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Evaluation of the Impact of the Present Ship Recycling Regulations by Assessing the Most Prominent Shipbreaking Countries in the Shipping Industry

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Abstract: Scrapping market is unique in many respects. The value of its products is more affected by international trade than by shipping economic circles. There are many regulations for the environmentally friendly dismantling of ships. Ship recycling is the eco-friendly method of ship dismantling, and it is governed by a set of rules, namely: (a) HKC (Hong Kong Convention) on Ship Recycling of 2009, prepared by IMO (International Maritime Organization), (b) UN (United Nations) B.C. (Basel Convention) of 1989 and (c) E.U. Waste Shipment Regulation of 2006. Despite this polyphony in legislation, no clear set of rules has been uniformly applied yet, resulting in institutional discontinuities which shipowners often exploit. In this paper, a case study analysis of the most major shipbreaking countries will be conducted to evaluate the impact of the present regulatory framework and assess if the enactment of the legislation affected the shipping practice.

Key words: SRC, UN Basel Convention, E.U. Waste Shipment Regulation, Ship Recycling.

1. Introduction

Ship recycling results from ship breaking for scrap or disposal of a vessel's structure irrespective of where it is executed. This method is the most environmentally friendly procedure for dismantling ships since every part of the hull and machinery can be reused. Furthermore, it includes various actions, from removing all parts and equipment to breaking down and recycling its infrastructure [1].

While it is advantageous for the environment, the process is not well received by ship owners, who prefer traditional scraping methods for increased profit. Moreover, even if ship recycling is beneficial for handling ship scrapping, the global picture is not optimistic, mainly because recycling facilities' environmental standards and working practices are poor [2]. So far, there is a lack of a consistent regulatory system dealing with ship breaking and ship recycling matters, thus creating a gap, which occasionally shipping companies exploit. Based on this situation, the IMO (International Maritime Organization) adopted the HKC (Hong Kong Convention) on Ship Recycling in 2009. However, it is not yet in force, and possibly it will take quite some time for all the stakeholders to reach an agreement and enact the legislation [3].

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2. Present Ship Recycling Legal Framework

2.1 The UN (United Nations) B.C.

The overall aim of the B.C. (Basel Convention) is to protect human life and the environment against harmful substances and unfortunate events which may result from the generation, management, transboundary movements, and disposal of toxic wastes. It is relevant for vessel dismantling, as a vessel that is sent for scrap, in most cases, contains hazardous materials and may, therefore, be regarded as a shipment of hazardous waste. Thus, it is implemented on all ships, considered "waste" [4].

Under the B.C.'s technical guidelines on vessel dismantling, "beaching" is not acceptable, and it should be phased out in favour of more environmentally friendly methods of shipbreaking. However, this precaution is implemented on relatively few end-of-life ships and is challenging to enforce on most of the world's merchant fleet [5].

The B.C. regulatory system is rendered inefficient for two practical considerations: (1) Ships travel independently and, most importantly, can easily change the flag. (2) Leaving a port before a decision to scrap the vessel has been officially announced, in essence, avoids the controls of the B.C. and its Ban Protocol, especially where the decision is taken while on the high seas, where arguably there is no other state-related, except the flag state. However, even where the flag state has imposed requirements on the shipowner to obtain permission to export as required under the B.C., changing the flag of the ship or selling the vessel to a company incorporated in a state outside the OECD group avoids the general prohibition and makes the scrap value of the vessel available to the shipowner [6].

2.2 The HKC on Ship Recycling

The IMO Convention for the Safe and Environmentally Sound Recycling of Ships (2009) ensures that ships, when being recycled after reaching the end of their operational lives, do not provoke any unnecessary risk to human health and safety or the environment. However, the HKC is still not in force because none of the criteria has been met [7].

The HKC confronts recycling issues and focuses firstly on ships sold for scrap that may contain environmentally harmful substances such as asbestos, heavy metals, hydrocarbons, ozone-depleting materials and others, and most importantly, on issues related to the working and environmental conditions in ship recycling areas. Ships sent for scrap need to carry an "inventory of hazardous materials", which will be specific to each vessel. At the same time, ship recycling yards will be required to provide a "ship recycling plan", to specify how each ship will be recycled, depending on its particulars and its inventory [8]. However, it is questionable how local authorities can inspect this so-called inventory when the HKC is not in force, worse in the absence of a legal basis to justify and enforce a maritime claim for violation of environmental legislation [9].

2.3 Related EU Regulations

The EU Waste Shipment Regulation tries to ensure the protection of the environment when waste is subject to shipment. It adapts the B.C. at the E.U. level and the Basel "ban" by banning all waste exports for dumping, whether hazardous or not, except European Free Trade Association countries [10].

In addition, the regulation covers all vessels which are "waste" as defined under the E.U. waste framework directive. In practice, enforcement of the statute is difficult when a ship becomes waste outside European waters, although national courts have made some decisions. Recent cases, assessed below, have shown the uncertainty of some federal authorities regarding when and how to enforce the waste shipment rules about suspected end-of-life ships [11]. In addition, Regulation No. 1257/2013 refers to the establishment of an inventory of hazardous materials (in force 1-1-2016) and resembles the provisions of IMO HKC [12].

3. Case Studies of Ship Dismantling Countries and Regions

Like other industrial activities, ship dismantling activities have a significant environmental impact. Due to inadequate waste management and the failure of shipowners to provide the necessary information documents, the elimination of toxic substances from ships results in the contamination of coastal areas and the exposure of workers to toxic substances [6]. In addition, the dismantling of ships in shipyards poses a significant risk because there is a high probability of

uncontrolled fires occurring. When cutting the parts of the vessel, there are still fuel or flammable cargo residues inside the ship's hull, so the variety of emissions released in the air is significant [13].

The analysis below includes specific cases of ship dismantling countries and regions to present the effect and the issues caused by the implementation of ship dismantling processes and demonstrate that the method of ship dismantling violates the international legislation on the matter [14].

A similar analysis had been conducted previously, with the utilization of case law instead of cases of ship dismantling countries and regions, for assessing the potential impact on previous maritime accidents to measure the effectiveness of the HNS (Hazardous and Noxious Substances by Sea) Convention [15].

3.1 India

In the last ten years, more than 90% of the ships that arrive at the end of their operational lives a year have been discharged to the beaches of Alang in India, Chattogram in Bangladesh and Gadani in Pakistan, and these are the countries with the environmental problems [16].

The Alang region of India has 120 active ship recycling yards that export equipment for recycling and reuse in various types of waste. The Alang-Sosiya shipyard in India has received worldwide ships that have completed their lifecycle. The shipyard recycles hundreds of vessels and has tens of thousands of people [17].

Greenpeace first documented the problem in the area of Alang in 1998. After local actions NGOs (non-governmental organizations), the Supreme Court issued several decisions to improve and try to bring it in line with the international requirements for a decent working environment and a clean environment, free of toxic substances and waste [18].

The government responded by adobe the ship recycling code in 2013, and the GMB (Gujarat Maritime Board) created a waste reception facility. Nevertheless, the working and living conditions of the shipyard workers remain alarmingly poor [19].

The pollution in the area is an outcome of various materials of the ships, such as oil, asbestos, paint and plastics. Additionally, the disposal of household appliances causes significant problems to people and the environment due to a high amount of bacteria expelled in the area [20, 21].

According to the Toxics Watch Alliance research, 435 people died in India's industries from 1991 to 2012. Also, in 2018, another nine employees were recorded in the shipyards. However, impunity for shipyard owners remains a serious concern. No shipyard owner has ever been held responsible for the death of a worker because they managed to put pressure on police officers to acquit charges [22].

The number of ships coming to South Asian countries for recycling has declined recently. For example, in Alang, India, information published by the Gujarat Maritime Board reveals that the number of ships for scrapping has declined in recent years [23, 24].

National and international stakeholders may think about improving the potential lousy practice as the leakage effect does not appear to be the case shortly [25].

India is still the dominant country that dismantles ships due mainly to market and tonnage factors [23]. Many factors such as the economic downturn, the COVID-19 impact and regulatory policies may shake the actual and projected trend, but no broader geographical change is expected [24].

3.2 Bangladesh

Ship recycling in Bangladesh took place in 1980. In 1990, the Bangladeshi industry was in second place after India, with a total demolition volume of 40% worldwide. A large proportion of the ship's machinery is recycled and used in Bangladesh compared to other South Asian countries. In 2009, the Supreme Court ordered that the shipyards in the Chittagong region should be closed because none of the shipyards had a necessary environmental permit

to operate [26, 27].

Although there are laws in Bangladesh concerning the safety of workers and the environment, these are not adequately observed as they are deliberately ignored due to industrial pressure [28, 29].

As a result, many end-of-life vessels are being imported into shipyards under comprehensive certificates, claiming to have been rid of dangerous materials, resulting in 79,000 tonnes of asbestos 69,200 tonnes of toxic paints and 240,000 tonnes of PCBs (polychlorinated organic compounds) being imported into Bangladesh [30, 31].

Around 22,000 workers are employed directly by the shipbuilding industry in Bangladesh, and up to 200,000 are used indirectly through ancillary activities. These numbers vary depending on market conditions and may have increased recently due to undertaking recycling activities since 2009. The majority of workers are young men and largely illiterate. Very few women work on those facilities, due to the high risk of the ship dismantling process. It is estimated that up to 95% of the workforce are migrant workers from the poorest regions of Bangladesh. The workers live in unsuitable conditions and work long hours without stopping [32, 33].

In 2018, 16 deaths and 23 injuries were recorded in workforce due to fires, falls from a large hill, or falls on various parts of the ship as an outcome of ship-breaking activities [34].

In 2020, a project was implemented by the IMO to enhance safe and environmentally sound ship recycling in Bangladesh. In addition, Norway has committed $1.7 million to support improved ship recycling in Bangladesh. The agreement between the IMO and Norway on environmental ship recycling was signed on 24 July 2020. This agreement will pave the way for Bangladesh to become a contributor party to the HKC, to set up facilities for the treatment, storage and disposal of hazardous waste [35].

3.3 Pakistan

Key factors that caused great concern to Pakistan's recycling industries were pollution and the incorrect dismantling of ships. In the 1960s, the Gadani region of Pakistan began to operate as a large ship recycling industry. It is estimated that at the peak of Gadani's industry, it employed around 30,000 people. However, stronger competition from India and Bangladesh and changing tax and regulatory regimes caused it to fall. As a result, the production of ship litter fell to a few from one-fifth of the level [36].

Since 1990, a 45% duty has been imposed on ships imported for scrapping, negatively affecting the broken ship activities in Gadani, almost stopping the industry in the year 2000. In recent years, shipowners and local authorities have successfully pushed for a reduction in tariffs and taxes, so the industry has recovered significantly. However, volumes are much lower than those in Bangladesh [37].

The dismantling ships used by the Gadani are the landing, as the area consists of sand and water level is pretty profound. In recent years the number of employees has decreased significantly from 30,000 to between 6,000 and 8,000, with about 4,000 more indirectly employed through ancillary activities. Industry representatives show that almost no women or children are engaged in shipbuilding; up to 75% of the total workforce are migrant workers, although this statistic differs considerably between shipyards [38].

While labour organizations have denounced working conditions in Gadani, there is a higher degree of mechanization than in Bangladesh, which mitigates certain risks. However, the industry is still in great need of modernization. There are conflicting data on working conditions and safety and risk management in Gadani. There have been many injuries, and this is because the medical care facilities in the area are not fully equipped to deal with the damages that are frequent by the dismantling of ships; only basic first aid is provided to the workers on the premises, and there are no trained medical personnel. The

employees work seven days a week without days off which over time, results in the shipyard facing a staff shortage [39].

3.4 Europe

Except for the three abovementioned sovereign countries, there are several facilities in Europe dealing with ship recycling. These facilities are located in Belgium, Italy, the Netherlands, France, and other European countries. Europe's dismantling process is in a slipway, on a dock and in tanks [40].

Some ports are equipped with dry docks. The majority of facilities in Europe recycle small and medium-sized ships, especially naval ones. Several European shipyards also have the potential to recycle large commercial vessels. Since November 2018, 23 shipyards with around LDT 1.4 million total capacity have been included in the approved E.U. ship recycling facilities [41].

In Europe, ship recycling is much higher than in Asia, as the steel prices between these two countries are very different. As a result, Asia attracts many shipowners who want to dismantle their ships at the lowest possible cost [42, 43].

The European Recovery Fund proposes the creation of a ship recycling-dismantling yard in Greece that will be financially, economically and environmentally sustainable by European standards. Greece does not have such a unit for ship recycling despite the most significant percentage of its ships being sent worldwide for scrapping [44].

The non-existence of such a unit is a substantial shortcoming for the shipping infrastructure, and for this reason, 100 vessels of Greek shipowners are being driven for scrapping in Asia. The idea of ship recycling in Greece will bring positive results to the economy, the environment and society. The reuse of ship materials enhances the economy and synergy with shipbuilding and industrial activities [45].

Presently, Karmenu Vella, Commissioner for Environment, Maritime Affairs and Fisheries stated that: "For too long, EU vessels have been dismantled in poor environmental and social conditions. This is not acceptable any longer. The full entry into force of the EU Regulation on ship recycling is a milestone for this sector, as it provides for the first time clear and specific rules on how EU-flagged vessels should be recycled. Like other recycling activities, ship recycling can be carried out sustainably, in a way which is good for workers, the environment and the economy. We count on all actors in the sector to work constructively with us to make it happen" [46, 47].

4. Conclusion

The main conclusion of the study centers upon the fact that the international Conventions allow the ships of the signatory state members, after re-flagging to a non-member state, to be sent to a ship recycling facility in a non-member recycling state.

In addition, the Conventions do not allocate any final responsibility of clean-up to the shipowner. Also, besides E.U. Regulations, hardly any international ship recycling convention addresses reducing the risks to human health, safety and the environment through enforcing requirements, some of which are easy to fulfil.

Through the analysis of the prominent ship dismantling countries, it is evident that no direct actions such as banning dismantling activities on beaches have been issued. After assessing the said countries and regions, it is concluded that little has been changed since the past decades, with no proper safety, security, and environmentally sustainable measures yet in effect.

It is also evident that there is not even a primary national convention in many cases to at least partially regulate the ship recycling processes conducted after the "beaching". From this, we can assume that the shipbreaking countries "de facto" accept the threats of the process to human life and the environment, in favour of economic and social benefits. In contrast,

implementing a sustainable ship recycling process is yet not an economically viable option.

Finally, it can be said that with the absence of the enactment or the proper implementation of an international legal framework upon the issue of ship recycling, the enforcement of strict national legislation from all prominent shipbreaking nations and regions could substantially resolve the assessed phenomenon.

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