

## Ship scrapping – the challenges for international environmental regulation

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### Abstract

Ships are valuable sources of steel and other natural resources which can potentially be recycled and reused for economic and environmental benefits, and between 700 and 1000 ships are scrapped annually. On the other hand, up to 5% of the mass of a ship is dangerous wastes. Developed states and the European Union have introduced restrictive regulatory measures to regulate the conditions and locations of ship scrapping facilities. Despite the environmental benefits, these regulations may lose their battle for efficiency due to Asian countries which are engaged in a regulatory race to the bottom to attract ship owners to scrap their ships in their territories. The findings of this research indicate that despite being included in international and EU laws on ship scrapping, the specific instruments to prevent the movement of ship scrapping into the jurisdictions with low environmental standards are ineffective. A new global regulatory instrument is required which can find a balance between strict environmental protections and the economic interests of both the ship owner, companies engaged in ship scrapping, and countries which take economic advantage of those processes.

### Introduction

The average lifespan of a ship is estimated to be 20–30 years (Nawrot, 2015), which is determined by their means of production, technical changes resulting from advances in engineering and standards, including safety and environmental standards, and is also subject to current economic trends (Frey, 2013). Current demand for ship scrapping is estimated at 25 million tons per year (Ormod, 2012), which roughly corresponds to between 700 and 1000 ships (Dodds, 2007). The consequence to this activity is significant environmental pollution, the magnitude of which increases with the growth of commercial fleets, as well as the application of increasingly complicated engineering and chemical products in the production and operation of ships.

The main ship scrapping centers are located in developing countries because the recovery of raw materials has a strategic significance for these

countries in obtaining raw materials. In the ship scrapping process, it is possible to recover up to 98% of a ship's raw materials (Nawrot, 2015). Steel obtained from scrapping ships can satisfy approximately 15% of India's demand, or as much as 80% of Bangladesh's demand (Frey, 2013). Countries where the largest number of vessels are scrapped are successively India, Bangladesh, China, Pakistan, and Turkey, which are collectively responsible for scrapping 98% of global tonnage (Kumar, 2008). The Gujarati Province in India scraps 58% of all ships worldwide, and together with Pakistan, is responsible for 75% of all global scrapping activities (Kumar, 2008).

The high demand for raw materials is not the only reason to choose beaches in India for ship dismantling activities. The development of environmental standards, which necessitate more complicated and costly ship scrapping methods, has led to a situation where ships are scrapped in locations which could be called "pollution heavens", or jurisdictions with

a very liberal approach to environmental issues (Nyka, 2015).

### **Environmental impacts of ship scrapping in South and Southeast Asia**

Ship scrapping at locations in South and Southeast Asia is performed using simple methods that have insufficient infrastructure to limit the environmental impact of the demolition process. The most popular method is “beaching” (Lloyd’s Register, 2011), in which vessels are seated on a shore during high tide, and during low tide, workers have relatively free access. Work is carried out using uncomplicated tools, with a high risk of workplace accidents and practically no mechanisms to protect the environment from the intrusion of harmful substances (Kumar, 2008).

According to various studies, from 0.75% to significantly more than 1%, and according to some, even 5%, of a ship’s weight is due to dangerous substances (Frey, 2013). Asbestos is often used as an insulating material, and although it was prohibited as a structural material in the mid-1980s, it is still commonly found in ships that are currently scrapped. Other hazardous substances found on ships include polychlorinated biphenols, polyvinyl chloride, and polybromide difenillas, which are all used, *inter alia*, in fire safety facilities (Kumar, 2008). There are also remnants of banned anti-fouling substances based on organostat compounds in hull paints (Kumar, 2008). The use of TBT was prohibited by the AFS Convention in 2001 (AFS/CONF/26), but the remains of those substances are still present on the hulls of scrapped ships. In addition to chemical compounds, a considerable biological hazard for workers during ship demolition may include organic pollutants on ships undergoing demolition. The components contained in ballast water and oil residues may also present environmental threats (Kumar, 2008). A separate category of hazardous compounds are heavy metals used in a ship’s equipment or as residues in a ship’s tanks. These substances pose a direct threat to those working on ship demolition, but they can also contaminate the soil, air, and water, including freshwater used by people living near these areas (Nyka, 2015).

### **International environmental regulations of ship scrapping activities**

The abovementioned facts make regulating ship scrapping under international law an urgent matter.

One of the main bodies for regulating international law for transboundary shipments of hazardous wastes was the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal of 22 March 1989. The main mechanism of the Convention is a requirement of double consent, which includes the state exporting hazardous waste, and the importing country (Nyka, 2018). The countries of the Convention have acknowledged the threats of ship scrapping. In decision No. VII/26 adopted by the 7<sup>th</sup> COP (UNEP/CHW. 7/33, 2004) of the Basel Convention, it was decided that a vessel can constitute waste within the meaning of article 2 of the Convention while also remaining a ship in the meaning of other international law standards. The same decision also confirmed the fact that a substantial portion of the materials from which a ship is built may constitute hazardous waste (Galley, 2014). The Court of Justice of the European Union in case C-207/88 *Vessosso, Zanetti*, and later in cases C-304/94, C-330/94, C-342/94, and C-129/96, confirmed the possibility of recognizing an entire vessel as waste, while at the same time indicating that this status change may be altered in accordance national laws. Additionally, judgments of the Dutch, French, Turkish, Indian, and British courts based on article 2 of the Basel Convention remain in-line with Decision VII/26.

The possibility of states to use the mechanisms within the Basel Convention is subject to significant restrictions resulting from specifying the ship as waste. First, a ship rarely leaves the ports of developed countries before declaring the purpose of its disposal on Asian beaches. They often sail to these locations with a load, fulfilling the classic duties of a ship, which makes it impossible to circumvent the notification obligations under article 4 of the Convention. In addition, these vessels often change owners at sea, or just before their demolition (Ulfstein, 1999), eliminating the occurrence of a cross-border element (European Commission, 2007). Ships are often also unregistered, which makes it difficult to identify the flag state and thus effectively control the ship. It is also important to mention that Asian states have a vital interest in performing ship scrapping as an essential element of their own economies, and are therefore not interested in effective enforcement of their international commitments in this area (Matser, Liu & Harjono, 2001).

The low effectiveness of the Basel Convention has proven to be insufficient to specify ships as waste or as a source of waste, and the international community has proceeded to develop more specialized

instruments to respond to environmental pollution during ship scrapping. The Hong Kong International Convention for the safe and environmentally sound recycling of ships, or Hong Kong Convention of 15 May 2009, was adopted to strike a balance between the responsibilities of ship owners, vessel scrapping facilities, and countries benefiting from the recycling of vessels (Bhattacharjee, 2009). The Convention will enter into force 24 months after the date on which certain conditions are met, including:

1. No fewer than 15 States have signed it without reservation to ratification, acceptance or approval, or have deposited the requisite instrument of ratification, acceptance, approval, or accession in accordance with Article 16;
2. The combined merchant fleets of the States mentioned in paragraph 1.1 constitute no less than 40% of the gross tonnage of the world's merchant shipping; and
3. The combined maximum annual ship recycling volume of the States mentioned in paragraph 1.1 during the preceding 10 years constitutes not less than 3% of the gross tonnage of the combined merchant shipping of the same States.

It is worth noting that the abovementioned conditions must be cumulative, which may be somewhat surprising in light of the fact that the criteria for enforcing other maritime law conventions are generally presented as alternatives (Mikkeli, 2019).

2019 was a landmark year from the perspective of fulfilling the conditions of enforcement of the Convention. This is related to the accession of the Convention in January 2019 by Turkey which is considered one of the most popular destinations for ship scrapping, and in February by the Netherlands. In turn, March 2019 saw the ratification of the Convention by Serbia and one of the major powers regarding the tonnage of the commercial fleet, Japan. It is also expected that the Convention will soon be ratified by Germany and Estonia. More importantly, Malta and India have also undertaken serious work to prepare accession to the Convention. The accession of these two last countries would account for 30% of the world tonnage required by art. 17 of the Convention, and also another requirement, that 3% of ship recycling capacities be parties to the Convention (Mikkeli, 2019).

The purpose of the Convention on Safe and Environmentally Friendly Ship Recycling is to introduce a binding instrument to ensure that the ship scrapping process is carried out in a way that does not cause environmental damage or negatively affect human life and health. It is intended to

ensure (Nawrot, 2015) that the responsibilities of ship owners, vessel scrapping facility owners, and the countries benefiting from the ship scrapping are preserved (Bhattacharjee, 2009).

The main mechanism of the convention is a holistic approach to the lifecycle of a ship and setting standards for environmentally sound ship recycling. The first mechanism means that the recycling and the environmental safety of this activity should be taken into account at each step of a ship's lifecycle – starting with its design, through its construction, maintenance, and ending with its green recycling. In all these steps, the use of hazardous materials should be minimized. The standards of ecologically-sound ship recycling were introduced as the second important mechanism by the convention. Although the convention does not specify which recycling method is correct, it does formulate certain basic technical standards which must be preserved during ship scrapping (Regulation 17). Parties to the convention must set procedures and methods to ensure proper ship recycling, and certain institutional arrangements concerning the cooperation of states in this field are also decided in the Convention (Regulation 6 and 7).

Within the formal obligations of the Convention, the flag state is obliged to ensure that the ship possesses an International Certificate on Inventory of Hazardous Materials for ships in use, or an International Ready for Recycling Certificate which is issued based on a ship recycling plan after a final inspection has been performed. The main obligations of flag states include issuing proper certificates and performing inspections and verifications of hazardous substances in the ship. Special regulations of the Convention focus on ship recycling facilities, which are defined as "a defined area that is a site, yard or facility used for the recycling of ships" (Art. 2(11)). This broad definition has been criticized because it allows primitive ship recycling facilities far from the standards of modern ship scrapping shipyards to be classified as ship recycling facilities (Nawrot, 2015). Although this broad definition was probably prepared so as to not exclude the most popular ship scrapping sites in Asia, and may be treated as pragmatic move to attract those countries to join the convention, one can hardly imagine beaches in Alang satisfying the technical requirements of such facilities. Such facilities must be equipped with a ship recycling facility plan, which is a document that introduces procedural mechanisms for the workers and ensure that ship scrapping is environmentally sound. It must also have an authorization of ship

recycling facilities document, which is a time-limited permit for performing ship recycling services that is issued after verification of the facilities documents and an on-site inspection.

## EU perspective on ship recycling

Since the Hong Kong Convention will become binding in the near or distant future (if at all), it is worth mentioning the regional, EU approach to the problem of ship recycling. The European Union presents a restrictive approach to environmental issues which arises from an awareness of the consequences of sea disasters occurring off the coast of the Union and also because a considerable portion of the Western Europe coasts have been contaminated (Galley, 2014). The EU was one of the greatest advocates and promoters of the signing of the Hong Kong Convention. The ratification of this Convention by the EU will also constitute a significant quantitative and political contribution to achieving the conditions for enforcement of the Hong Kong Convention. While EU countries are not the most popular flag states in the commercial fleet, the EU is one of the largest markets and exporters of mass-scale products using freight ships. This allows the EU to put pressure on carriers to achieve an adequate level of safety in freight delivery.

To facilitate ratification of the Hong Kong Convention by EU countries and to develop EU standards for ship recycling based on international law, the European Parliament and the Council adopted Regulation No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on the recycling of ships and amended Regulation (EC) No 1013/2006 and Directive 2009/16/EC (Regulation, 2013). The recycling regulations of EU institutions go beyond the negotiated minimum standards, and the implemented solutions are often more restrictive than those proposed in the Hong Kong Convention. At the same time, it can be inferred from the regulations that the EU institutions are aware of the likely problems with implementing ship recycling standards. One of the most important is undoubtedly the continued escape of ships from the jurisdiction of EU countries.

The scope of the regulation covers both vessels flying the flag of a Member State and also vessels flying the flag of a third country which calls at port or anchors in EU countries (art. 2). This will create a specific extension of the jurisdiction to non-EU vessels. Of course, there is a question of the efficiency of the application of standards against ships flying the flag of a non-EU country, as well as

the possibility of control, particularly as it regards determining the place where such a vessel will be scrapped. It is important to note that the aim of the regulation is to increase the health and safety and environmental protection at every stage of the ship's life cycle (art. 1). This means that even if the ship scrapping procedures are not followed, it must comply with relevant EU law rules during its operation or during its construction in EU shipyards. Examples may include standards for prohibiting the use of dangerous substances on board in annex 1 to the Regulation (art. 4). It must also be kept in mind that enforcing the obligations on the creation of hazardous materials lists is the basis for implementing more environmentally friendly ship scrapping methods even in non-EU countries or OECD.

The regulation uses the autonomous definition of a vessel for its regulation, which includes vessels, floating and self-lifting platforms, floating storage units, floating production and storage facilities, as well as vessels without equipment or those which are towed. This definition is broad and covers an even broader range of devices than the Brussels Convention of 1924, or the Convention of 1969 concerning pollution of the sea by oil. When analyzing the definition of a vessel from regulation 1257/2013, it is evident that the definition of a vessel within the regulation was clearly inspired by the text of Hong Kong Convention (art. Article 2 (a) 7 of the Hong Kong Convention). This is not surprising, if we consider that one of the objectives of the EU regulation is to create the conditions for ratification of the Hong Kong Convention by EU states.

A few categories of obligations imposed by the regulation can be identified. First, the use of certain types of substances in the structure of the vessel are prohibited. Then, there are administrative obligations consisting of obtaining different consents and the preparation of studies which are significantly important in the final phase of a unit's life cycle, i.e., preparing it for recycling. The purpose of the Convention is to monitor the hazardous substances on board first by creating a list of hazardous materials. The ship's condition is reviewed and its certificate of performance is confirmed, and then a recycling plan is drawn up and approved.

The regulation also considers the issue of recycling infrastructure. Title III lays down the formal and material conditions which must be met to enroll a ship recycling facility in the Union's list of such facilities. In case of recycling facilities which are located within EU countries, functioning of such facilities is subject to a special authorization issued

by a competent Member State's administrative body. These allowances are temporary in nature (5 years) with the possibility of prolonging them for longer periods. The regulation also provides for the possibility of inclusion in the list of recycling establishments located in non-EU countries, but this entry procedure is even more formalized. The condition for entry shall be the fulfilment by a ship recycling facility of the conditions laid down in the Hong Kong Convention, the Stockholm Convention on Persistent Organic Pollutants, the IMO and ILO guidelines, and the requirements of the Basel Convention.

Since 31 December 2018, large commercial seagoing vessels flying the flag of an EU Member State may be recycled only in safe and sound ship recycling facilities included in the European List of ship recycling facilities. The European List was first established on 19 December 2016 and last updated on 17 June 2019. It currently contains 34 shipyards, including 30 facilities located in 12 Member States of the European Union and Norway, 3 facilities in Turkey, and 1 facility in the United States of America. The relatively low number of ship scrapping facilities in the EU, with 9 located at the Baltic sea, may offer the possibility of opening such facilities based on existing shipyard infrastructure in Poland. Since 2017 in Poland, a Batory Program has been implemented, which aimed to revitalize the shipyard industry in Poland. Despite huge media promotion, the flagship investment of the program – the construction of a modern ferry in Szczecin shipyard – seems to be experiencing huge delays and obstacles before construction has even begun. Ship scrapping may offer an interesting niche in the market for Polish shipyards. Two important conditions must be met, however – current trends in ship scrapping in Europe have to be reversed in accordance with EU regulations, and proper environmental protection infrastructure has to be created. Tons of wastes, including toxic ones, are currently imported to Poland both legally and illegally which creates a huge environmental danger through mishandling and human negligence. The question must be asked if we really want to create another environmental risk in such an ecologically sensitive area as the Polish coast of the Baltic Sea.

## Conclusions

The analysis of requirements of ship recycling facilities regulations makes it very unlikely that facilities located in the leading ship scrapping locations will be added to the EU list. There appear to

be requirements which are incompatible with the beaching practices which dominate Southeast Asia (with the exception of China): carrying out work from built structures, requiring a facility be designed, constructed, and used in an ecologically sound way, and proper waste management of a facility. The fulfilment of these requirements, as opposed to others mentioned in art. 13 of the regulation, would require the creation of infrastructure that does not currently exist in Southeast Asia. The costs of establishing such infrastructure would reduce the competitiveness of these facilities.

Similarly, the strict and expensive-to-implement rules on industrial emissions may result in *carbon leakage*, which occurs during the transfer of activities to more favorable locations with lower environmental standards, which causes *ship leakage* with regards to ship recycling. Despite the arguments of certain authors (Kościński, 2014) who, based on article 29 of the regulation, see the possibility of subsidizing EU ship scrapping facilities which comply with the requirements of the regulation. These facilities will be unable to compete with social dumping (rates per working day of \$2–7) (Puthucherril, 2011) or the environmental laws which this industry meets in the context of the competition with Asian countries.

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