[60] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[61] Ibid.
[62] ENS. (2001, April 30). Living Free of Pollution Called Basic Human Right. New York, New York: AmeriScan.

communities to the effects of climate change (e.g. rising sea levels, increasing storm surge, changing ocean chemistry), and, of course, endangers regional biodiversity. In 2009, for example, 40,000 mangrove trees were illegally chopped down in Bangladesh, thereby destroying a valuable source of protection from the seasonal typhoons and monsoons. In that same region, 21 fish and crustaceans species have been wiped out from shipbreaking.[63] If the coast is not immediately destroyed from the expansion of yards, it is severely impacted by the resultant pollution.



"Bioaccumulation and Biomagnification" (2002). Based on Mader, Sylvia S. 1996.

Millions of tons of hazardous waste have already been imported to South Asian countries because of the shipbreaking industry. Not properly disposed of, chemical pollutants, debris, toxic leakages, and paint chips from end-of-life ships are absorbed by coastal sediments or else washed away by the tides.[64] In addition to wreaking havoc on the health of local ecosystems, communities, and economies, this pollution poses a major threat to the greater ocean systems. Upon entering the ocean, large quantities of toxins from shipbreaking yards make their way into the marine food web, first bio-accumulating in small organisms.[65] The concentration of toxins can lower the reproductive capacity and life spans of organisms, ultimately reducing the population available for human consumption and altering the balance of

[63] Md. M. Hossain and M. M. Islam. 2006. Ship Breaking Activities and its Impact on the Coastal Zone of Chittagong, Bangladesh: Towards Sustainable Management. Young Power in Social Action (YPSA), Chittagong, Bangladesh
[64] Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014.
[65] Palumbi, Stephen. (2010, April). Hidden Toxins in the Fish We Eat [Video File]. Retrieved from http://www.ted.com/talks/stephen_palumbi_following_the_mercury_trail?language=en.

aquatic ecosystems. Due to the process of biomagnification, apex predators carry larger toxin loads, which make consumption of their meat a risk to human health.[66] Once in the ocean, pollutants can travel the world— mercury, chromium, asbestos, and PCBs, for instance are found at increasingly high levels in seafood consumed everywhere from Asia to the Americas.[67] Human, aquatic, and terrestrial food chains cannot avoid contamination indefinitely.

Athus-Bertrand, Y. *Chittagong ship breaking yard,* Chittagong, Bangladesh.

Even if hazardous waste does not make its way off the beach and into the water, it still accumulates dangerously in the coastal sediment. In 2010, the World Bank reported on the analysis of soil samples and related tests taken in and around Bangladeshi shipbreaking yards between 2005 and 2010. Based on these findings, the World Bank projected that the soils would accumulate up to 79,000 tons of asbestos, 240,000 tons of PCBs, and 69,200 tons of

[66] Palumbi, Stephen. (2010, April). Hidden Toxins in the Fish We Eat.
[67] Ibid.

paints, among other toxins, over the next twenty years.[68] Thus reaching even more dangerous levels than are already found today. The intense build-up of toxins represents a growing and long-lasting threat to the health of nearby communities and coastal resources. In fact, 21 species of fish and crustacean can no longer be found in these coastal areas of Bangladesh.

Table ES 5. Impacts of climate change on ship breaking yards and coastal areas

Event	Impact	Effect	Mitigation
Sea level rise	Tidal erosion of beaches	Loss of beaching facility	Coastal protection works
Storm surges	Damage to infrastructure	Yard buildings undermined and lost	
	Loss of coastal roads	Roadside shops destroyed	Relocation
		Roadside community dwellings submerged	Relocation
Higher tides	Release of heavy metals, TBTs, and PCBs from yards into the coastal environments	Fisheries and shrimp hatcheries poisoned	Pre-emptive de-pollution or stabilization of contaminated areas

69

The location and practices of the shipbreaking and recycling industry makes it extremely vulnerable to the impacts of climate change, especially sea level rise. As rising water levels submerge beaches and ship dissembling areas, decades worth of pollutants accumulated in the sand are released into the ocean. The increased frequency and magnitude of major storms coupled with rising sea levels means more and more toxins will be washed out to sea— once there, they will pose even greater environmental and human health hazards, inevitably entering the global food web, threatening biodiversity, and crippling fisheries.[70]

[68] Sarraf, M. et al. (2010). The Ship Breaking and Recycling Industry in Bangladesh and Pakistan.
[69] Ibid.
[70] Ibid.

McCurry, S. 1994. ***Welder in a Ship Breaking Yard,*** **Mumbai**

WHO'S BENEFITTING?

The shipbreaking industry degrades both coastal and marine ecosystems and the fundamental human rights of past and future populations. It is easy to see what other countries in maritime transport get out of the situation— lower labor costs and little oversight; but how do people in shipbreaking countries benefit? Besides a damaged environment and an unhealthy population— what do developing countries stand to gain from allowing shipbreaking on their shores?

Despite the danger and the dirt, shipbreaking and recycling is actually a highly lucrative business.[71] To begin with, the industry creates hundreds of thousands of direct and indirect jobs for some of the poorest and most marginalized demographics of South Asia. For Bangladesh and Pakistan, though it varies by volume of shipbreaking, the workforce in recycling yards ranges from 8,000 to 22,000 workers, with at least 200,000 in the supply chain, shops, and steel re-rolling mills. That's not to mention extended family dependents, which are estimated to be over 500,000 in Bangladesh alone.[72] Although shipbreaking is one of the most

[71] Gwin, P. (2014, May 1). The Ship-Breakers. National Geographic.
[72] Sarraf, M. et al. (2010). The Ship Breaking and Recycling Industry in Bangladesh and Pakistan.

dangerous jobs in the world according to the ILO, it is still a job that can provide a much-needed source of income for struggling communities.

At the same time that shipping companies are registering for FOCs in order to avoid paying the higher costs of modern ship recycling facilities in their countries of origin, shipbreaking yard owners are working to attract more and larger vessels onto their beaches. Brokers in shipbreaking yards are responsible for arranging the sale of over a thousand vessels that are beached in South Asia every year. Even though the purchase and dissembling of a standard ship (80,000 dwt) is estimated to cost $4 - $6 million, there continues to be a generally high rate of return on the investment through the sale of scrap materials. In Bangladeshi shipbreaking yards for instance, the profit margin is more than 15 percent for the sale of the ship's materials. However, just like any market, the supply, demand, and profitability of obsolete vessels and their scraps depend on a number of broad global, national, and regional elements. According to a 2010 World Bank study, the main elements of costs and revenues in shipbreaking and recycling are:[73]

COSTS:

- Purchase of ship
- Investment costs (for equipment and civil works such as cranes, forklifts, storage, and housing)
- Financial costs
- Labor costs (varies greatly country to country and is a major reason why South Asian shipbreaking yards are so enticing)
- Rents and consumption of utilities (e.g. land use; oxygen, oil, electricity, etc.)
- Taxes, tariffs and duties (e.g. import taxes)
- Other costs (e.g. for handling hazardous waste)

REVENUES:

- Steel (re-rolled and non-ferrous scrap)
- Other recyclable items (e.g. scrap, machinery, furniture, ropes, cabling, etc.)

Nearly everything on and in a ship can be recycled and resold. The most significant recyclable output in terms of volume and revenue is steel. According to yard workers in Chittagong, Bangladesh, approximately 85 percent of a ship is recyclable steel in the form of re-rollable plates (75 percent) and melting scrap (10 percent).[74] The substantial quantity of scrap steel supplied by the shipbreaking and recycling industry plays a significant role in the economies of South Asia, especially when the demands of the iron and steel industries seem never-ending.

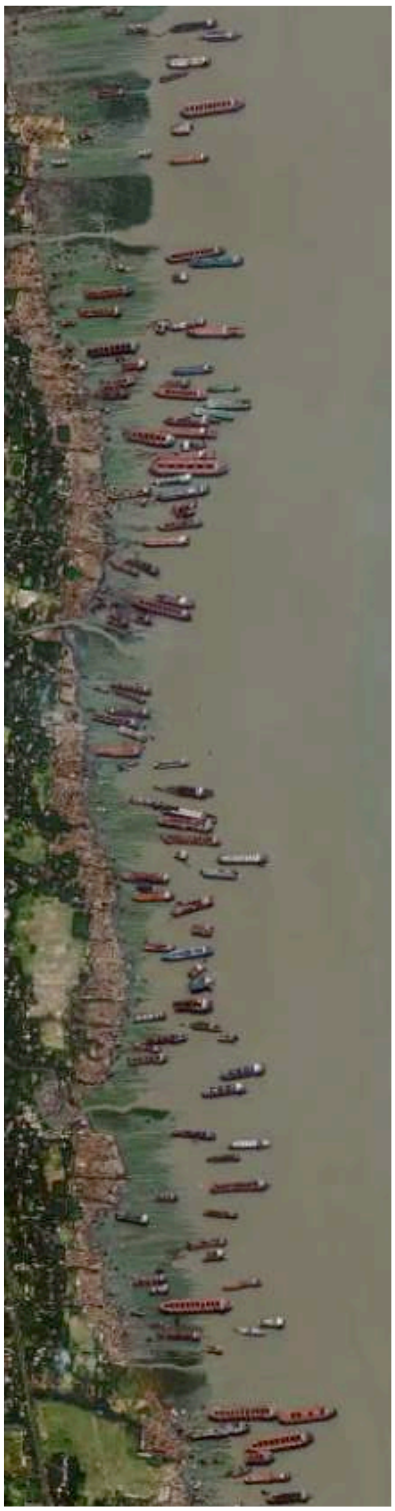
[73] Sarraf, M. et al. (2010). The Ship Breaking and Recycling Industry in Bangladesh and Pakistan.
[74] Ibid.

The shipbreaking and recycling industry actually provides well over 50 percent of Bangladesh's total steel supply.[75]

The industry presents a fair share of benefits for the developing nations involved: job creation, a vast supply of steel and other recyclables, and theoretically, an environmentally sustainable method of ship disposal. However, the industry also entails the importation of millions of tons of hazardous waste and all the damages to environmental and human health that comes with that. For developing nations like Bangladesh, India, and Pakistan, shipbreaking may form a large component of the national economy, but so does the ocean.[76] Thus, importing the operations can reduce the negative economic and social effects of current practices.

"It is a choice of profits at the cost of people and the environment."
***-**UN Office of the High Commissioner on Human Rights*

[75] Shahin, M. (Ed.). (2012). Overview of Shipbreaking in Bangladesh.
[76] The World Bank. (2014, April 12). Sustainable Development - The Living Oceans.



DigitalGlobe. (Satellite Photograph). A Maritime Graveyard

THE ROAD AHEAD

Put simply, to stop the coastal and ocean pollution as well as the violation of human rights, shipbreaking needs to be made safer. As one of the world's most dangerous industry, this is easier said than done. Similar to most problems facing today's world, the main barrier to improving the shipbreaking process is money. Shipowners take their end-of-life vessels to shipbreaking yards in order to save money; shipyard owners operate in the way that they do in order to make more money; workers continue to toil away in squalor and unsafe conditions without complaint in order to get money to support their impoverished families. No stakeholder can be expected to resign their best interests for the greater good.

The sheer size of the industry may initially make the prospect of progress seem bleak, but it can actually be a useful tool in development. According to the 2010 World Bank report, *Ship Breaking and Recycling Industry in Bangladesh and Pakistan*, even though the prevailing environmental and health conditions of South Asian shipbreaking yards are what allows these countries to participate in a competitive industry, the resulting, growing profit margins have inadvertently created a corresponding margin for change.

> The levels of profitability indicate that there is scope for developing more sustainable practices in Bangladesh without damaging the overall competitiveness of the industry—and without increasing the risk of relocation of the industry. As profitability is lower in Pakistan, there is likely to be less scope for imposing new and tougher environmental regulation without corresponding adjustments in the industry's taxation and incentives structures, as the introduction of higher costs could lead to a relocation of the industry to other countries.[77]

The shipbreaking and recycling industries of Bangladesh, India, and Pakistan have grown substantially since The World Bank publication five years ago. So, while the ideas remain valid, the conclusions about

[77] Shahin, M. (Ed.). (2012). Overview of Shipbreaking in Bangladesh.

each country's scope for developing better practices have altered. The profitability of all three countries has increased exponentially, meaning each country has a greater scope for enacting more sustainable practices. Even so, the movement to improve the shipbreaking industry should not be a sole charge by those immediately impacted by it in developing nations. Other countries involved in maritime transport along with international governing bodies must play an active role. There are existing, regulatory frameworks that can be applied for improvement.

Hybrid International

A Brief History about the Creation of Regulatory Infrastructure

Timeline of Legislation Concerning the Shipping Industry and/or Related Pollution

1948: The UN Convention in Geneva concludes with the creation of the International Maritime Organization (IMO)— first official IMO meeting takes place January 1959

1972: UN Conference on the Human Environment adopts the Stockholm Declaration

1973: MARPOL (Marine Pollution – International Convention for the Prevention of Pollution from Ships) is signed, but is later modified by the 1978 Protocol

1987: The Montreal Protocol of Ozone Depleting Substances is called into order

1989: The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal is negotiated

2001: The Stockholm Convention on Persistent Organic Pollutants takes place

2009: The Convention for the Safe and Environmentally Sound Recycling

Prior to the second half of the 20th century, there was generally little concern about the conservation of Earth's resources, for there was little understanding about the interlocking and interdependent relationship between nature and mankind. The exponential rise in population, industry, and pollution following the Industrial Revolution caused many people to start thinking about the possible benefits of some type of overarching management system. It wasn't until after suffering through two World Wars that countries began creating large, international frameworks through which they could regulate and monitor different sectors of human society. The **International Maritime Organization (IMO)** was one of those early international bodies.[78]

Established in 1948 at the Geneva Convention, the IMO is primarily responsible for developing and maintaining a comprehensive regulatory framework to ensure safe, secure, clean, and efficient shipping around the world. As a specialized agency of the United Nations, the IMO oversees all legal matters and environmental concerns. The 171 Member States meet every two years to discuss any major issues relating to the maritime transport industry— a 40-

[78] International Maritime Organization. (2015). International Convention for the Prevention of Pollution from Ships (MARPOL). Retrieved from http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx

member Council gathers between sessions to make decisions if necessary.[79] When it comes to shipbreaking, the IMO is the main regulating body— garnering active support by its members would be a huge step towards improving the industry's practices.

"Safe, secure and efficient shipping on clean oceans."
—The official slogan of the IMO

Although the IMO was originally formed for the purpose of regulating the safety of international shipping, it has since modified and updated its focus to encompass environmental pollution and impact. In June 1972, the UN held the **Conference on the Human Environment**.[80] The purpose of the Conference was to discuss the effects of human activities on the environment and the necessity of its protection, and overall, to figure out how nations can jointly tackle ocean pollution, among other issues. The Conference concluded with the adoption of a Declaration, which contains 26 principles revolving around international development and the environment, and an Action Plan, which consists of 109 recommendations for how countries can meet the proscribed principle.[81] The first document in international environmental law to recognize the right to a healthy environment, the 1972 Stockholm Declaration was a promise that signing countries would:

- Establish rules for preventing the discharge of pollution into the ocean from rivers, ships, factories and other sources
- Establish adequate penalties for those who violated the pollution regulations
- Assume responsibility for the protection of oceans beyond national jurisdiction
- Share technological and other information with other countries for reducing, minimizing, or otherwise addressing pollution before it causes harm to the ocean

These are just four of the 26 principles.[82] While the Declaration is not a binding document, it represents a major step forward in the countries accepting joint responsibility for marine degradation.

Arguably the greatest accomplishment of the IMO was the establishment of MARPOL in 1973 (modified by the Protocol of 1978). **MARPOL 73/78,** or the International Convention for the Prevention of Pollution of Ships, was first negotiated in the wake of the 1972 Stockholm

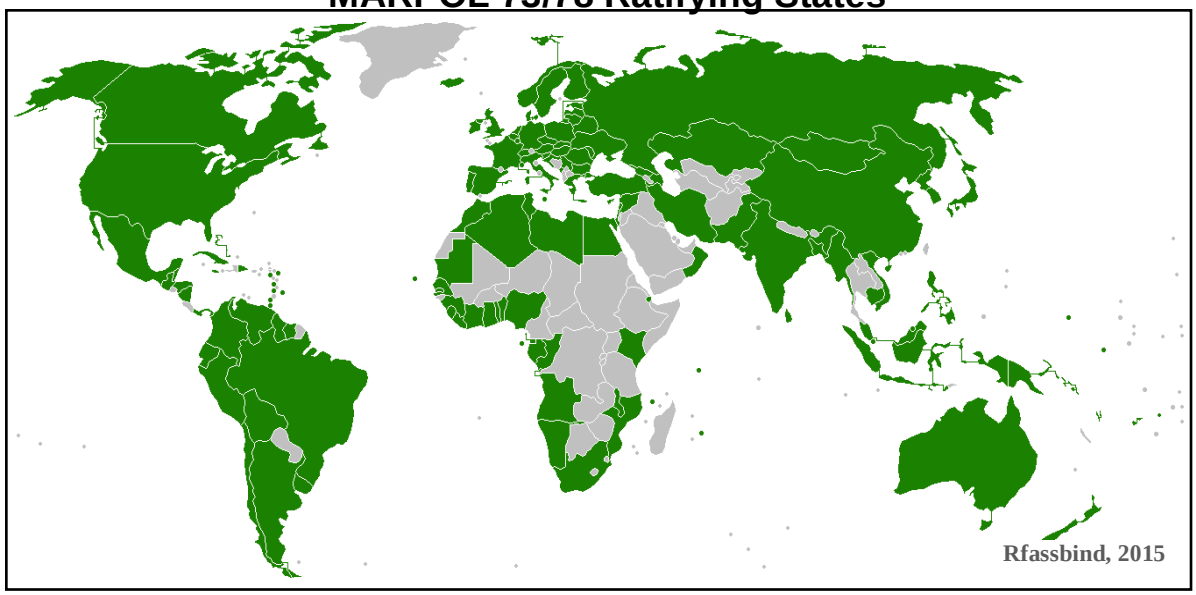
[79] International Maritime Organization. (2015). International Convention for the Prevention of Pollution from Ships.
[80] United Nations Environment Programme. (1972). Declaration of the United Nations Conference on the Human Environment. Retrieved from http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503.
[81] Ibid.
[82] Ibid.

Conference on the Human Environment, where the basic principles guiding marine pollution prevention were formally framed.[83] It is divided into six annexes, each of which addresses the regulation of a certain category of ship emissions. Now one of the most important international marine environmental conventions, MARPOL aims to preserve marine ecosystems by eliminating pollution from oil spillages, sewage, plastics, and other hazardous waste. It regulates vessel discharge, monitors the disposition of containerized materials, and is the driving force behind the 1988 ban on the release of plastics into the ocean.[84]

As of 2013, 153 nations, representing 99.2 percent of global merchant shipping tonnage, participate in the convention.[85] All ships flagged under signatory states are automatically subject to MARPOL requirements. This is particularly important with regards to the shipbreaking industry. MARPOL identifies more than 250 substances as being so hazardous, any residue should not be leaked or washed out anywhere near land, much less the tidal beaches of shipbreaking yards.[86]

End-of-life vessels, particularly oil tankers, are covered in various accumulated chemical residues, the proper disposal of which (by MARPOL standards) can cost a fortune. Open registry countries and FOCs allow shipping companies to circumvent MARPOL standards and use the substandard facilities of South Asia. Washing up in ship recycling yards, obsolete vessels bring with them a plethora of toxic pollutants that endanger the lives of the unprotected workers dismantling the ships and the coastal and marine ecosystems on and adjacent to the beaches.

MARPOL 73/78 Ratifying States



[83] International Maritime Organization. (2015). International Convention for the Prevention of Pollution from Ships.
[84] Ibid.
[85] Ibid.
[86] Ibid.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was one of the first attempts to ensure that shipbreaking was the responsibility of the exporting state, the importing state and the transit state.[87] Negotiated in 1989, the Basel Convention aimed to completely ban the export of hazardous materials from OECD (Organization for Economic Cooperation and Development) countries to less developed, low-income countries.[88]

"Japanese companies own 2,000 out of the total 3,000 major ships in the world. Most of the Japanese-owned ships go to China for recycling after their life. But we want to sell end-of-the-life ships to India because India offers better prices than China,"

—Keiji Tomoda, chairman of Ship Recycling Cub-Committee of the Japanese Ship Owners' Association, explaining why the ratification of the Hong Kong Convention in India would be a significant step forward – *The Indian Express*

During the 1980's, industrialized countries decided to adopt a variety of new environmental regulations. This led to a dramatic spike in the cost of hazardous waste disposal.[89] Soon more and more waste was shipped from the industrialized world to developing countries for more economical dumping.[90] The UN organized the Basal Convention to address these activities, and the convention concluded with the implementation of more stringent waste ownership and disposal laws. According to the Basal Convention, dispatching a ship from a Greek port, for example, to a demolition yard in Pakistan would technically constitute the export of hazardous waste, and therefore would be illegal. However, under the Basel Convention, a shipowner can simply conceal the intention to scrap once it leaves an OECD port, and can then sell the ship for scrap once the ship is on the high seas. Therefore port states rarely have the opportunity to enforce the Basel Convention.[91] It is for this reason that the Hong Kong Convention was drafted, to apply these rules to the flag state, and not only to the port of dispatch.

Recognizing that the complex issue of shipbreaking had to be addressed more directly, international negotiations began again. In May 2009, the Convention for the Safe and Environmentally Sound Recycling of Ships (also known as the **Hong Kong Convention**) was adopted by the joint efforts of the

[87] Heidegger, P , et al. "What a Difference a Flag Makes." *NGO Shipbreaking Platform.*
[88] Lipman, Z.M. (2011). Trade in Hazardous Waste: Environmental Justice Versus Economic Growth. Environmental Justice and Legal Process, Macquarie University, Australia.
[89] Gerostergiou. (n.d.). What is Shipbreaking?
[90] Lipman, Z.M. (2011). Trade in Hazardous Waste.
[91] Heidegger, P , et al. "What a Difference a Flag Makes." *NGO Shipbreaking Platform.*

members of the IMO and the Basal Convention.[92] The main purpose of the Hong Kong Convention is to ensure end-of-life vessels do not unnecessarily threaten the health and safety of humans or the environment when being recycled. The Convention is designed to address all issues concerning ship recycling, including the disposal of hazardous materials, yard working conditions, and the implementation of environmentally-friendly ship design, construction, and operation.[93] So far, only Norway, Democratic Republic of Congo, and France have ratified the Convention; its implementation requires the commitment of 15 states, representing at least 40 percent of global merchant shipping tonnage.[94] Progress is being made, however, as Japan announced in June 2015 that it would be putting Japanese ratification of the Hong Kong Convention on the fast track.[95] Influential as a major world shipping country, Japan has been discussing with India the prospect of ratifying the Convention and improving its shipbreaking practices.[96] Japan is actively taking responsibility for how its ships are recycled, which may pave the way for other maritime countries to do the same.[97] If the shipbreaking and recycling industry is going to change, all countries must eventually accept their responsibility in the enabling of the industry and assume their roles in the remodeling and recovery process.

Future Legislation & Where to go from Here

"Clean and safe ship recycling is technically and financially feasible."
—NGO Shipbreaking Platform

The international infrastructure to sustainably regulate maritime transport and shipbreaking is already in place. In moving forward, government officials and international organizations must remember: "The voice of the poor doesn't reach far."[98] Change in shipbreaking practices cannot be expected to arise from the shipowners and developing countries involved, especially when potential profits are on the line. National and international governing bodies must find a way to effectively communicate what is at stake if current practices prevail and be prepared to help shipbreaking countries improve their operations without significantly compromising existing profit margins. The NGO Shipbreaking Platform[99] has been on the forefront of this issue and has been publicly identifying specific companies that participate in improper shipbreaking.

[92] International Maritime Organization. (2015). The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.
[93] International Maritime Organization. (2015). The Hong Kong International Convention.
[94] Ibid.
[95] Industrial Global Union. (2015, June 23). Japan: Expedited Hong Kong Convention. Retrieved from http://www.industriall-union.org/japan-expedited-ratification-of-hong-kong-convention
[96] Kateshiya, G. (2015, January 14). Japan pushes for ratification of Hong Kong Convention
[97] Industrial Global Union. (2015, June 23). Japan: Expedited Hong Kong Convention.
[98] Greenpeace and The International Federation for Human Rights. (2005, December). *End of Life Ships.*
[99] A coalition of environmental, human, and labor rights organizations established in 2005; recognized by UN and EU agencies as the "pre-eminent international civil society advocacy organization on shipbreaking"

International pressure to act is growing, and with the various IMO conventions offering a legislative framework, shipbreaking and recycling practices are on the brink of revisal.

The governments of developing countries are only looking at the short-term economic benefits of permitting shipbreaking, a perspective supported by global shipping interests despite the long-term harm to communities and the coastal resources on which they depend. We all benefit because we are not paying the true costs of the goods shipped around the world—it's not just the cost of fuel and labor today, but also the cost of disposing of old ships properly that needs to be incorporated into the system. Countries that fail to ensure that their flagged ships are disposed of properly are supporting the predatory retention of desperate labor pools, the flagrant use of child labor, and the injury, disease, and misery that plague the communities where shipbreaking occurs.

Current shipbreaking and recycling practices are not only unsustainable; they are pointedly destructive of the planet's future. The economies of (not to mention the people in) developing countries will not be able to survive if the ocean takes any more hits. Even though shipbreaking offers some benefits, it is sacrificing the economic security, environmental and human health, and basic human rights of the nations involved. The shipbreaking and recycling industry needs to fundamentally change and soon before the damage inflicted spreads and becomes irreversible. The profitability of shipbreaking shows that there is a possibility to improve the industry's practices.[100] Maritime transport countries and international governing bodies already have the tools to enact such changes. What is needed is a mobilizing force and an informed sense of urgency to push for change.

The governments of Bangladesh and other shipbreaking discounters need to look at the big picture to fully comprehend the interdependence of the economic, social, and environmental sectors that underpin their long-term wellbeing so that their own coastal riches are not contaminated beyond use. And the only way they are going to do that is if the international community makes it clear that it is willing to ensure that the byproduct of global ocean commerce is not just profitable transactions, but also coastal community health and human rights protection.

In reality, it is unlikely that shipbreaking will ever be a completely safe industry. Accidents and pollution will inevitably happen. However, the establishment of better breaking processes, safety and security measures, worker training, and hazardous disposal procedures can lessen their frequency and scale. The ratification of the Hong Kong Convention and the more thorough implementation of past environmental legislation are the next steps towards

[100] Shahin, M. (Ed.). (2012). Overview of Shipbreaking in Bangladesh.

improving the shipbreaking and recycling industry. If addressed not only through a conservation framework, but also a human rights and economic security framework, the malpractices and consequences of shipbreaking may be more widely understood, and the urgency of the need to reform, recognized. The time to change is now; all it takes is the willpower to do so.

REFERENCES

Celaya, X. (Ed.). (2015, May 20). More efforts needed to protect people from exposure to toxic substance- UN experts urges WHO. Retrieved from http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=15983&LangID=E

Center for Biological Diversity. (n.d.). Human Population Growth and Oceans. Population and Sustainability. Retrieved from http://www.biologicaldiversity.org/programs/population_and_sustainability/oceans/

ENS. (2001, April 30). *Living Free of Pollution Called Basic Human Right*. New York, New York: AmeriScan.

Environmental Justice Foundation. (2012). No Place Like Home - Securing Recognition, Protection and Assistance for Climate Refugees. London. Retrieved from https://www.oceanfdn.org/sites/default/files/NPLH_briefing.pdf

Fishwise. (2014, March). Trafficked II - An Updated Summary of Human Rights Abuses in the Seafood Industry. Retrieved from https://www.oceanfdn.org/sites/default/files/Trafficked_II_FishWise_2014%20%281%29.compressed.pdf

Gerostergiou. (n.d.). What is Shipbreaking? Retrieved from http://digilib.lib.unipi.gr/dspace/bitstream/unipi/4633/1/Gerostergiou.pdf

Greenpeace and The International Federation for Human Rights. (2005, December). *End of Life Ships: The Human Cost of Breaking Ships.* A Greenpeace and FIDH Joint Report. Pg. 5-7. Retrieved from http://www.greenpeace.org/international/Global/international/planet-2/report/2006/4/end-of-life-the-human-cost-of.pdf

Gwin, P. (2014, May 1). The Ship-Breakers. National Geographic. Retrieved from http://ngm.nationalgeographic.com/2014/05/shipbreakers/gwin-text

Halpern, B. et al. (2015, July 14). Spatial and temporal changes in cumulative human impacts on the world's ocean *Nature Communications* 6 (7615).

Heidegger, P. et al. (Ed.). (2014). NGO Shipbreaking Platform - Annual Report 2013. Retrieved from http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2014/06/NGO-Shipbreaking-Platform-annual-report-2013.pdf

Heidegger, P. et al. (Ed.). (2015). NGO Shipbreaking Platform - Annual Report 2014. Retrieved from http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2015/06/NGO-Shipbreaking-Platform-Annual-Report-2014.pdf

Heidegger, P., Jenssen, I., Reuter, D., Mulinaris, N., & Carlsson, F. (2015, April). What a Difference a Flag Makes. NGO Shipbreaking Platform. Retrieved from http://www.shipbreakingplatform.org/shipbrea_wp2011/wp-content/uploads/2015/04/FoCBriefing_NGO-Shipbreaking-Platform_-April-2015.pdf

Herr, D., Isensee, K., & Turley, C. (2013). Overview of the international policy landscape and activities on ocean acidification. International Atomic Energy Council. Retrieved from https://www.iaea.org/ocean-acidification/download/OA Policy white paper_final.pdf

Hoffmann, J., Juan, W., Rubiato, J. et al. (2014). Review of Maritime Transport 2014 (J. Rogers, Ed.). United Nations Conference on Trade and Development. Retrieved from http://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf

Industrial Global Union. (2015, June 23). Japan: Expedited Hong Kong Convention. Retrieved from http://www.industriall-union.org/japan-expedited-ratification-of-hong-kong-convention

International Chamber of Shipping. (2014). Shipping, World Trade and the Reduction of CO2 Emissions. United Nations Framework Convention on Climate Change (UNFCCC). Retrieved from http://www.ics-shipping.org/docs/default-source/resources/environmental-protection/shipping-world-trade-and-the-reduction-of-co2-emissions.pdf?sfvrsn=6

International Maritime Organization. (2015). International Convention for the Prevention of Pollution from Ships (MARPOL). Retrieved from http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx

International Maritime Organization. (2015). The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships. Retrieved from http://www.imo.org/en/About/conventions/listofconventions/pages/the-hong-kong-international-convention-for-the-safe-and-environmentally-sound-recycling-of-ships.aspx

Jenssen, I. (2007). NGO Platform on Shipbreaking Comments. Retrieved from http://ban.org/library/NGO_Platform_Comments.pdf.

Kateshiya, G. (2015, January 14). Japan pushes for ratification of Hong Kong Convention, ship recyclers agree. The Indian Express. Retrieved from http://indianexpress.com/article/cities/ahmedabad/japan-pushes-for-ratification-of-hong-kong-convention-ship-recyclers-agree/

Klaren, F. (2015, April 2). Platform News - 32 Multinational Companies Say ‘No’ to Dirty and Dangerous Shipbreaking. NGO Shipbreaking Platform. Retrieved from http://www.shipbreakingplatform.org

Lipman, Z.M. (2006), International regulation of hazardous chemicals and its efficacy in promoting sustainability for developing countries. *International journal of environmental, cultural, economic and social sustainability, 2*(1), 85- 93.

Lipman, Z.M. (2011). Trade in Hazardous Waste: Environmental Justice Versus Economic Growth. Environmental Justice and Legal Process, Macquarie University, Australia.

Md. M. Hossain and M. M. Islam. 2006. Ship Breaking Activities and its Impact on the Coastal Zone of Chittagong, Bangladesh: Towards Sustainable Management. Young Power in Social Action (YPSA), Chittagong, Bangladesh Retrieved from http://shipbreakingbd.info/report/Ship%20Breaking%20Activities%20and%20its%20Impact%20on%20the.pdf

Michaels, S. (2015, June 12). The Big Source of Pollution That No One Talks About. Mother Jones. Retrieved from http://www.motherjones.com/blue-marble/2015/06/study-pollution-ships

Milmo, C. (2014, March 15). Exclusive: World's most pristine waters are polluted by US Navy human waste. The Independent. Retrieved from http://www.independent.co.uk

Overview of the International Shipping Industry. (n.d.). Shipping and World Trade. Retrieved from http://www.pfri.uniri.hr/~bopri/documents/Unit01a-Internationalshippingindustry.doc.

Palumbi, Stephen. (2010, April). *Hidden Toxins in the Fish We Eat* [Video File]. Retrieved from http://www.ted.com/talks/stephen_palumbi_following_the_mercury_trail?language=en.

Revkin, A. (2008, February 26). Human Shadows on the Seas. The New York Times. Retrieved from http://www.nytimes.com/2008/02/26/science/earth/26coas.html

Roberts, G., & Corum, J. (2008, February 25). Mapping the Other 70 Percent. The New York Times. Retrieved from http://www.nytimes.com/interactive/2008/02/25/science/earth/20080225_COAST_GRAPHIC.html?#first

Sarraf, M., Stuer-Lauridsen, F., Dyoulgerov, M., Bloch, R., Wingfield, S., & Watkinson, R. (2010). The Ship Breaking and Recycling Industry in Bangladesh and Pakistan. (Report no. 58275-SAS). The World Bank. Retrieved from http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1296680097256/Shipbreaking.pdf

Shahin, M. (Ed.). (2012). Overview of Shipbreaking in Bangladesh. Retrieved from http://www.shipbreakingbd.info/overview.html

Spalding, M. (2014). Mapping Ocean Wealth. The Nature Conservancy. Retrieved from http://www.nature.org/ourinitiatives/habitats/oceanscoasts/mapping-ocean-wealth-white-paper-pdf.pdf

Surfrider Foundation Europe. (2013, December 1). A White Paper on Maritime Safety. Retrieved from http://fr.calameo.com/read/00029102124a7d21ca330

Treves, T. (2010). Human Rights and the Law of the Sea. Berkeley Journal of International Law. Volume 28, Issues 1. Retrieved from http://www.oceanfdn.org/sites/default/files/Human%20Rights%20and%20the%20Law%20of%20the%20Sea.pdf

The World Bank. (2014, April 12). Sustainable Development - The Living Oceans. Retrieved from http://go.worldbank.org/A2MYFIUQM0

United Nations. (2013). Recent developments and trends in international maritime transport affecting trade of developing countries. United Nations Conference on Trade and Development, 5th session. Retrieved from http://unctad.org/meetings/en/SessionalDocuments/cid30_en.pdf

United Nations Environment Programme. (2006*). Ecosystems and Biodiversity.* UNEP Regional Seas Reports and Studies No. 178. Retrieved from http://www.unep.org/pdf/EcosystemBiodiversity_DeepWaters_20060616.pdf

United Nations Environment Programme. (1972). Declaration of the United Nations Conference on the Human Environment. Retrieved from http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503.

United Nations. (1948). Universal Declaration of Human Rights. Retrieved from http://www.un.org/en/documents/udhr/

United Nations Convention on the Law of the Sea, 1982. http://www.un.org/depts/los/convention_agreements/texts/unclos/part1.htm

Vice International. (February 2015). The Ship Breakers of Bangladesh. Retrieved from https://www.youtube.com/watch?v=JU0DXdAhdsA

World Shipping Council - Partners in Trade. (2015). Retrieved from http://www.worldshipping.org/

FIGURES & ILLUSTRATIONS

Athus-Bertrand, Y. (Photographer). Chittagong ship breaking yard, Chittagong, Bangladesh (22°28’ N, 91°43’ E) [digital image]. Retrieved from http://www.yannarthusbertrand2.org/index.php?option=com_datsogallery&Itemid=27&func=detail&catid=23&id=1978&lang=en&l=1280

“Bioaccumulation and Biomagnification” (2002). Based on Mader, Sylvia S. 1996. Biology – 5th Ed. WBC and Cox, G.W. 1997. Conservation Biology – 2nd Ed. WCB. Retrieved from: http://www.marietta.edu/~biol/102/2bioma95.html

Corbett, J. et al. (Data Compiler). (Published 2007 by American Chemical Society). Shipping

Pollution [digital image]. Retrieved from http://pubs.acs.org/doi/pdf/10.1021/es071686z

DigitalGlobe. (Satellite Photograph). A Maritime Graveyard [digital image]. Retrieved from http://ngm.nationalgeographic.com/2014/05/shipbreakers/hettwer-photography

Estimated 2015 Population Density [digital image]. Retrieved from http://mapsontheweb.zoom-maps.com/post/86298469730/population-density-estimate-for-2015

Global Shipping Lanes [digital image]. Retrieved from https://ireneses.files.wordpress.com/2012/05/shipping-lanes1.jpeg

Google Maps. (Satellite Photograph). (2015). Ship breaking yards from above [digital image]. Retrieved from https://mercantopia.files.wordpress.com/2013/05/ship-breaking-yards-google-earth.jpg

Halpern, B. et al. (Digital Image). (Published 2008, February 15 in *Science*). A Global Map of Human Impact on Marine Ecosystems [digital image]. Retrieved from http://www.nytimes.com/interactive/2008/02/25/science/earth/20080225_COAST_GRAPHIC.html

Halpern, B. et al. (Digital Image). (Published 2015, July 14 in *Nature Communications*). Spatial and temporal changes in cumulative human impacts on the world's ocean [digital image]. Retrieved from http://www.nature.com/ncomms/2015/150714/ncomms8615/full/ncomms8615.html

Haus. (Data Compiler). (2010, August 24). Top 11 FOCs As Percentage of World Fleet in DWT [digital image]. Retrieved from https://upload.wikimedia.org/wikipedia/commons/b/b3/Top11FOCs2009.png

Hettwer, M. (Photographer). The Ship-Breakers [digital image]. Retrieved from http://ngm.nationalgeographic.com/2014/05/shipbreakers/hettwer-photography

Hybrid International. (Photograph). Cargo Ship [digital image]. Retrieved from http://hybrid-intl.com/wp-content/uploads/2012/10/hybrid10232012011.jpg

IHS Maritime (Data Compiler). Top Five Ship-Recycling Nations (2003-2013) [digital image]. Retrieved from http://ngm.nationalgeographic.com/2014/05/shipbreakers/gwin-text

IHS Maritime; Morris, R. (Data Compiler). Shipbreakers Map [digital image]. Retrieved from http://ngm.nationalgeographic.com/2014/05/shipbreakers/img/shipbreakers-map-810x460-FINAL.png

McCurry, S. (Photographer). (1994). Welder in a Ship Breaking Yard, Mumbai [digital image]. Retrieved from http://www.beetlesandhuxley.com/sites/default/files/stock-images/WELDER-IN-A-SHIP-BREAKING-YARD-MUMBAI-1994-1-C32394.jpg

Reichmann, M. (Photographer). (2005, January). Cable Gang, Chittagong [digital image]. Retrieved from https://luminous-landscape.com/chittagong-ship-breaking-yards/

Rfassbind. (Data Compiler). (2015, January 20). MARPOL 73/78 ratifying states [digital image]. Retrieved from https://upload.wikimedia.org/wikipedia/commons/a/ab/MARPOL_73-78_signatories.png

Schmidt, R. (Photographer). (2012, July 10). عامل باكستاني يسحب مرساة السفينة لتثبيتها قبل الدخول في مرحلة التفكيك وبيعها كخردة (وكالات) [digital image]. Retrieved from http://www.gettyimages.com/detail/news-photo/agence-france-presse-chief-photographer-south-asia-roberto-news-photo/471517708

Shahin, Muhammed Ali. (Photograph). (2007). Mr Muhammed Ali Shahin, Young Power in Social Action, Bangladesh [digital image]. Retrieved from http://ec.europa.eu/environment/archives/greenweek2007/day02/pages/474.htm

Torset, P. (Photographer). Shipbreakers in Bangladesh [digital image]. Retrieved from http://www.pierretorset.com/stories/shipbreaking/

UNCTAD secretariat. (Data Compiler). Participation of developing countries in world seaborne trade, selected years [digital image]. Retrieved from http://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf

UNCTAD secretariat. (Data Compiler). World fleet by principal vessel types, 1980-2014 [digital image]. Retrieved from http://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf

UNCTAD secretariat. (Data Compiler). World seaborne trade, by country group, 2013 [digital image]. Retrieved from http://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf

UNCTAD secretariat. (Data Compiler). World seaborne trade by geographical region, 2013 [digital image]. Retrieved from http://unctad.org/en/PublicationsLibrary/rmt2014_en.pdf

World Shipping Council. (Photograph). Container Ship [digital image] Retrieved from http://cdn28.us3.fansshare.com/photograph/containership/sales-cargo-worthy-container-ship-779990692.jpg