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THE URGENCY OF GREEN SHIP RECYCLING METHODS AND ITS REGULATIONS IN INDONESIA FROM THE INTERNATIONAL LAW PERSPECTIVE

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ABSTRACT

One of the critical problems for ships utilization is the limited operative life which affect its efficiency. Therefore, ship owners tend to send these ships for recycling. On the one hand, ship recycling industry can absorb labour and become a source of state revenue. Nevertheless, these activities significantly affect the preservation of the marine environment if not appropriately managed. Marine waste pollution is an essential issue in global context. Regrettably, as a country with a massive shipping intensity and geographically a strategic location, Indonesia does not have a comprehensive national policy regarding recycling ships weighing for 500 GT or more. The government allows conventional ship recycling methods that are not environmentally friendly and sustainably, which contradicts Indonesia's commitment to supporting the Sustainable Development Goals (SDGs). Thus, Indonesia is vulnerable to claims regarding poor pollution management due to ship dismantling activities. The claim could be addressed to the state's responsibility, which refered to international instruments such as conventions and guidelines in terms of preventing pollution to neighboring countries originating from ship breaking and dismantling activities that lack regulation and measures. This article argues the urgency to reform the current national ship recycling regime in the future to apply a greener method by alluding to international general principles, customary and jurisprudence.

Keywords: *Ship, Ship Recycling, Green Ship Recycling.*

INTRODUCTION

One of the crucial shipping problems is the short operative life of the ships, which only lasts for 25-30 years.[1] Therefore, the old ships are dispatched to the ship recycling facilities.[2] Ship recycling (dismantling, breaking, demolition or scrapping) is a complex activity that reprocessing hazardous materials applied in the ship structure, which comes from various substances.[3]

[1]Thomas Vance, Timothy Fileman, and Stephen de Mora, (2021). Shipping, Ships and the Environment. In *Environmental Impact of Ships* (1–10). Cambridge University Press. https://doi.org/10.1017/9781108381598.002, p.4 ; Natalia de Souza Ribeiro, Euler Sanchez Ocampo, and Newton Narciso Pereira, (2019).

[2]Karin Garmer et al.,(2015). Development and validation of three-step risk assessment method for ship recycling sector. *Safety Science*, *76*, 175–189. https://doi.org/10.1016/j.ssci.2015.02.007

[3]Dharu Feby Smaradhana, Aditya Rio Prabowo, and Andita Nataria Fitri Ganda, (2021) "Exploring the Potential of Graphene Materials in Marine and Shipping Industries – A Technical Review for Prospective Application on Ship Operation and Material-Structure Aspects," *Journal of Ocean Engineering and Science*, 1–39, https://doi.org/10.1016/j.joes.2021.02.004, p. 5.

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According to the Indonesian Classification Bureau, in 2019, there were 11,317 ships or 19,219,373 GT Indonesian-flagged ships. They consist of 10,878 ships measuring 100 GT and above that sail in domestic waters, and 439 ships weighing 500 GT have certified international sailing. The data shows that the potential of the ship recycling industry in Indonesia is reasonably significant. Unfortunately, Indonesia is not a signatory member of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) yet and did not have a comprehensive arrangement regarding environmentally friendly ship recycling for ships weighing 100 GT or 500 GT and above yet. However, the regulation of ship recycling in Indonesia is regulated simultaneously in Law Number 17 of 2008 concerning Shipping, the Regulation of the Minister of Transportation Number 29 of 2014 concerning the Maritime Environment Pollution Prevention and the Government Regulation Number 31 of 2021 concerning the Implementation of the Shipping Sector.

According to Clarksons Shipping Intelligence Network, Indonesia has 278 shipyards[4] with three main ship recycling activities in Tanjung Jati, Madura; Cilincing, North Jakarta; and Tanjung Uncang, Batam. Regrettably, most facilities are performing a simple method of operation.[5] Mainly, Indonesia's breaking or dismantling method is the beaching method and is limited to breaking ships into pieces of iron plate.[6] Hence, if the Indonesian government does not manage ship recycling activity with environmentally, friendly and sustainably methods and regulations, it may harm the nation in the future. It may also bias for Indonesia's stance at the international level regarding reducing emissions and preserving the marine environment. Moreover, Indonesia is vulnerable to the state's responsibility claims from neighboring countries because of the insufficient rules and mitigation concerning pollution management from the ship-breaking activities.[7] So, it is essential to reform current national legal regime concerning ship recycling.

Ship recycling activities have received greater attention because of the horrific effect to the environment. It triggers growing protests from international environmental organizations against defunct seagoing ships being dismantled under environmentally damaging and humanly degrading conditions.[8] However, there is still a few legal research that discusses ship recycling in Indonesia. This study differs from previous research conducted by Wasis Akriananta and Ketut Suastika (2017), which emphasizes applying the Analytic Network Process (ANP) method in the ship recycling process. Furthermore, Siti Fariya (2018) research discusses the technical plans for constructing ship recycling yard facilities in Indonesia. In addition, research conducted by Sunaryo *et al.* (٢٠٢١) that mainly focuses on determining the gap between current national regulation and international conventions regarding ship breaking yards.[9] The distinction of this study from the previous works is the published papers did not determine the threat of potential claims from neighboring states and prevention steps to oppose the claim.

This article discusses the existing legal vacuum in ship recycling industry and provide recommendations for the government in making future policies. Thus, the authors describe the

[4]Dimitris Gavalas, Theodoros Syriopoulos, and Michael Tsatsaronis, (2021) "Assessing Key Performance Indicators in the Shipbuilding Industry; an MCDM Approach," *Maritime Policy and Management,* 00.(00), 1–29, https://doi.org/10.1080/03088839.2021.1876939 p. 7.

[5]Wasis Akriananta and Ketut Suastika,(2017) "Pengembangan Galangan Daur-Ulang Kapal Ramah Lingkungan Di Indonesia Menggunakan Metode Anp: Studi Kasus Galangan Daur-Ulang Kapal Di Kamal, Madura," *Jurnal Kelautan Nasional,* 12, (1), 33, https://doi.org/10.15578/jkn.v12i1.6196, p. 33-34.

[6]Siti Fariya,(2018). "Analisa Teknis Pembangunan Ship Recycling Yard Di Indonesia," *Jurnal Teknologi Maritim,* 1 (2), p. 16

[7]Stefan Ambec and Lars Ehlers,(2016) "Regulation via the Polluter-Pays Principle," *Economic Journal* 126 (593), 884–906, https://doi.org/10.1111/ecoj.12184,

[8]Juan Ignacio Alcaide, Emilio Rodríguez-Díaz, and Francisco Piniella, (2017)"European Policies on Ship Recycling: A Stakeholder Survey," *Marine Policy* 81, March: 262–72, https://doi.org/10.1016/j.marpol.2017.03.037.p 265

[9]Sunaryo Sunaryo et al., (2021), "A Gap Analysis of Ship-Recycling Practices in Indonesia," *Recycling,* 6(3) https://doi.org/10.3390/recycling6030048.

international rules regarding ship recycling in the first part, referring to the HKC. In the second part, the authors discuss on how Indonesia's national policy regulates ship recycling activities to show its weaknesses. After examining the international and national regulations, the authors construct the urgency of reforming the ship recycling regime in Indonesia by referring to international customary law and jurisprudences.

METHOD

The research approach employed in this report is a normative method that used data gathering strategies such as direct observation and literature review. The work was examined descriptively by describing the facts in data with legal materials consisting of primary, secondary, and tertiary legal resources. The primary legal texts used are as follows:

1. The Hong Kong International Convention 2009;
2. Law Number 17 of 2008 concerning Shipping;
3. the Minister of Transportation Regulation Number 29 of 2014 concerning the Prevention of Pollution of the Maritime Environment;
4. Circular Letter of the Director of Shipping and Maritime Affairs Number 19/PK/DK/2019 concerning the Recycling of Indonesian-flagged vessels dated 11 March 2019
5. Government Regulation Number 31 of 2021 concerning Implementation of the Shipping Sector

ANALYSIS AND DISCUSSION

International Conventions Related to the Ship Recycling

The Hong Kong International Convention for the Safe and Environmentally Friendly Recycling of Ships aims are to ensure that the recycling of ships that have reached the end of their operational life does not pose unnecessary risks to human health, safety and environment.[10] The HKC applies to ships of 500 GT or more engaged in international trade, except for government-owned ships and warships. They operates throughout their lives only in waters which subject to the sovereignty or jurisdiction of the country in which the ship's flag is registered.[11] HKC also applies to ship recycling facilities operating under the jurisdiction of a party to the Convention.[12] The HKC is accompanied by several appendices that list hazardous substances, forms and certificates related to the Convention.[13] The Convention has a two-tier system with the primary governance and procedural rules specified in the main text of the Convention and supporting rules in the form of detailed requirements and more specific regulations specified in the annexes.[14]

In general, the annexes manage the control of toxic materials in ships in several ways, such as (1) limiting/prohibiting the use of hazardous materials, (2) developing an inventory of hazardous materials, (3) minimizing work accidents for workers by making policies that prioritize safety and (4) protection of health and the environment by providing safety equipment in the workplace. [15]According to the Article 15 paragraph (1) state that recycling states permit

[10]Mohamed Hussein Nassar and Ahmed Hamdy Moursy, (2016)"Evaluation of Hong Kong Convention in the Maritime Industry," *Journal of Shipping and Ocean Engineering,* 6: 115–20, https://doi.org/https://doi.org/10.17265/2159-5879/2016.02.006, p 116.

[11]Monica Ajeng Oktaviany, (2019)"Challenges for the Ratification of the Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 in Indonesia" (World Maritime University Dissertations, p. 49.

[12]Timothy Carey, (2011) "The Hongkong International Convention for the Safe and Environmentally Sound Recycling Ships: Progress?" Lund University, p. 25.

[13]Marria Sarraf, "Ship Breaking and Recycling Industry in Bangladesh and Pakistan," p.89-91.

[14]Kanu Priya Jain, (2013)"Critical Analysis of the Hong Kong International Convention on Ship Recycling," *International Journal of Environmental, Ecological, Geological and Mining Engineering,* 7 (10), 683–91, p.685.

[15]Shawkat Alam dan Abdullah Faruque, (2014) "Legal Regulation of the Shipbreaking Industry in Bangladesh: The International Regulatory Framework and Domestic Implementation Challenges," *Marine Policy,* 47, 46–56, https://doi.

ship recycling facilities and ensure that the facilities are "designed, constructed, and operated in a safe and environmentally sound manner." The HKC has a pattern of periodic surveys, certification processes, reporting requirements, which are indispensable in every flag country.[16] A salient feature of this instrument encompasses ship standardization from design, building, operation, and maintenance to recycling, along with standards applicable to ship recycling facilities.[17]

However, HKC has still not entered into force yet due to the Article 17 of the Convention. The Convention requires ratification, acceptance, or approval of at least 15 Countries which represents 40 per cent of the world trade shipments on a gross tonnage basis, with the combined maximum annual ship recycling volume of those countries shall constitute not less than three per cent of their combined trade shipping tonnage for the last ten years. Although this Convention has not enter into force yet and Indonesia is not a member state of the Convention yet.[18] There are strong indications that Indonesia intends to be a party to this Convention in the future, as stated by the Directorate General of Sea Transportation in the Workshop on "Safe and Environmentally Friendly Ships Fulfillment" on 17th November 2020.[19]

National Policy on Ship Recycling

The ship recycling process is an activity that has a significant risk to the workers and the surrounding environment. Thus, proper arrangements and methods are needed.[20] The regulation regarding ships breaking in Indonesia has been briefly mentioned in Law Number 17 of 2008 on Shipping.[21] Based on the Article 241 paragraph (1) of the Shipping Law, ship recycling is an activity to cut and destroy ships that are no longer used safely and environmentally soundly. However, if a violation occurs, the perpetrators can be charged with imprisonment for a maximum of two years and/or a fine of a maximum of IDR 300,000,000.[22]

The technical arrangement of ship recycling is regulated in the Minister of Transportation Regulation Number 29 of 2014 concerning the Prevention of Pollution of the Maritime Environment from the Articles 51 to 56. Based on the Article 51, ships with a gross tonnage of 500 GT or more sailing in international waters and ship recycling facilities should comply with international ship recycling regulations. However, for ship with a gross tonnage of 100 GT or more sailing in Indonesian waters and ship anchoring facilities carrying out ship dismantling work in Indonesian waters, they are obliged to comply with the provisions in this Ministerial Regulation.

The regulation of the Indonesian-flagged ships recycling is organized in the Letter of the Director of Shipping and Maritime Affairs Number 19/PK/DK/2019 concerning the Recycling of Indonesian-flagged vessels dated 11 March 2019. According to that letter, every Indonesian-

org/10.1016/j.marpol.2014.01.022, p.48.

[16]Akshat Aror dan Anna Kalogianni, (2020) "Ship Recycling: Guidelines for Devising a Strategy in Compliance with Complex Regulatory Framework," *Standard Club Bulletin*, p.3.

[17]Gabriela Argüello Moncayo,(2016) "International Law on Ship Recycling and Its Interface with EU Law," *Marine Pollution Bulletin* , 109 (1): 301–9, https://doi.org/10.1016/j.marpolbul.2016.05.065, p. 303.

[18]Shafiah F. Muibat, Andrew Wiguna Mantong, and Gilang Kembara, (2020) "Maritime Safety in Indonesia: Mapping The Challenges and Opportunities," *Centre for Strategic and International Studies*, p.27.

[19]Redaksi ISL News, (2020), "Karena Konvensi International Hongkong, Ditjen Hubla Gelar Workshop Penutuhan Kapal Yang Aman Dan Ramah Lingkungan,", https://www.indonesiashippingline.com/maritime-news/6174-karena-konvensi-international-hongkong,-ditjen-hubla-gelar-workshop-penutuhan-kapal-yang-aman-dan-ramah-lingkungan.html.accessed 8 September 2021

[20]Md. Imrul Jobaid et al., (2014)"Ship Recycling and Its Environmental Impact: A Brief Overview of Bangladesh," *IOSR Journal of Business and Management* 16 (10), 31–37, https://doi.org/10.9790/487x-161013137, p. 31.

[21]M. Syamsudin, (2014)"Commercial Code Di Bidang Perlindungan Hukum Konsumen (Studi Perbandingan Di Pelabuhan," *Jurnal Media Hukum,* 21 (1), 20–43, http://journal.umy.ac.id/index.php/jmh/article/view/1155, p 26.the content analysis is aimed to the contents of the legal provisions of the commercial code which are no longer appropriate , and it needs to be replaced by the new ones. The results of the study shows that there are some commercial code regulations that need to be reviewed namely: (1

[22]Law No. 17 of 2008 on Navigation, Article329.

flagged ship should be inspected before issuing a readiness certificate for ship recycling (ship recycling ready certificate) which includes:

1. Check the list of hazardous materials inventory (hazardous material inventory);
2. Plan completion of the ship; and
3. Complete requirements for authorization on ship-holding facilities (ship recycling facilities)

The Indonesian government has just authorized Government Regulation Number 31 of 2021 concerning the Implementation of the Shipping Sector, which was approved on 2 February 2021. Provisions regarding the shipbuilding activities are discussed from the Article 137 to the Article 139. The provisions add arrangements regarding obligations of shipyard owners to have waste storage and management facilities. Furthermore, the new provisions in the Article 137 paragraph (4) states that ship recycling activities must be carried out in facilities that have received recognition from the Minister. However, this provision is vague because there is no further explanation regarding what conditions should be met by a shipyard facility to be recognized by the Minister.

The drawback of the national regulation on ship recycling in Indonesia is that the scope of regulation only applies to ships with 100 GT. In comparison, for ships with 500 GT, it has not been technically regulated. In the light of that, Indonesia has not yet adopted the HKC law or has not become a member state. Therefore, currently there are no national law that regulate ship recycling technical compliance for ships weighing 500 GT. Moreover, the latest regulation does not yet provide categorization of the ship breaking methods which are allowed or not allowed to.

The Urgency of Reforming the Ship Recycling Regime in Indonesia

The Relevance of Hong Kong Convention 2009 as State's Reference

Although the HKC has not been effectively enforced, it does not mean irrelevant or cannot be referred to for constructing national policy. For example, the European Union that implementing the EU Ship Recycling Resolution, which adopts the rules of the HKC, which came into force in 30th of December 2013. The regulation adopts and enhances the provisions and rules set by HKC by establishing a certification, survey and authorization system for large ships sailing using the flags of EU member countries.[23] Another example is the Japanese classification society ClassNK had issued Statements of Compliance (SOC) since September 2015. This SOC issued for ship recycling facilities meeting the requirements of the HKC and that the facilities are practicing recycling procedures under the plan.[24]

The European Union Ship Recycling Regulations (EU SRR) has higher standards than the Convention regarding the inventory of hazardous materials and ship recycling facilities. The inventory of hazardous materials that a ship should be kept from its construction until its demolition includes even more substances than those listed in the HKC.[25] It suppose the EU SRR and the HKC are implemented effectively. In that case, they can reduce emissions and apply hazardous materials (such as asbestos, mercury, and ozone-depleting substances) on ships.[26] Furthermore, the regulation arranges a detail list of requirements for European ship recycling yards located in the third countries that recycle European flagged ships.[27] Non-European ship recycling facilities will have to submit applications to the Commission and

[23]Argüello Moncayo, *Op.cit.*p. 302
[24]International Law and Policy Institute,(2016) "Shipbreaking Practices in Bangladesh, India and Pakistan,", p. 10.
[25]Argüello Moncayo, *Loc.cit.*
[26]Hsuan dan Parisi, *Op.cit.*p.6-7.
[27]Kanu Priya Jain, Jeroen Pruyn, dan Hans Hopman, (2018)"Strategic Guidance Based on the Concept of Cleaner Production to Improve the Ship Recycling Industry," *Environment Systems and Decisions,* 38 (2): 250–60, https://doi.org/10.1007/s10669-017-9654-5, p.254.

prove that they have complied requirements within the list.[28] However, to comply with EU SRR, the recycling facilities cannot practice the beaching method or other methods that are not sustainable and environmentally friendly.[29]

Thus, it indicates that the beaching method will be banned soon. Countries that still practice the method would be encourage to adjust their conducts and legal instruments to be more sustainable. The Convention has been ratified or approved by twelve states, are Belgium, the Republic of the Congo, Denmark, Estonia, France, Japan, Netherlands, Norway, Panama, Serbia, India and Turkey.

Solution for Indonesia's National Policy Concerning Ship Recycling

As we recall the current national policy, Law Number 17 of 2008 concerning Shipping, the Ministerial Regulation No. 29 of 2014 concerning the Prevention of Pollution of the Maritime Environment, only has a limited scope on ships weighing 100 GT. In addition, the Government Regulation Number 31 of 2021 did not mention or categorize the ship within the scope of the regulation. Moreover, those regulation does not determine which method is prohibited or not allowed for ship breaking. This argument is supported by the previous studies that conclude Indonesia is far from meeting the requirements of the existing regulations concerning ship recycling.[30] Thus, it appears that the national legal regime related to shipping recycling substantially has not shown clarity, certainty, and completes legal instruments.

As cited from Indonesia Intended Nationally Determined Contribution (INDC): "for 2020 and beyond, Indonesia envisions to achieve archipelagic climate resilience as a result of comprehensive adaptation and mitigation programs and disaster risk reduction strategies. "In order to achieve that vision, Indonesia shall empower and improve the provision of essential services in health and education, technological innovation, and sustainable natural resource management.

Consistent with that commitment, the adaptation or ratification of the HKC is needed to assert Indonesia's stance at the national and international level in promoting marine conservation, emission reduction, and climate change management. Thus, no countries shall inhibit or restrict Indonesia's deed, specifically in the shipping sector. Such restriction is employed by accusing the Indonesian shipping industry of not supporting the vision in 2050, namely sustainable mobility. Sustainable mobility is a vision that aims to reduce emissions by ٪٩٠ through implementing strict rules regarding reductions at ports.[٣١] The vision of sustainable mobility aligns with the 13th SDGs concerning climate change management and the 14th SDGs on the preservation of marine ecosystems. The 13th SDGs emphasizes policies that facilitates the reduction of greenhouse gas emissions that limiting the increase in the earth's temperature to no more than 1.5^0C. [32] Meanwhile, the 14th SDGs emphasize reducing human activities or activities that can cause an increase in the acidity of seawater and pollute marine creatures. Recently, countries have prioritized reducing greenhouse gas emissions in the coming decades since its compounded effects are catastrophic and irreversible.[33]

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[28]International Law and Policy Institute, "Shipbreaking Practices in Bangladesh, India and Pakistan.", p. 17

[29]Tomi Solakivi et al., (2021)"The European Ship Recycling Regulation and Its Market Implications: Ship-Recycling Capacity and Market Potential," *Journal of Cleaner Production,* 294, 126235, https://doi.org/10.1016/j.jclepro.2021.126235. labour rights and occupational health. To steer the industry's transition towards adopting more sustainable practices, the European Union has introduced the European Ship Recycling Regulation (SRR

[30]Sunaryo Sunaryo et al, *Op.cit*, p.7. and is considered a prospective source of economic development and employment opportunity, and yet conceivably poses a threat to the health and safety of workers and the environment. There are international and national regulations that govern ship-recycling activities to ensure that the hazardous impacts of the industry are minimized.

[31]European Commission, 2019"Sustainable Mobility", p. 10.

[32]Department of Economic and Social AffairsSustainable Development, "Take Urgent Action to Combat Climate Change and Its Impacts," accessed 21 April 2021, https://sdgs.un.org/goals/goal13 .

[33]Rob Amos and Emily Lydgate, (2020)"Trade, Transboundary Impacts and the Implementation of SDG 12," *Sustainability Science* 15 (6) 1699–1710, https://doi.org/10.1007/s11625-019-00713-9, p. 1701.

Another critical issue is the possibility of other state claim based on state's responsibility because of poor waste management, unregulated breaking methods, and ineffective mitigation measures that induce leakage of harmful substances. These conditions could endanger the marine population and damage the national territory.[34] International law and customs explicate that a state is "responsible" if it fails to fulfill its international obligations to prevent, reduce and control pollution of the marine environment. Therefore, a state is liable to make whole "reparation" for the injury caused by the internationally wrongful act.[35] That statement is affirmed by the international customary principle of *sic utere tuo ut alienum non laedas*. The principle means that states bear the responsibility to ensure that wastes from any activities conducted within their territories. At the same time, they shall not cause pollution to other States' marine environment or areas beyond the limits of national jurisdiction.[36]

States' responsibility is mentioned in Article 235 paragraph (1) UNCLOS 1982, which stipulates, "States are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable under international law." Furthermore, in the Article 235 paragraph (2) and paragraph (3), a state is liable for damage resulting from pollution of the marine environment by ships or persons subject to its jurisdiction and control. The liability will exist if there is a causal link between the obligation of fulfillment failure and the damage to the marine environment. Under the UNCLOS 1982, Catherine Lotrionte argues that the international principle of state responsibility is based on the idea that the state has direct control over the non-state actor who commits the violation and the attribution by the state to the non-state actor (caused by the state). This condition allows other parties to hold the state guilty of the actions of the non-state actor who commits a violation.[37]

According to Article 2 of the State Responsibility for Internationally Wrongful Acts Convention, invoking the idea of state responsibility requires two elements: the act that results in the loss attributable to the country concerned and the act that violates international law. The term "attribution" in the the Yearbook of the International Law Commission is used to denote operations or activities carried out by non-state actors representing the acts or omissions of a State.[38] In line with that clause, the government bears the responsibility invoked by the damages caused either by its citizen or legal entity registered under its flag. In other words, Indonesia is at risk against the state's responsibility claims such as "polluters pay" and "strict liability". It is linked to the government's lack of surveillance and preventive measures in the ship breaking process, which resulting in transboundary waste.[39]

The strict liability principle applies to non-wrongful yet attributed or attributable acts to the states where polluter origins or when the state does not prevent violations of private actors.[40] In addition, there is an alternate principle that demands the state to be responsible of their acts namely the polluter pays principle that determines whoever produces and causes the pollution to compensate to those who suffer from the damage. The principle specifies further that the

[34]*Ibid.*

[35]Andrew Tirrell and Elizabeth Mendenhall, (2021)"Cruise Ships, COVID-19, and Port / Flag State Obligations," *Ocean Development & International Law* 0 (0) 1–14, https://doi.org/10.1080/00908320.2021.1913323, p. 12.

[36]Yoshifumi Tanaka, (2017)"Land-Based Marine Pollution," in *The Practice of Shared Responsibility in International Law*, ed. André Nollkaemper, Ilias Plakokefalos, and Jessica Schechinger, Cambridge: Cambridge University Pres, 294–315, https://doi.org/10.1017/9781316227480.013, p. 296.

[37]Catherine Lotrionte, (2011)"Introduction: Strengthening the Norms of State Responsibility," *Georgetown Journal of International Affairs,* 00(00): 101–9, p. 105.

[38]International Law Commission, (2015)*Yearbook of the International Law Commission 2015,.*vol. II p. 50.

[39]Juan Ignacio Alcaide, Emilio Rodríguez-Díaz, and Francisco Piniella, (2017)"European Policies on Ship Recycling: A Stakeholder Survey," *Marine Policy* 81, 262–72, https://doi.org/10.1016/j.marpol.2017.03.037 p.262.

[40]Riccardo Vecellio Seagate,(2021) "Protecting Cultural Heritage By Recourse to International Environmental Law: Chinese Stances on Faultless State Liability," *Hastings Environmental Law Journal,* 27 (1): 153–228, p. 155.

cost of pollution should be borne by the entity which get the profit from the process that causes pollution.[41] Furthermore, the customary law of state responsibility, the term "compensation" is finite to financial assessable harm to persons and property. It also includes lost future income and reasonable measures taken to remedy or mitigate the harm.[42] According to those clauses, the Indonesian government is liable for any damages caused by ship-breaking activities because, the government receives benefits through the tax collection from the shipyard facilities. However, the state did not provide sufficient measures or regulations regarding the activities. Thus, the government may be found guilty and violate the Article 235 paragraphs (1), (2), and (3) of the UNCLOS 1982 concerning the responsibility to prevent pollution arising from ship or persons subject to its jurisdiction and control.

In order to avoid such claims, waste management in the form of liquid, solid, and air should be supervised strictly by public policy using the precautionary principle and the principle of preventive action.[43] The precautionary principle is set out in Principle 15 of the 1992 Rio Declaration that specifies the precautionary approach aims to prevent severe irreversible harm and urge the authorities to act in situations of scientific uncertainty regarding the threat.[44] The government is urged to provide rules and measures to prevent and mitigate unfortunate things in the middle of scientific uncertainty at a regional and global level s asserted in Article 3 paragraph (3) UNFCC.

The precautionary approach can be determined as a cautious assessment of long-range or remote catastrophes.[45] State's defense using precautionary approach is widely seen in discussions of biodiversity conservation whether explicitly or implicitly.[46] Weiner argued that there are at least three precautionary principles exist that ranges from the most robust version to the weaker principle. This argument resulted from some cases, such as the US Supreme Court case Industrial Union, AFL-CIO v. American Petroleum Institute (1980). He describes that version first version is about "uncertainty does not justify inaction", second version related to "uncertain risk justifies action," and the third version in terms of "shifting the burden of proof."[47] Weiner opined that the first and second versions are mainly described as "permitting" action and "justifying" action. However, the third version would forbid a "risky activity until the proponent of the activity demonstrates that it poses no (or acceptable) risk.[48]

Although some authors criticize the principle, the EU Commission suggests that precautionary measures should be proportional to the "chosen level of protection" because "risk can rarely be reduced to zero." According to the Commission, the "chosen level of protection" should be considered within a structured approach to risk analysis, which comprises three elements: risk assessment, risk management, and risk communication.[49] On the other hand, the preventive action principle requires the state to enact effective environmental laws and regulations to

[41]Ambec and Ehlers,["http://www.mendeley.com/documents/?uuid=a82fc09e-c4e5-4f34-9965-729e1f775af1"]}],

[42]Jesse L. Reynolds, (2019)"International Compensation and Liability," in *The Governance of Solar Geoengineering: Managing Climate Change in the Anthropocene*, Cambridge: Cambridge University Pres, 178–95, https://doi.org/10.1017/9781316676790.012, p. 180.

[43]Linda Hajjar Leib, (2011) "Theorisation Of The Various Human Rights Approaches To Environmental Issues," in *Human Rights And The Environment: Philosophical, Theoretical And Legal Perspectives*, Leiden; Boston: Brill, p. 50.

[44]*Ibid*

[45]Kylie Morphett, Wayne Hall, and Coral Gartner, "The Misuse of the Precautionary Principle in Justifying Australia's Ban on the Sale of Nicotine Vaping Products," *Nicotine and Tobacco Research* 23, no. 1 (2021): 14–20, https://doi.org/10.1093/ntr/ntaa173, p. 15.the precautionary principle has been used to justify an effective sales ban on nicotine vaping products (NVPs

[46]Jonathan A Newman, Gary Varner, and Stefan Linquist, "The Precautionary Principle," in *Defending Biodiversity: Environmental Science and Ethics* (Cambridge: Cambridge University Press, 2017), 97–131, https://doi.org/10.1017/9781139024105.005, p.101.

[47]Nathan Dinneen, (2013)"Precautionary Discourse," *Politics and the Life Sciences : The Journal of the Association for Politics and the Life Sciences,* 32(1): 2–21, https://doi.org/10.2990/32_1_2, p. 5.

[48]*Ibid*

[49]Commission of the European Communities, "Communication from the Commission on the Precautionary Principle.," 2000, https://op.europa.eu/en/publication-detail/-/publication/21676661-a79f-4153-b984-aeb28f07c80a/language-en.

prevent transboundary environmental damage caused by any events on the country's territory. This principle was established due to the concept of 'jurisdiction' control over a territory.[50] The prevention approach applies to activities under the jurisdiction or control of a State as long as an existing link is established within the effects, the perpetrators and state of origin. This argument aligns with principle 21 of the Stockholm Declaration. Furthermore, the principle might also be applicable to harm arising from extraterritorial activities under the jurisdiction of a state, for instance, concerning overseas greenhouse gas emissions caused by national companies or domestic consumption.[51] The prevention principle has been used in the Permanent Court of Arbitration (PCA) on Iron Rhine Railway Arbitration in 2005 between Belgium and the Netherlands. The issue was concerning the reactivation of a railway passing through Dutch territory. The tribunal pondered that economic activities such as these had to be planned to prevent environmental damage.[52]The precautionary approach and preventive action principles can pertain to regulation, licensing, and strict supervision. The term "regulation" can also imply that States create and enforce rules that can prevent the spread of pollution.[53]

The points described become an urgent need for regulations on the ship recycling industry that regulate laws on Government Regulation comprehensively. As referred to the Principle 11 of Rio Declaration 1992, Manson argues that "if the activity meets the damage condition and the link between the activity and the effect meets the knowledge condition, then decision-makers ought to enact the specified remedy".[54] As one of the members of the United Nations, Indonesia should fulfill its commitment to prevent environmental damages from spreading to neighboring countries by establishing a comprehensive legislation product concerning the ship recycling industry, whether in the form of act or government regulation. However, given the weakness of the Act, which is expensive because it involves the parliament and takes longer than the formation of Government Regulations, a Government Regulation is considered more practical.

Indonesia could adopt several rules in the HKC and the Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships. Alternatively, Indonesia could modify its law based on other countries' regulations ships recycling weighing 100 and 500 GT or more, such as the regulation on:

1. Feasibility of Ship Recycling facilities;
2. Inspection of the Ship while it is still sailing and just before recycling;
3. Ship closure permits for service providers and connoisseurs of ship closing services;
4. Procedures for cleaning and testing ships before unloading;
5. Control of toxic materials in ships by limiting/prohibiting the use of hazardous materials,
6. Purpose the green supply chain management (green design, green purchasing, green production, and green logistics)
7. Development of an inventory of hazardous materials certification,
8. Minimizing work accidents for workers by making policies that prioritize safety; and
9. Management of toxic materials;
10. Implementation of Environmentally Friendly Ship Breaking (green ship recycling)

[50]Leslie-Anne Duvic-Paoli, (2018)"Prevention and Protection of the Environment," in *The Prevention Principle in International Environmental Law*, vol. II, 234–59, https://doi.org/10.1017/9781108553728.011, p.235.

[51]Benoit Mayer, (2014)"State Responsibility and Climate Change Governance: A Light through the Storm," *Chinese Journal of International Law* 13 (3), 539–75, https://doi.org/10.1093/chinesejil/jmu030, substantial global consensus on responses to climate change.","author":[{"dropping-particle":"","family":"Mayer","given": "State Responsibility and Climate Change Governance: A Light through the Storm," Chinese Journal of International Law 13, no. 3 (2014

[52]Leslie-Anne Duvic-Paoli, (2018) "Prevention in the Jurisprudence," in *The Prevention Principle in International Environmental Law*, 137–73, https://doi.org/10.1017/9781108553728.007, p. 148.

[53]Waseem Ahmad Qureshi,(2021) "International Law and Efforts to Mitigate Freshwater Scarcity," *Oregon Review of International Law,* 22, 109–46, p.135.

[54]Newman, Varner, and Linquist, *Op.cit.*p. 102.

11. Categorization of recyling methods that are green and sustainable such as slipaway or drydocking.

Apart from technical procedures, the regulation should designate which agency is authorized to supervise, inspect, and prosecute ship recycling violations in Indonesia. In terms of supervision, it can be given to Marine Security Agency, Harbormaster, Water Police, Navy, or the Ministry of Transportation. However, specifically for prosecution in criminal acts, it can be coordinated by the civil servant investigator (PPNS) in the Ministry of Transportation and the Indonesian Police investigator. Regulations regarding security and crime should be contained since the government has the right and authority to protect the state's sovereignty and preserve the environment on land, air, and waters.[55] In addition, the government also should perform due diligence obligations and environmental impact assessments on ship dismantling activities. The due diligence and environmental impact assessment are further asserted in the Costa Rica v. Nicaragua cases that pertain to the alleged breach of the obligation to carry out an environmental impact assessment. Based on the ICJ opinion, a state is required to conduct a dual assessment. The state is obliged to ascertain whether there is a risk of significant transboundary harm that would initiate the duty to conduct an environmental impact assessment (preliminary assessment).[56]

CONCLUSION

The regulation of ship recycling in Indonesia to date regulated in Law Number 17 of 2008 concerning Shipping, Regulation of the Minister of Transportation Number 29 of 2014 concerning Prevention of Maritime Environmental Pollution, Director of Shipping and Maritime Affairs Circular Letter Number 19/PK/DK/2019 concerning Indonesian-flagged Ships Recycling, and Government Regulation Number 31 of 2021 concerning the Implementation of the Shipping. As a result of the evaluation of HKC and other international law instruments, Indonesia's national rules and policies are lack in regulating green ship recycling for 100 GT and 500 GT ships in particular. Thus, there is no categorization of the prohibited ship breaking methods for 100 GT and 500 GT ships in Indonesia. The shipping industry is quite promising to absorb labor and increase state revenue. However, if not strictly regulated, this industry can slowly damage the surrounding environment. It ultimately harms the country itself and can cause losses in neighboring countries due to pollution and waste that is not managed correctly.

As a member state of the United Nations, Indonesia should commit to Sustainable Development Goals regarding climate and the environment and realize sustainable mobility in 2050. Therefore, it is necessary to reform the ship recycling regime in Indonesia. One of them is establishing laws and regulations that manage in detail for ships recycling weighing 100 GT or 500 GT or more to avoid claims from neighboring countries. The government should take firm measures on methods and compliance rules which are suitable for recycling ships weighing 100 GT to 500 GT or more. This effort can be done by adopting HKC law, along with its guidelines, or ratifying the HKC.

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