

World Maritime University

# The Maritime Commons: Digital Repository of the World Maritime University

---

World Maritime University Dissertations

Dissertations

---

11-3-2019

## The methodologist for regulation a new policy of ship recycling in Indonesia based on HKC 2009

Hadi Prabowo

Follow this and additional works at: [https://commons.wmu.se/all\\_dissertations](https://commons.wmu.se/all_dissertations)

Part of the [Environmental Law Commons](#), and the [Transportation Commons](#)  
Commons

---

### Network Recommended Citation

Prabowo, Hadi, "The methodologist for regulation a new policy of ship recycling in Indonesia based on HKC 2009" (2019). *World Maritime University Dissertations*. 1138.

[https://commons.wmu.se/all\\_dissertations/1138](https://commons.wmu.se/all_dissertations/1138)

This Dissertation is brought to you courtesy of Maritime Commons. Open Access items may be downloaded for non-commercial, fair use academic purposes. No items may be hosted on another server or web site without express written permission from the World Maritime University. For more information, please contact [library@wmu.se](mailto:library@wmu.se).

**WORLD MARITIME UNIVERSITY**

Malmö, Sweden

**The Methodologist for  
Regulation a New Policy of Ship Recycling  
in Indonesia  
Based on HKC 2009**

By

**Hadi Prabowo  
Indonesia**

A dissertation submitted to the World Maritime University in partial fulfillment of the requirement for the award of the degree of

**MASTER OF SCIENCE  
In  
MARITIME AFFAIRS**

**(Ocean Sustainability, Governance, and Management)**

2019

## Declaration

I certify that all the material in this dissertation that is not my own work has been identified and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views and are not necessarily endorsed by the University.

Signature : 

Date : 24<sup>th</sup> of September 2019

Supervised by: Aleke Stöfen-O'Brien

Global Ocean Institute-World Maritime  
University

## Acknowledgments

My grateful fondness I dedicate it towards Allah Swt. I cannot be thankful enough. My mother, father, siblings, my girlfriend, and my 'home inn' friends in Indonesia, I would love to see them and thank them for their endless support.

I would like to say thank you to my beloved mother who passed away but the love and her care are still in my fragments of time to give me infinite strength to pursue my dream beyond my limit in the world.

I want to say thank you to my beloved father and sister who gave me the opportunity, financial support, and an unforgettable experience to study at World Maritime University.

I would like to say thank you to my beloved girlfriend, Cesha Octoria who gave her time 24/7 to remind me how lucky I am now, her proudness of me, her love to me, sharing our dream, teach me a healthy life and how beautiful and big life it is.

I would be glad to express my sincere gratitude to the OSGM and GOI faculty, Professor Ronan Long, Professor Aleke Stöfen-O'Brien, Professor Murray Rudd, and Professor Mary Wisz for encouraging me to work on this dissertation, guiding me in the right direction and providing me with invaluable comments, advice, and recommendations. Also, I would like to extend my appreciation to all the professors and all the faculty for making this university the best place to gain maritime knowledge.

Last but not least, for my Indonesia family WMU S19 Mbak Monic, Ira, Mas Haris, Taslim, and Zameel and Indonesia WMU S18 students especially Ardy Kusuma, who have help me day by day, making these 14 months in Malmo seems pretty fast and very memorable. I hope you kindly accept my apology to anyone whom I have not mentioned but has contributed a lot either directly or indirectly to my work.

Må Vål

## Abstract

Title of Dissertation: The Methodologist for Regulation a New Policy of Ship Recycling in Indonesia Based on HKC 2009  
Degree: Master of Science

The dissertation is a study of HKC 2009 to provide advice for the Indonesian government or other stakeholders to consider to ratify or not HKC 2009 aspects of ship recycling practice to achieve environmental quality standards that will potentially improve the marine ecosystems in Indonesia.

The HKC focuses from the start of shipbuilding to the end of the ship age in every aspect of the entire life-cycle of a ship. It begins with the design and construction to the point when the ship is dismantled. If the HKC 2009 ever enters into force, it will be interesting to see how these HKC 2009 regulations develop and help each country that is member states in IMO to help themselves to make an environmental sound friendly ship recycling practice.

Indonesia, an archipelagic country in tropical South-East Asia, is considered as one of the countries with the most ocean energy potential. Indonesia has an area of two thirds covered by ocean and the length of coastline is 54,716km. Indonesia has a high potential of investments in the maritime industry due to its strategic geographical location. To answer the challenges Indonesia has ratify the HKC 2009 The SWOT methodology will be used. From the SWOT, researcher can see the strengths, weaknesses, opportunities, and threats that must be achieved by Indonesia if Indonesia decide to ratify the HKC 2009 and optimally adopt it into Indonesia's regulatory framework. Indonesia needs to formulate new regulations to maximize the performance of the ship recycling industry. To formulate new regulation framework, the Indonesian government requires SEA.

**KEYWORDS :** HKC 2009, Regulatory Framework, Ship Recycling, Indonesia, SEA, Ratification

# Table of Contents

<b>Declaration</b> .....	<b>ii</b>
<b>Acknowledgments</b> .....	<b>iii</b>
<b>Abstract</b> .....	<b>iv</b>
<b>Table of Contents</b> .....	<b>v</b>
<b>Table of Figures</b> .....	<b>vii</b>
<b>List of Abbreviations</b> .....	<b>viii</b>
<b>1. Introduction</b> .....	<b>1</b>
1.1. Executive summary .....	1
1.2. Structure and Organization.....	1
1.3. Objective and Research Questions.....	2
1.4. Scope of Study and Methodology .....	2
<b>2. Background</b> .....	<b>4</b>
2.1. Ship recycling and HKC 2009 .....	4
2.2. Ship recycling as renewable dismantling waste solutions.....	6
2.3. Indonesia and its ship recycling practice potential.....	6
<b>3. HKC 2009</b> .....	<b>8</b>
3.1 History.....	8
3.2 Regulatory Techniques .....	9
3.2.3 Technical requirements.....	13
3.2.4 Ship recycling facilities .....	16
3.2.5 Ship related obligations .....	17
3.3 Infographic summary.....	18
<b>4. Indonesia Ship Recycling Reflection</b> .....	<b>20</b>
4.1 Indonesian Maritime Policy.....	20
4.2 Ministry of Industry of Indonesia obligation .....	21
4.3 Ministry of Transportation of Indonesia obligation .....	23
4.4 Ministry of Manpower and Transmigration of Indonesia obligation .....	24
4.6 Indonesia Ship Recycling Infrastructure .....	25
4.7 Infographic summary.....	27
<b>5. Indonesia on ratification HKC 2009</b> .....	<b>28</b>
5.1 The Challenge of formulating new regulatiom .....	28
5.2 Indonesia needs to formulate new policy on ship recycling .....	30
5.2.1 Strategic environmental assessment.....	32
5.3 Environmental and Social Impacts.....	35
<b>6. Conclusion</b> .....	<b>37</b>

<b>References.....</b>	<b>39</b>
------------------------	-----------

## Table of Figures

Figure 1. Articles summary of HKC 2009.....	18
Figure 2. Regulations for safe and environmentally sound recycling of ships of HKC 2009.....	19
Figure 3. Indonesia regulatory framework summary.....	27
Figure 4. Workflow structure.....	31
Figure 5. SEA-Planning process linked models.....	33
Figure 6. The link between CSI with SI, ESI and strategic reference framework.....	35

## List of Abbreviations

ASEAN	Association of Southeast Asia Nations
CA	Competent Authority(ies)
CDF	Critic Decision Factor
DASR	Document of Authorization to conduct Ship Recycling
ESI	Environmental and Sustainability Issues
EU	European Union
GT	Gross Tonnage
HAZOP	Hazard and Operability study
HKC 2009	Hong Kong HKC 2009
HSE	Health, Safety, and Environment
IHM	Inventory of Hazardous Material
IMO	International Maritime Organization
INSA	Indonesia National Shipowners' Association
IRRC	International Ready for Recycling Certificate
MEPC	Maritime Environment Protection Committee
NGO	Non-governmental Organization
PCB	Polychlorinated biphenyl
PPE	Personal Protective Equipment
PPP	Polluter-Pays-Principle
RI	Republic of Indonesia
SI	Strategic Issues
SRF	Ship Recycling Facility(ies)
SRFP	Ship Recycling Facility(ies) Plan
SRP	Ship Recycling Plan
SWOT	Strength, Weakness, Opportunities, Threats
UN	United Nation
UNCLOS	United Nations HKC 2009 on the Law of the Sea

# **1. Introduction**

## **1.1. Executive summary**

The topic of this dissertation is about what happens if Indonesia ratifies the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention [HKC 2009]) and what challenges Indonesia will face in the future. This dissertation will focus on analysing the HKC 2009, the Indonesian ship recycling industry and regulatory framework methodology. The 2009 HKC analysis is needed in order to discover what the main points are in this dissertation, which will be a point of reference to analyse the Indonesian ship recycling industry according to certain points and then determine what regulatory framework methodology will be used.

## **1.2. Structure and Organization**

In pursuance to accomplish the objectives of this study, the dissertation is organized into the following sections: Chapter 1 introduces the outline of the dissertation. It also includes the methodology and limitations. Chapter 2 presents the background of the dissertation. Chapter 3 provides a literature review regarding fundamentals of the HKC 2009, including history, regulatory technique, objective and definition of the HKC 2009. This chapter also explains the article review about ship-related obligations, ship recycling facilities, and technical requirements. Chapter 4 presents the real situation analysis regarding environmental impacts caused by ship recycling practices, regulatory framework and regulations as well as ship data in Indonesia.

Furthermore, Chapter 5 discusses the feasibility study of implementing the HKC 2009 in Indonesia. This case study focuses on comparison of regulations between the HKC 2009 and Indonesia's ship recycling regulations. Chapter 6 will conclude the analysis the HKC 2009 and Indonesia's ship recycling implementation. It provides advice for the Indonesian government and other stakeholders who are considering whether to ratify the HKC 2009 aspects of ship recycling practices to achieve environmental quality standards that will potentially improve the marine ecosystems in Indonesia.

### **1.3. Objective and Research Questions**

As specified by the background, the objective of this research is to provide advice for the Indonesian government and other stakeholders who are considering whether to ratify the HKC 2009 aspects of ship recycling practices to achieve environmental quality standards that will potentially improve the marine ecosystems in Indonesia. Furthermore, there are five research questions to operationalize as follows:

- i. What HKC 2009 obligation is already implemented in Indonesia?
- ii. What are the environmental effects that occur because of ship recycling practices in Indonesia?
- iii. What are the challenges of implementing the HKC 2009 regulation to Indonesia's national regulation.
- iv. How could Indonesia deal with all the challenges in implementing the HKC

### **1.4. Scope of Study and Methodology**

This research about ship recycling practices focuses on the HKC 2009. The scope of location is precisely only in the coastal areas around ship recycling yards in Indonesia. As a developing country, Indonesia wants to improve ship recycling practices to pursue a better marine ecosystem in upcoming years (Kemenperin, 2018).

This research does not analyze the environmental effects of ship recycling in Indonesia based on quantitative nor observation data in the field. The research potentially focused on what happens in marine ecosystems around ship recycling and to investigate how the HKC 2009 has influenced and supported Indonesian national regulations to pursue better environmental marine ecosystems.

In this research, the data and information regarding the environmental effects of ship recycling practices in Indonesia will be gathered through a literature review. The literature review includes academic journals on ship recycling, annual reports, and detailed analysis of the regulations and objectives of the HKC 2009.

Further, some important data, current situation, applicable regulatory framework and regulations about ship recycling from the Ministry of Transportation of Indonesia, the Ministry of Industry of Indonesia, the Ministry of Manpower of Indonesia, INSA, and Indonesia SRF will be combined as support sources for the research.

In addition, necessary information from certain principles of the HKC 2009 is already reflected in Indonesia's national law and provides a detailed overview of essential changes if the HKC 2009 is implemented in Indonesia. To fully understand all the challenges in the HKC 2009 implementation, a comparative analysis of different approaches in several countries will be carried out, for example in Bangladesh, India, Denmark, China, and Turkey. Beside the HKC 2009, European Union Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling give another view or perspective of ship recycling regulations to be analyzed.

The benefits and opportunities of renewing ship recycling practices in Indonesia will be analyzed. In addition it will be determined if the HKC 2009 implementation is suitable for Indonesian ship recycling practices or not. The framework mindset in this research will describe the pros and cons of Indonesia's current regulations to manage its ship recycling practices, and adverse effects caused by ship recycling practices. Thus, all the results analyzed will be used to give recommendations for a better future for Indonesia.

## 2. Background

### 2.1. Ship recycling and HKC 2009

Ship recycling is a process whereby the entire ship is dismantled, and the components of the vessel that are fit and tradeable for economic reasons (Vuori, J., 2013). The average life cycle for ships, from fully operational to its grave, is around 25-30 operational years. The most significant concern in ship recycling is health, safety, and environmental (HSE) violations. Environmental impacts can be divided into two categories which are the marine environment and air emissions. In a global world, during the shipbreaking phase, air emissions are released. In order to avoid corrosion and fouling, all the surface of a ship has to undergo heavily treated operations (Puthucherril, 2010). Practically, during the cutting phase the anti-fouling paints create more hazardous gases and fumes. Anti-fouling paints are today prohibited, but all ships that are scrapped still use toxic chemicals (Hossain, 2006).

The second threat to the environment from ship recycling is the marine ecosystem. The beaching method is mostly used in developing countries. The ships are docked when the tidewater is high and anchored when it is low. The first thing to do when the vessel is anchored is to empty all the equipment and machines left in the vessel. In addition, the remains of ship fuel and other oily items such as hydraulic oils and lubricants are rolled in barrels across the beaches. The toxic materials of the ships are separated and should not go to the marine environment. Tides are changing from high to low, so they bring a tremendously amount of toxic waste such as heavy metals, debris, and toxic substance (Saraf et al., 2010).

Ship recycling is a global challenge because of the number of ships in operation due to the global maritime shipping industry. It is important that to understand how polluted and dangerous these expired and aged vessels are to either human life or the marine ecosystem (NGO Shipbreaking Platform, 2017). The main point is that developing countries like India and Bangladesh which have a huge ship recycling industry would help with the entry into force of the HKC 2009 and evolve the international law, especially in ship recycling practices. Further, China as one of the most significant ship

recycling countries, should give their sound support for the the HKC 2009 to be incorporated into international law (Jain, Pruyn, & Hopman, 2013). The main problem why the HKC 2009 is there are just six countries that have already given their signatures, which are Belgium, Denmark, France, Norway, Panama, and the Republic of the Congo. The HKC will enter to force after two years. Therefore, the HKC 2009 should enter into force after 15 states, representing forty percent of the world merchant shipping by gross-tonnage, and an average 3 percent of recycling tonnage for the previous ten years (ClassNK, 2019).

There is another perspective of ship recycling regulations that the Europe Union built to reduce negative impacts linked to the EU-flagged ships (Regulation (EU) No 1257/2013, 2013). The law was made based on the HKC 2009 and aims to implement the HKC 2009 quickly, without waiting for the HKC 2009 ratification and entry into force. The purpose of the regulation is to enhance safety, the protection of human health and the European Union marine environment throughout a ship's life-cycle, in particular, to ensure that hazardous waste from such ship recycling is subject to environmentally sound management (Zuin, Belac, & Marzi, 2009)..

For developing countries, particularly in Indonesia, ship recycling seems to be indispensable to the growth of their economy but in another perspective, ship recycling is a challenge to deal with their lack of health, safety, and environment for their countries (Neşer, Ünsalan, Tekoğul, & Stuer-Lauridsen, 2008). To develop and improve the health, safety, and environment, the Indonesian government should use TAIDA (Tracking, Analysing, Imaging, Deciding and Acting) method or the SWOT method or strategic environmental assessment, based on the HKC 2009 to implement the potential regulatory framework of ship recycling practices (Loska, 2015). However, this ship recycling management improvement from the HKC 2009 to Indonesia regulations is far from reality. The economic growth and the high-cost infrastructure and maintenance challenges must be dealt with. In addition, the gap of technology knowledge in developing countries is still far behind developed countries (Fariya, Gunbeyaz, Kurt, Sunaryo, & Djatmiko, 2019). This research will clarify/discuss the HKC 2009 implementation in Indonesia from numerous perspectives.

## **2.2. Ship recycling as renewable dismantling waste solutions**

The ship recycling industry which dismantles old and decommissioned ships enabling the re-use of valuable materials is a significant supplier of steel and essential parts of the economy in many countries (Chang,Wang, & Durak, 2010). However, recycling practices can have negative social and environmental impacts. Ships contain toxic materials such as asbestos and heavy metals, for which many ship recycling hubs do not have the infrastructure to treat. These toxic materials generate health and safety concerns for workers and contaminate the natural environment. In many developing countries, there is a lot of adverse effects from ship recycling practices damaging the workers and marine ecosystems around the ship recycling yards (Jain, Pruyn, & Hopman, 2013). Because the merchant ship trade is growing as fast as the international economy, the numbers of ships will become considerable. This is a problem if there are no regulations to take care of the problem. The increased number of ships in the ocean will increase the demand for ship recycling to prevent further environmental impacts.

In the past 20 years, the awareness of the problems of the ship recycling industry has been raised unquestionably as well as the need for developing environmentally friendly ship dismantling In 2009, IMO adopted the HKC 2009 that was held in Hong Kong and it ended well with an outcome of 21 articles and 25 regulations (Chang, Wang, & Durak, (2010). From an environmental perspective, the HKCs aims to prevent, reduce, minimize and, to the extent practicable, eliminate accidents, injuries and other adverse effects on human health and the environment caused by ship recycling, and enhance ship safety, protection of human health and the environment throughout a ship's operating life. (HKC, 2009).

## **2.3. Indonesia and its ship recycling practice potential**

Indonesia, an archipelagic country in tropical South-East Asia, is considered as one of the countries with the most ocean energy potential (ESDM, 2017). Indonesia has an area of two-thirds covered by ocean, and the length of coastline is 54,716km. According to Coen van Dijk *et al.* (2015), Indonesia has a high potential of investments in the maritime industry due to its strategic geographical location and that is why

there is high governmental interest in maritime infrastructure and acceleration in trade. In recent years, the Indonesian government, with a chosen president Joko Widodo, started to move towards and began to focus on maritime activities such as development of maritime infrastructure, maritime security and fishing industries (Gindrasah & Priamarizki, 2015).

Based on that fact, the latest country that ratified the HKC 2009 is Germany and the Indonesian government has not yet ratified the HKC 2009. This is an excellent opportunity for Indonesia to develop a possible ship recycling industry. Since the application of cabotage principle in 2005, as obligated by the Presidential Instruction No. 5 (2005), the number of Indonesia's merchant ships have increased to almost 13,000 units in 2013 as stated by Indonesia's National Ship Owners Association. Indonesian merchant ships are dominated by oil tankers and container vessels (INSA, 2013). Potentially, an increasing number of vessels that operate in Indonesian waters will affect the demand for ship recycling in the future (Sunaryo, & Pahalatua, 2015).

## 3. HKC 2009

### 3.1 History

“The United Nations of International Maritime Organization (IMO) has, since it was founded in 1948, focused on the global regulation of ships themselves, ensuring they are fit for purpose in terms of safety, security and environmental protection” (IMO, 2019). In the IMO Marine Environment Protection Committee (MEPC) 42<sup>nd</sup> session in 1998, the committee agreed that the IMO has the dominant role of regulating ship recycling facilities. The IMO’ role includes legal and technical aspects, such as preparation of a ship before the recycling process and coordination with ILO and the 1989 Basel Convention and the HKC 2009. After MEPC’s 49 session, the IMO agreed to develop recommendatory guidelines to be adopted named as IMO Guidelines on Ship Recycling.

The Basel Convention 1989 has proven invaluable for regulating the international trade of hazardous waste, and it is not always easily applicable to waste generated by ship recycling (Bhattacharjee, 2009). The three fundamental provisions the Basel Convention are to minimize the amounts of hazardous materials, decrease the range of the disposal from the waste resource and “environmentally sound management and disposal of hazardous materials waste”. The relationship between the Basel Convention and ship recycling is the Basel Convention is an international legal monitoring instrument of shipbreaking and focuses on the movement of transporting hazardous materials from ships and how to reuse and recycle the materials resulting from ship breaking operations (Moen, 2008). Because the Basel convention only focuses on the disposal of hazardous materials, reuse, and recycle of ship materials and not the entire process from the ship building to the ship recycling process, IMO decided to draft the HKC 2009 to cover that gap.

As a result of gaps in the regulation of the Basel Convention, the MEPC 53 decided to create a “new mandatory instrument on recycling of ships, to provide legally binding and globally applicable regulations for international shipping and recycling facilities.” The MEPC 53 was required to develop a ship recycling practice system, which

provides the regulations with the following points, such as the establishment of an appropriate enforcement mechanism for ship recycling; the operation of ship recycling practice facilities in a safe and environmentally way; and the preparation, design, construction, and operation of ships recycling without compromising the safety and efficiency of ships.

At the MPEC 54 session, the MEPC made a working group to discuss ship recycling facilities and to further develop a draft text including the article and annex for the HKC 2009. At the 55 session, the draft was done and provided globally applicable ship recycling practices for international shipping and recycling activities.

The result was the HKC 2009 was born on 11-15 May 2009. In addition to closing the gaps in the Basel Convention, and implicitly, picking up on the objectives of the Basel Convention, the HKC 2009 has essential objectives of its own. The HKC 2009 aims to establish “‘cradle-to-grave’ regulation that spans across every aspect of the entire life-cycle of a ship (Jain, et al., 2013). This envisions rules that begin at design and construction and run-up to the point that the ship is dismantled. The HKC 2009 is also very devoted to pursuing the fundamentals of sustainable development. Many have pushed to prohibit exporting ships to developing countries and do recycling activity, but in another way this would result valuable resources and loss of jobs in the recycling state (Carey, 2012). By not prohibiting export, the HKC 2009 has presented its commitment to the right of development of the recycling states. It takes into account all aspects, from the ship’s design stage onwards and right through to the end of the ship’s life. It also includes the responsible management and disposal of associated waste streams in a safe and environmentally sound manner. The ‘cradle to grave’ concept has addressed all environmental and safety aspects related to ship recycling but not as a ship recycle looping system.

### **3.2 Regulatory Techniques**

In the following, the regulatory techniques of the HKC 2009 will be outlined to analyze its material scope.

#### **3.2.1 Objective**

Each Party to this HKC 2009 undertakes to give full and complete effect to its provisions in order to prevent, reduce, minimize and, to the extent practicable, eliminate accidents, injuries and other adverse effects on human health and the environment caused by Ship Recycling, and enhance ship safety, protection of human health and the environment throughout a ship's operating life (Art. 1 HKC 2009, 2009).

From Article 1 HKC 2009, there are several objectives that HKC 2009 pursue to make safe and environmentally sound manner of ship recycling practice. The following goal of the HKC 2009 is a two-fold application, which means the aim of HKC 2009 is to "effectively address the environmental, occupational health and safety risks related to ship recycling". The HKC 2009 has adopted the two application to cover both the ships and the recycling facility, which deal with human health and safety and the environment through from shipbuilding till ship recycling.

The life-cycle approach is an approach that loops the systems, such as ship building, end of life operation, ship breaking, ship recycling and then the materials are used again to build a new ship (Changet al., 2010). The HKC 2009 sets out regulations about the design, construction, operation, and maintenance of ships from the beginning and how to maintain inventory of hazardous materials during the recycling process. Further, the HKC 2009 requires prior authorization of every ship recycling facility (SRF) by its state. Notification and reporting obligations need ship-owners and SRFs to provide legal documents under the HKC 2009 to their states' administrations before recycling the ship. Finally, all information such as ship documents, ship administration, ship specification, document of authorization to conduct ship recycling (DASR), ship recycling plan (SRP), ship recycling facility plan (SRFP), international ready for recycling certificate (IRRC) and other documents about ship recycling activities should be shared with the IMO so that the report will assist towards effective enforcement, monitoring, and implementation of the HKC 2009.

### 3.2.2 Definition

Due to differences in interpretation, and therefore the analysis of the description in the HKC 2009 intended that each country can have the same understanding of things that will be discussed in the HKC 2009. The description such as ship, competent authority, gross tonnage (GT), hazardous materials, ship recycling, SRF, and recycling company will be discussed further in the next paragraphs.

From the definition in the HKC 2009,

ship means any type ship which operates or has operated in the marine environment and includes submarines, floating, floating platform, a platform of self-elevator, Storage Units Floating (FSU), and Unit Storage and Offloading Floating Production (FPSO), including a vessel stripped of equipment or withdrawn. The vessel must sail under the flag of any country and may not change the state flag while sailing (Article 92 UNCLOS, 1982).

Warships, naval ships, or other ships owned by one party and non-commercial government service and ships with less than 500 GT do not apply to the the HKC 2009 (Art. 3 HKC 2009). Ships with less than 500 GT are not involved in the HKC 2009. This provisions would probably be burdensome in terms of the environment, because if the number of vessels with less than 500 gross tons when the HKC 2009 entry into force it is applicable internationally, so these ships will potentially be a risk too for maritime environment. Then, the HKC 2009 can not be applied either to warships nonaval or other ships owned by one party and non-commercial government service. Many hazardous materials such as asbestos and PCBs have been found in warships and naval vessels(Nassar, & Moursy, 2016).

The purpose of Competent Authority is an institution defined by the existence of a formal or informal system rule (Green, & Fernandez-Bilbao, 2006). The Competent Authority will seek its capacity to help all stakeholders in the ship recycling industry to cooperate with each other constantly and sustainably (Eade, 1997). The Competent Authorities is appointed by each party member to have specific obligation to make sure the ship recycling regulations run smoothly. For example for ship recycling facilities (SRF), the Competent Authority will ensure which process of the provisions is used to ensure the monitoring activity was effective, ESM operations, and staff who are competent to deal with SRF (Secretariat of the Basel Convention, 2013).

Hazardous materials are material or substances, which are either radiological, biological, physical and chemical. These are discarded which could potentially cause harm to marine ecosystems, marine biodiversity, and humans (Institute of Hazardous Materials Management, 2019). Hazardous materials such as asbestos, PCBs, mercury, lead, anti-fouling compounds, and systems are often found on the ship that was about to be recycled and not kept in good inventory, which are potentially harmful to workers (Nassar, & Moursy, 2016). There are famous principles in the Hazardous Material International Regulation mentioned in the Rio Declaration on Environment and Development, UN 1992 called POLLUTER-PAYS-PRINCIPLE, where polluters who have caused environmental damage and human damage should be responsible for the pollution, but this principle is usually used only as a cover for political promotion or ideological agenda rather than to determine who actually has to pay the compensation (Cordalo, 2006). If the POLLUTER-PAYS-PRINCIPLE applies in ship recycling activities, there will be four subjects that have the potential to be responsible, namely ship owners, recycling company, shipbuilding company or state maritime administration (Coly, 2012). In the HKC 2009, there was no further discussion of the process of removing materials in separate facilities, so the scope of the HKC is not only limited to ship recycling, but also the process of removing hazardous materials. (Samiotis, Charalampous, & Tselentis, 2013).

Ship recycling is an activity as a whole looping system of entirely and partly demolition of ships in SRFs, to recover the components and the resources which will be reinstated and used again, including the operations of the ships' component storage and treatment in separate facilities (Jain, Pruyn, & Hopman, 2013). Ship recycling can not only be viewed from the side of the environmental aspects, the ship recycling activity is a sustainable economic cycle in the shipping industry, which is to keep the balance between supply and demand. For example, when the ships that operate in the sea is oversupply with recycling the ships, so demand of reuse materials from recycling of ships will increase again for other shipping industry like shipbuilding and the freight market (Carlis, Poleman, 2016).

### **3.2.3 Technical requirements**

Technical requirements in the HKC 2009 are divided by into chapters. The following chapter discusses the four main points, such as general provision, the needs of ships for the shipowner, the requirements for ship recycling facilities, and the reporting required information before recycling the ship. These requirements are intended to make the user understand the deeper aspects of the inner knowledge of the provisions in the HKC 2009 and what should be done to ensure that ship recycling activities run well.

Chapter 1 discusses general provisions related to ship recycling after the HKC 2009 entry into force. General requirements contain new definitions which will be understood by members of parties of the HKC 2009. There are several issues/factors that are focused on in this research concerning the general provisions, such as "Competent Person", "safe for the entry," and "safe for hot work". The Competent person is individually selected by the Competent Authority that has the experience, skill, and knowledge about the potential hazardous materials and able to manage risk and reduce the impact of hazardous materials on ship recycling activities and understand the guidelines on hazardous materials based on the Basel Convention (Books, 1997). Then, safe for entry and safe for hot work relate to health and safety of the workers

at the recycling area where the worker operation standards were adopted by International Labour Organization (Barlas, 2012).

Chapter 2 discusses the requirements that need to be known by the shipowners when their ships operate in accordance with the provisions of the HKC 2009. There are several items that could be focused on in this research regarding the requirements of ships, such as the inventory of hazardous materials on the ship, preparations for ship recycling, and the preparation documents for the ship before it moves to the recycle stage. Shipbuilders have several comments related with inventory of hazardous materials. For example, there is equipment or machinery in ships which have a small amount of value to be debate whether its give effect to the health and safety or not like others hazardous materials and which specific materials on steel plates and pipes for hull structures that contained hazardous materials The value of hazardous materials threshold is specified and listed in Appendices A and B to the annex of the HKC 2009 which will potentially help the inventory to be well prepared for all ships over 500 GT (new ships under regulation 5.1 and existing ships within the first five years by regulation 5.2) (PPR, 2015) and changes in the list of hazardous materials can be made by the technical committee which is pointed out in 6.3-regulation and regulation 7 established after the HKC 2009 has entered into force (MEPC 61, 2010 (c)). Ship Recycling Plan (SRP) is developed by SRF with Competent Authority (CA) approval and SRP is a “stand-alone document” that aims to provide methods and operating procedures in chronological sequence hierarchy to recycle each ship, such as pre-arrival management; acceptance check; safety precautions and specific training; hazardous materials removal; cutting work plan; and hazardous materials storage (MEPC 62, 2011). In a conference in 2009, the attendees recommended before the ship recycling activity starts, the flag State Administration should conduct a survey and issue the International Ready for Recycling Certificate (IRRC) where the flag State Administration will undertake an obligation to survey and certification in accordance with the provisions and guidelines in the HKC 2009 (International Conference on the Safe and Environmentally Sound Recycling of Ships, 2009 (d)).

Chapter 3 discusses the requirements that need to be known by the SRF to operate the ship recycling activities in accordance with the provisions of the HKC 2009. There are several things that are focused on in this research regarding the SRF requirements, such as SRF Plan; Safe and Environmentally Sound Management of Hazardous Materials; and Work Safety and Training. SRF Plan is linked with SRP, which is used by the CA to check whether the SRF followed the provisions in the HKC 2009 and SRFP is "standard template document" which follows the recycling methodology, such as dry dock; cleaning floating barge or flat top; slipway; and wet berth which has a commitment to pursue workers' health and safety and protection of the environment (MEPC 60, 2010). Associated with SRFP, safe approach and environmentally sound management of hazardous materials, also described in SRFP guidelines, aim to make ship recycling activities run well by the following aspects, such as identification and on-board locations; recycling approach; analytical method sampling protocol; removal, handling, and remediation; storage and labeling; and treatment, transportation, and disposal. Likewise, regarding the work safety and training, SRFP will identify and apply the concept of worker health and safety in the SRF from multiple perspectives such as the key regulator of safety, job hazard, and training; prevention of accidents procedure from the recycling activities and hazardous materials; and ship recycling operation procedures like diving, welding, personal protective equipment, evacuation area till responses for human injuries as it is in the HKC 2009 (MEPC 60, 2010).

Chapter 4 discusses the requirements that need to be known about the reporting of ships that are ready to be recycled in accordance with the provisions of this HKC 2009. Some things are focussed on in this research regarding the reporting requirements of a ship, such as the details to be given by the shipowner to the flag State Administration and who is responsible for reporting the complete recycling of ships. Some of the features to be provided by the shipowner to the flag State Administration, such as flag State name, IMO ship's identification number, ship's type, ship's port registered, shipowner

information, ship's classification societies, ships' dimension specification, IHM, and SRP. The purpose of the details given are the flag State Administration will begin to prepare the survey and IRRC documents as it is in the HKC 2009. In addition, the reality situation in the field is the SRF may not know to whom the report of completion should be sent in the flag State Administration, so it would be better if the one who is responsible to report is the Competent Authority who knows better which person is in charge in the flag State Administration related to ship recycling affairs (International Conference on the Safe and Environmentally Sound Recycling of Ships , 2009 (b)).

### **3.2.4 Ship recycling facilities**

The following paragraph of the SRF chapter will focused on four main points such as controls related to ship recycling; authorization of SRF; exchange of information; and detection of violations. These points will give further understanding of SRF obligations on behalf of the research objectives.

According to the HKC 2009, SRF under its jurisdiction has to comply with the SRF requirements. The controls related to shipping recycling should use precautionary principles by CA to ensure SRF minimize its risk possibility related to ship recycling activity impacts on workers and the environment by indicating which ship recycling activities cause the impacts (Gardiner, 2006). Based on regulation 15 HKC 2009, the SRFP audit scheme such as inspection, monitoring, enforcement provision, including analyzing the sampling and entry of all components in SRF would be controlled well related to shipping recycling.

Furthermore, the authorization of ship recycling facilities is carried out by CA, and CA should be fully responsible for issuing the Document of Authorization to conduct ship recycling (International Conference on the Safe and Environmentally Sound Recycling of Ships, 2009 (c)). The length of time of the authorization of SRF is five years, further than that, SRF should re-audit and ask CA to issue a new authorization. According to HKC 2009, "CA within

specified geographical area(s) or area(s) expertise” causing several perspectives to reflect such as in the case dealing with multiple CA specified area(s) of expertise (environmental protection; health and safety; labor); and where a ship will be recycled in multiple SRF in different geographical area(s) jurisdiction (International Conference on the Safe and Environmentally Sound Recycling of Ships , 2009 (c)).

On behalf of SRF, party members have the rights to request an exchange of relevant information with the International Maritime Organization and done with evidence of violations on SRF (Art.7 HKC 2009). If a party detects a violation in SRF, the party can request an investigation from other parties to check the SRF under its jurisdiction and report back to the party who requested it, and to the International Maritime Organization as it is in the HKC 2009 (MEPC 61, 2010 (b)).

### **3.2.5 Ship related obligations**

In the following paragraph of ship-related obligations, the chapter will be focused on two main points such as controls related to ship recycling for shipowners as well as survey and certification of ships. These points will give further understanding about ship-related obligations for shipowners on behalf of the research objectives.

“Each Party shall require that ships entitled to fly its flag or operating under its authority comply with the requirements set forth in the HKC 2009 and shall take effective measures to ensure such compliance” (Art. 4 (1) HKC 2009). Related to controls, shipowners have to prepare the following documents, such as the SRP document, the IRRIC document, and preparedness for inventory of hazardous materials as it is in the HKC 2009 (Annex 3 HKC 2009). In a conference in 2010, the attendees recommended that the SRP document should make reference to the SRF framework and DASR, so shipowners can draft a well-prepared SRP wherein the SRP draft included chronological steps processing the hazardous materials (MEPC 61, 2010 (a)).

After that, the SRP document will be surveyed and issued an IRRC document by CA. Then shipowners can recycle their ships (Art. 5 HKC 2009).

### 3.3 Infographic summary

Figure 1 shows an infographic summary of the articles of HKC 2009. Regulations for safe and environmentally sound recycling of ships of HKC 2009 is shown in Figure 2.

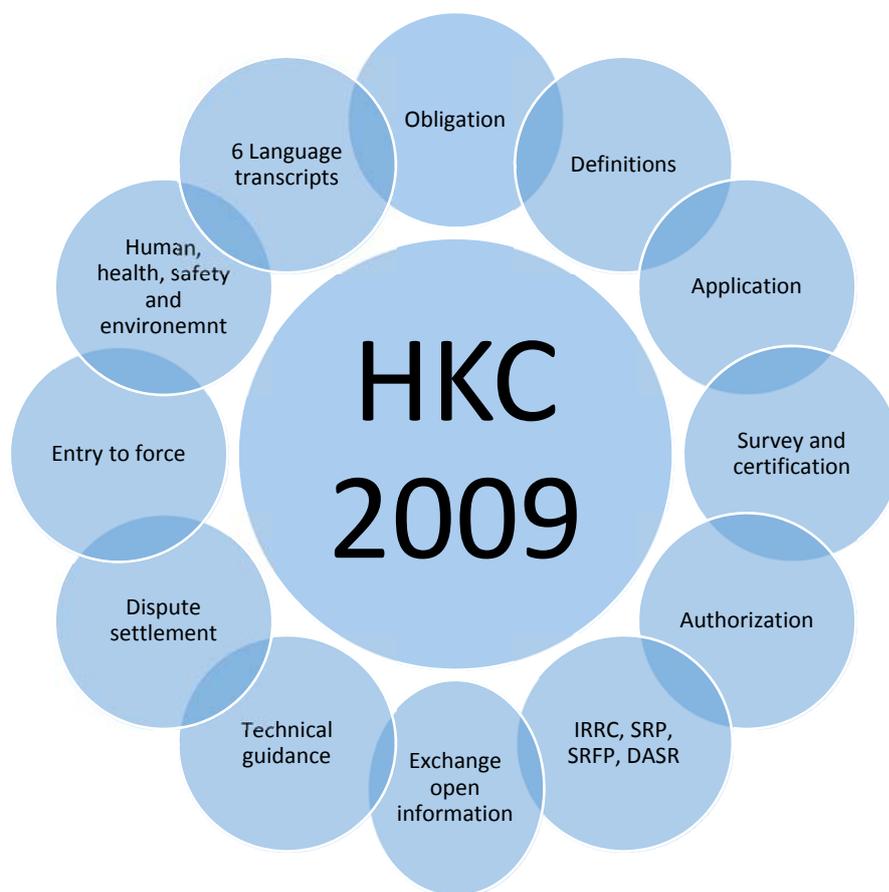


Figure 1. Articles summary of HKC 2009

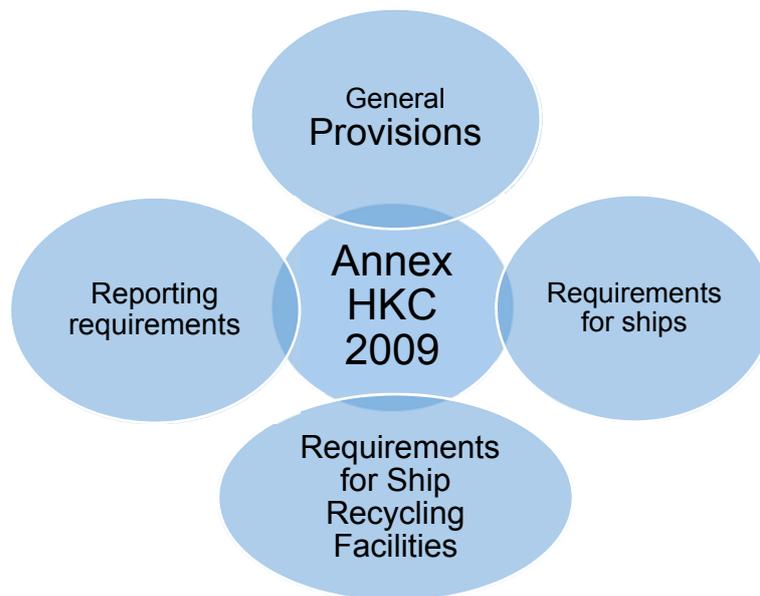


Figure 2. Regulations for safe and environmentally sound recycling of ships of HKC  
2009

## 4. Indonesia Ship Recycling Reflection

### 4.1 Indonesian Maritime Policy

Indonesia's ocean policy is a policy concept made by President Jokowi in the East Asia Summit (KTT) on November 13, 2014, Nay Pyi Taw, Myanmar (Aufiya, M. A., 2017). Jokowi further explanation is about the outlines of the ocean infrastructure development, the shipping industry, and maritime tourism as well as the implementation of maritime diplomacy, whether it is to increase the cooperation and maritime conflict management, such as illegal fishing, violation of the sovereignty, territorial disputes and maritime piracy. Submission of a national strategy by Jokowi in East Asian countries conferences was important to achieve "maritime axis" and to develop Indonesia's geopolitical issues, which are inevitable (Agastia, & Perwita, 2015). Jokowi brought political messages related to Indonesian economy, ie East Asia and Asian Pacific region as a whole is essential for the security and stability of the global economy. Asia-Pacific strategic environment has been transformed into a famous territory in global politics (Pattiradjawane, & Soebagjo, 2015). The main strength of the area will be a strategic competition of various cooperation both in terms of the economy and security.

The increase of China's influence on strategic cooperation with ASEAN in recent years and the policy of "One Belt One Road" unite the Eurasian region, was clear evidence of this transformation (Ferdinand, 2016). On the other hand, the United States also continues to increase the presence and influence in the Asian-Pacific region through a policy of Asia-Pacific at the time of Barack Obama presidency and now at the time, the United States also do the visits of strategic and cooperation of all countries in the Asia Pacific region (Roberts, Habir, & Sebastian, 2014). President Jokowi's understanding of the development of Indonesia's geo-economic, geostrategic, and geopolitical factors as the main purpose to bring back Indonesia to be a maritime country was implemented in Indonesian ocean policy. This is an important step to do a synergy strategy to improve the economy and also directly strengthen the defense and security of Indonesian waters (Arif, & Kurniawan, 2018). The center of gravity of geo economy and geopolitics of the world has shifted from

west to east, so Jokowi needs to show that Indonesia will become one of states that well uses its blue economy potential to achieve a maritime nation's prosperity and dignity (President RI, 2015).

Understanding and efforts are important to realize ocean areas as the central subject of a policy, to balance the stability of maritime security and national interests that have impacts on economic developments and societies (Rochwulaningsih, Y., Sulistiyono, S. T., Masrurroh, N. N., & Maulany, N. N., 2019). Such efforts are implemented through the protection of the local economy by investing in the maritime sector infrastructure, including logistics service port, shipyards, marine tourism, and marine environmental protection. Through this strategy, Jokowi emphasized several things, such as Indonesia's economic development by supporting the establishment of the shipping industry infrastructure in advancing the maritime economy of Indonesia through Indonesian ocean policy implementation (Coordinating Ministry for Maritime Affairs Republic of Indonesia, 2017). To build a potentially useful industry, the industry itself should be integrated with the regulatory framework that supports each other. In the shipping industry and the environment in Indonesia, there are three relevant entities which have the obligation to manage the regulatory framework, such as the Ministry of Industry of Indonesia, the Ministry of Transportation of Indonesia, and the Ministry of Environment and Forestry of Indonesia. The following sub-chapter will be focused on understanding of the Indonesian ship recycling reflection because the analysis of several stakeholders will give a vision related to shipping recycling practices in Indonesia and how each stakeholder influenced it.

#### **4.2 Ministry of Industry of Indonesia obligation**

In an effort to accelerate the process of industrialization to support national economic development as well as anticipate the negative impact of globalization and liberalization of the world economy and developments in the future, Indonesia needs a direction and a clear policy in the medium term, and long term, which is contained in a National Industrial Policy made by the Ministry of Industry of Indonesia (Regulation of the President of Indonesia, 2008). The Ministry of Industry of Indonesia is a specific ministry dealing with the industry affairs in Indonesia, .It is divided into

five directorates-general, such as the Directorate General of Agricultural Industry; Directorate General of the Chemical Industry, Textile and miscellaneous; directorate general of metal, machinery, transportation equipment, and electronics; directorate general of small and medium industries; directorate general industrial zoning development; and industrial research and development agencies (Ministry of Industry of Indonesia, 2017 (b)). Shipbuilding and ship recycling is under the directorate general of metal, machinery, transport equipment and electronics. The scope of the shipbuilding industry includes industrial ships, industrial equipment, and ship equipment, ship repair industry, shipbreaking industry and offshore infrastructure development industry (Ministry of industry of Indonesia, 2009 (a)). Further, the shipping industry grouping consists of the shipping production industry and interrelationship shipping industry and the shipbuilding industry. The group of the shipping production industry is an industry that produces equipment that is needed by the shipbuilding industry, such as ferro/steel; aluminum and brass, fiberglass, wood, rubber, plastic, glass, textiles, marine paint, welding electrode, and cathodic protection. For the interrelationship, the shipping industry consists of components such as propulsion machine components, deck machinery and communications equipment. Then, the shipbuilding industry itself uses all components and equipment provided by the shipping production industry and interrelationship shipping industry resulting in a new ships made by recycled materials. In addition, the shipbuilding industry also stands as fixing and maintenance operations.

The problem the national shipping industry is facing can be classified into two groups, which are internal issues and external issues (Ministry of Industry of Indonesia; Habibie, Gumelar, & Sitorus, 2015). The potential internal problems experienced by the Indonesian shipping industry such as inadequate quality of human resources; outdated quality of raw materials requirements for shipbuilding materials; production equipment and technology are old or outdated; production facilities and infrastructure for building new ships and maintenance are limited; tax policy given by the government is potentially high; the status of land use for several national shipping industries (BUMN) have obligations to lease; and the national shipping companies has not been fully able to compete in the global era.

The potential external problems, which are often encountered in the national shipbuilding industry, are a lack of government support through the provision of policies and guidelines to make the shipping industry that is not only focused on new shipbuilding but also viewed from the side of the green shipbuilding and environmentally sound. Further, there is lack of integration between ministries in Indonesia, which handles the shipping industry and ship recycling industry, and yet the whole shipbuilding industry and related industries are still in doubt of the importance of establishing an green industrial cluster to improve competitiveness in the field of the shipbuilding industry. Solving the potential external problems with good governmental support to its industry will be the implication of a potential raise of industry growth.

#### **4.3 Ministry of Transportation of Indonesia obligation**

The Ministry of Transportation of Indonesia deals with affairs concerning the transportation sector including national policy formulation, policy implementation and technical policy in the field of transportation. In addition to management of property of the country related to transportation, supervision and execution of tasks in the field of transportation and submission of the evaluation report are also under this Ministry (Ministry of Transportation of Indonesia , 2019 (b)).

In the prevention of maritime pollution, the Ministry of Transportation supports the clean marine environment in Indonesia as well as anticipating the negative impact of national and global communities and the marine environment. Prevention of pollution of the maritime environment meant by the Ministry of Transportation is for the Indonesian maritime development in the future, so direction and a clear policy are needed in the medium term, as well as long term focus on the prevention of pollution from ships contained in the national transportation policy made by the Ministry of Industry of Indonesia (Ministry of Transportation of Indonesia, 2014 (a)). Article 51 to article 68 in the law of the Ministry of Transportation of Indonesia no. 29 explained specifically about SRF. Ships in Indonesia with a cargo of 500 gross tons or more must comply with the international regulations to conduct the ship recycling process, while the ships between 100 GT and 500 GT have to follow the rules of the law of the

Ministry of Transportation of Indonesia no. 29 to recycling of ships. Indonesian flagged ships should also have a list of IHM to do recycling of ships and POLLUTER-PAYS-PRINCIPLE charged to the shipowner whose ships have at least 1000 GT. The shipowner will then obtain a certificate from the Ministry of Transportation of Indonesia. The certificate is used by the shipowner to claim insurance policy to a third party. Authorization SRF in Indonesia must obtain a license and DASR from the Ministry of Transportation of Indonesia before it can conduct recycling of ships. Survey and certification are also done by the Ministry of Transportation of Indonesia by appointing CA in charge of surveying the vessels that wants to be recycled in accordance with the survey document requirements in the annex of the law of the Ministry of Transportation of Indonesia no. 29.

#### **4.4 Ministry of Manpower and Transmigration of Indonesia obligation**

The Ministry of Manpower of Indonesia deals with the worker affair sector including formulation improving the competence of skills and productivity of workers; improvement of social protection of workers; improvement of workers inspection; and acceleration and equitable development of the region (Ministry of Manpower of Indonesia , 2019 (c)). Regulations concerning safety in Indonesia was first created in 1970. The provisions aims to prevent, reduce and protect workers from danger in work areas (Acts of Indonesia, 1970). Work areas that are discussed in the rules cover agricultural industry, shipbuilding, health, transport, fisheries, and mining.

The ship recycling industry is dealing with hazardous materials, heavy equipment, and a variety of potential hazards that arise when processing shipbreaking, so workers are required to wear personal protective equipment (PPE). The Ministry of Human Resources of Indonesia also made specific regulations regarding PPE to support safety at work areas (Ministry of Manpower of Indonesia, 2010 (a)). The Ministry of Manpower of Indonesia also set a general health, safety and environment (HSE) system. Each company must identify potential hazards, assessment, and risk management, HSE implementation compared with other companies and other sectors who have better HSE implementation and review of the causes that are potentially harmful to the workers. Compensation and interference solution, results from previous assessments, annual monitoring and evaluation must also be identified.

In addition, advice from the workers and critics must be sought (Indonesia government regulation, 2012 (d)). The minister decision made by the Ministry of Manpower of Indonesia mentioned resurrection standard of competence for national employment in the category of manufacturing industry groups of ships to help shipbuilding companies to form a working system that is much better in accordance with prescribed regulations. However, specific regulations about shipbreaking and HSE in ship recycling were not found (Ministry of Manpower of Indonesia, 2015 (b)).

#### **4.5 INSA**

INSA is an organization that was created to facilitate the entrepreneurs who are running the shipping industry to unite among others and develop the potential of commercial shipping nationwide to achieve the maximum possible efficiency. It should encourage and maintain the delivery of services to the growth and development of the Indonesian economy, both domestically and abroad. Further it should help improve the foreign balance of payments position of Indonesia and maintain economic unity of Indonesia in order to reduce economic dependence on foreign trade by sea (Indonesian National Shipowners' Association, 2019).

In 2007, a meeting which was attended by 15 representatives from the Asian Shipowners' Forum (ASF) member associations including INSA supported the draft convention on ship recycling and the guidelines developed by the IMO (Asian Shipowners' Forum, 2007). The committee encourages flexibility regarding existing regulations related to ships, for example, the application of the IHM and certification. However, the committee, shipowners and other stakeholders recognize the importance of equality in the knowledge of information about IHM and a lack of knowledge and expertise regarding the capacity building of the IHM (Asian Shipowners' Forum, 2007).

#### **4.6 Indonesia Ship Recycling Infrastructure**

The ship recycling industry in the village of Kalibaru, Cilincing, North Jakarta, was the location of a representative image of the SRF in the national Indonesia ship recycling industry (Widagdo, 2017). The ship recycling industry in North Jakarta is still far from

safe and environmentally sound. There is not only marine pollution but also coastal and land pollution. The location also has a minimal area, so there are no boundaries between one activity to another activity. This is due to lack of knowledge in the process of recycling the ship safely and environmentally sound. Facilities and industrial equipment for recycling of ships in these locations are outdated in accordance with the standards of protection of workers' health and environmental pollution prevention standards. The workers are not equipped with PPE and they are not aware of the dangerous materials around them. The workers only work without knowing the long-term effect on their health and environmental pollution to their human body (Fariya, 2017). In the process of recycling the ship, the ship recycling industry players did not pay attention to the handling of hazardous materials.

Other SRFs were placed in Tanjung Jati, Madura, where the method used for ship recycling activities is the beaching method and the extent of shipbreaking business without thought of the safe and environmentally sound recycling of ships (Akriananta, & Suastika, 2017). According to analysis from HAZOP conducted in ship recycling industry in Tanjung Jati, Madura the industry in Madura is at high risk and potentially hazardous and can cause harm to the owner of the company or the people who live near the industrial areas, both in terms of accidents of human beings and the impact of hazardous substances.

According to data from the Ministry of Transportation of Indonesia, the total number of vessels in Indonesia amounted to 72 992 ships with a total of 44,299,098 GT, consisting of several types of ships, including bulk carriers, containers, general cargo vessels, passenger vessels, tankers, barges, and others (Ministry of Transportation of Indonesia, 2019 (c)). With such numbers, Indonesia has a potential market in ship recycling but unfortunately, the SRF was not supported by a qualified technical and management system and the SRF that existed in Indonesia did not have guidelines how to make the SRF environmentally sound recycling of ships.

#### 4.7 Infographic summary

Here the two figures infographic summary of Indonesia about the regulatory framework shown in Figure 3.

Ministry of Industry	Ministry of Transportation	Ministry of manpower	INSA	NGO	Indonesia SRF
<ul style="list-style-type: none"> <li>• Business license authorization</li> <li>• Outdated Industry Policy</li> <li>• Overlapping obligation between ministry</li> </ul>	<ul style="list-style-type: none"> <li>• general Ship recycling guidelines</li> <li>• IHM policy</li> <li>• PPP policy</li> <li>• SRF</li> <li>• DASR for SRF</li> <li>• CA</li> <li>• DASR</li> <li>• IRRC</li> <li>• exchange information policy</li> <li>• Overlapping obligation between ministry</li> </ul>	<ul style="list-style-type: none"> <li>• general HSE policy</li> <li>• worker rights policy</li> <li>• PPE policy</li> <li>• No specific HSE policy in ship recycling industry</li> <li>• Overlapping obligation between ministry</li> </ul>	<ul style="list-style-type: none"> <li>• Support Hong Kong HKC 2009 (2007)</li> <li>• No update review or meeting related ship recycling industry between INSA and governance</li> </ul>	<ul style="list-style-type: none"> <li>• Not founded specific NGO discuss about Indonesia's ship recycling</li> </ul>	<ul style="list-style-type: none"> <li>• Provided business license from Ministry of industry</li> <li>• No guidelines about environmental ly sound recycling of ships</li> <li>• Used conventional shipbreaking method</li> <li>• High risk activity and impact either for human and environment</li> </ul>

Figure 3. Indonesia regulatory framework summary

## **5. Indonesia on ratification HKC 2009**

### **5.1 The Challenge of formulating new regulation**

To answer the challenges for Indonesia to ratify the HKC 2009, the researcher will use the SWOT methodology. From the SWOT, the strengths, weaknesses, opportunities, and threats can be seen. These must be achieved by Indonesia if Indonesia decides to ratify the HKC 2009 and optimally adopt it into Indonesia's regulatory framework (Ghazinoory, Abdi, & Azadegan-Mehr, 2011).

Indonesia's strengths are that it is the largest archipelagic country in the world, which means Indonesia's geopolitical is very strategic (Tumonggor et al 2013). From the topography, along the coastline of the main island whether it is Java Island, Sumatra Island, Bali Island, Kalimantan Island, Sulawesi Island, and Papua Island, Indonesia should have the potential to develop ship recycling industries in these areas. As one of the ASEAN member countries, flanked by Malaysia, Singapore, and Australia, Indonesia has a strategic position in the Asia shipping line, so ships that have passed their productive operation age whether from Europe, the Middle East and Asia, also Indonesia ships can become a potential market for covering the demand and supply of the ship recycling industry in Indonesia (Trace, Frielink, & Hew, 2009).

Indonesia's weakness is in the ship recycling industry regulatory framework, connections between stakeholders, and governance support. Starting with the ship recycling industry regulatory framework, the Ministry of Transportation regulations that carefully monitor the HKC 2009 regulations have only been applied to the Ministry of Transportation regulation no. 29 (2014) whereas in the Ministry of Industry and the Ministry of Manpower specific rules related to shipping recycling and HSE management system of ship recycling activity were not found. Overlapping policy territories between the three ministries is a weakness in the Indonesia legislation (Datta et al., 2011). Although shipping regulations are discussed more in the Ministry of Transportation, business regulations affairs related to the shipping industry sector are discussed more in the Ministry of Industry and the regulations of the HSE of workers are discussed more in the Ministry of Manpower. Regarding the connection

between stakeholders, it needs to be developed again, especially from the Indonesia SRF and NGOs related with specific ship recycling issues, including the relationship with INSA and related ministries to establish sustainable cooperation. The last weakness is no clear guidelines for doing ship recycling starting from the initial design of shipbuilding until when the ship is ready for recycling (Liu, et al, 2016).

Indonesia's opportunities are with the absence of clear policies and guidelines without overlapping obligations between Indonesia's ministries. Indonesia's opportunities are wide open to see the great potential in terms of developing the shipbuilding industry, regulatory framework formula, and Indonesian ship recycling guidelines (Wever, L., Glaser, M., Gorris, P., & Ferrol-Schulte, D., 2012). The development of marine infrastructure will be more evenly distributed on other islands beside Java Island (Deichmann, U., Kaiser, K., Lall, S. V., & Shalizi, Z., 2005). The reasons the ship recycling industry has a good potential to be developed in Indonesia are to open up new employment opportunities for local people and change the mindset of the community regarding the ship recycling industry, which is usually damaging the marine environment. The HKC 2009 can be a potentially useful reference in establishing the Indonesian regulatory framework specifically regarding ship recycling and essential knowledge for all shipping industry stakeholders.

Indonesia's threats are that the government must be prepared for issue about a large potential budget and different interests from each ministry and other stakeholders related to ship recycling (Guess, 2005). The budget should be prepared from the planning stage of the regulatory framework regarding ship recycling until the inauguration of the new regulation, preparation of SRF infrastructure, preparation of documents related to ship recycling and national and international market analysis for ship recycling competition (International Law and Policy Institute., 2016). The different interests and obligations of each ministry and other stakeholders are also a threat because it can slow the bureaucracy process between the government goals and ship recycling industry stakeholders' goals to achieve environmentally sound recycling of ships.

## **5.2 Indonesia needs to formulate new policy on ship recycling**

Indonesia needs to formulate new policy to maximize the performance of the ship recycling industry. In doing so, the Indonesian government requires a regulatory framework assessment methodology. Regulatory framework assessment is an assessment that improve regulatory decision-making and practice to proposed new regulation with particular methodology. The research suggest that the Indonesian government should use strategic environmental assessment as well as power, influence, and social circles methodology.

Strategic environmental assessment is one of the tools to carry out extensive environmental assessment procedures where strategic environmental assessment aims to plan ideas , policies, and programs in certain strategic positions (Brown, & Thériverl, 2000). Before formulating a regulatory framework with a strategic environmental assessment, the Indonesian government should start with multi-level governance as an analytical tool to capture, map, and gather any stakeholders related to the ship recycling industry, both domestically and from abroad, to carry out a new formulation of ship recycling in Indonesia (Bache, Bartle, & Flinders, 2016). After a multi-level governance analysis is carried out, the next step is to conduct a strategic environmental assessment with adaptation from different regulations; provide new objectives and constraints in regulation formulation; prepare the necessary regulatory instruments and how to implement them; identify conflicts that occur with environmental impact studies; interconnecting connections from top management to the shipping recycling industry players; collect interest from each stakeholder and make it equal in a perspective agreed upon by all stakeholders; draft regulations on ship recycling in Indonesia; do a comparative study of the draft with actual field conditions; evaluation, monitoring and revision of the first draft; and finally ratify the regulation in legal Indonesian entities (Wood, 2003). Environmental studies can be done by following the system according to Figure 4 and supplementing the document on strategic environmental assessment

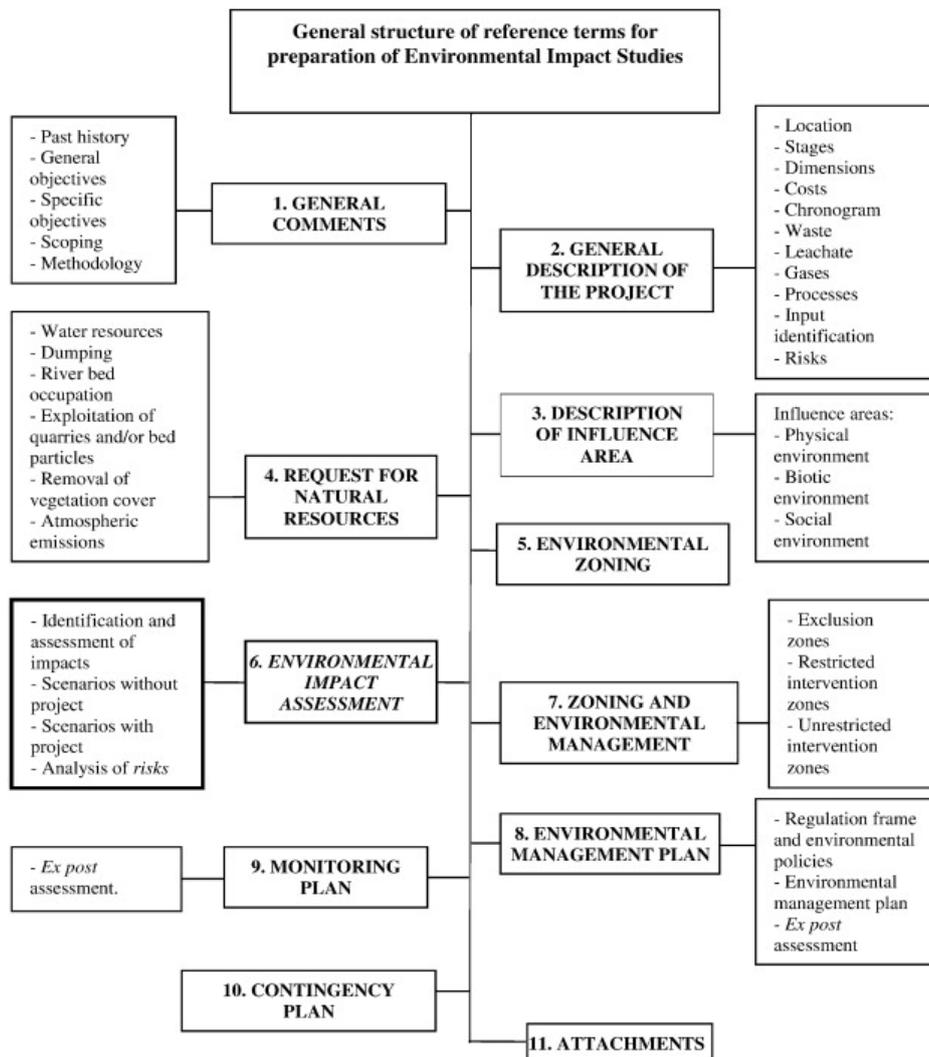


Figure 4. Environmental impact workflow structure (Toro, J., Requena, I., & Zamorano, M., 2010)

In addition to using strategic environmental assessment in formulating new regulations, power, influence and social circles methodology can provide a different perspective from an individual or government institution or organization in influencing a regulatory policy in a country (Kadushin, 1968). Power and privilege possessed by state elites can be one of the potential benefits in determining new regulatory policies. For example, if the elected president Joko Widodo rises again to lead Indonesia in the next 5 years with his idea of advancing Indonesia as a maritime nation, it will

facilitate bureaucracy and cooperation between levels of government management below that in the formulation of new policymaking (Lenski, 2013). Political skills of employees also have the potential to be very influential in determining policies in which employees can form relationships and build coalitions among stakeholders by showing strategically appropriate behavior in adaptive situations and social interests such as sincere interest, inspiring support, trust priority, transparent exchange and opinion and leadership (Treadway et al, 2013).

### **5.2.1 Strategic environmental assessment**

The sub-chapters will discuss deeper about strategic environmental assessment and guidelines for making SEA. Strategic environmental assessment is a strategic initiatives related to policy formulation in the context of planning and developing a program that has a long-term vision (Partidário, 2012). The context discussed is regarding the long-term vision of the ship recycling activity and the marine coastal environment. In addition, there are several key elements that need to be considered such as the vision of the particular SEA, work flexibility to complex systems, adapting to changing contexts, and focusing on potentially important contexts (Therivel, Wilson, Heaney, & Thompson, 2013).

Before determining the objectives of the content to be discussed at SEA, policy makers need to embed three fundamental objectives in their minds, such as encouraging environmental and sustainability; add-value to decision making and turning problems into opportunities and open minds creating a strategic culture (Stoeglehner, Brown, & Kørnøv, 2009). SEA is like an infamous tale from India "the elephant and the blind men", there are six men who touch different parts of the elephant's body and each has a partial view but they recognize the elephant wrong ???(Denzin, 2009). Then there is a wise man that said if each of you put your partial view together, the group of blind men will get an idea what an elephant looks like. Therefore, it is up to SEA, the blind group is stakeholders and the elephant is the context in the policy

formulation and through SEA, the policy maker can see things not just from single point of view but from several (Daigneault, 2013).

There are several models on how the SEA and policy making process could help the policymakers. In Figure 5, the first two models (models 1 and 2) are EIA-based SEA approaches, and the other models are more integrated and the strategy approaches to SEA. Model 3 is potentially suitable for the long term because the planning process and SEA process are in one line, and model 4 is potentially useful if the complex context problem needs to be flexible and adaptive.

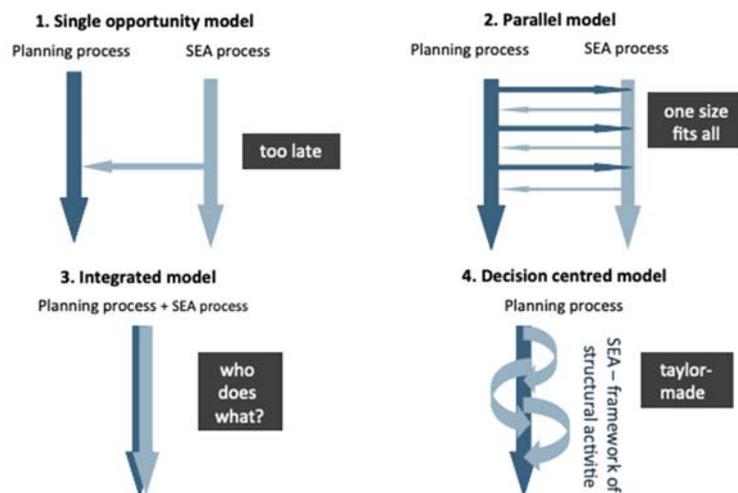


Figure 5. SEA-Planning process linked models (Partidário, M. D. R., 2007)

SEA and EIA are connected to each other in one looping system, EIA has the effects on environments (social, economic, and biophysical), then the SEA assesses the environment and makes development from it and loops again to EIA (CSIR, 2000). So what makes the SEA a potentially useful strategy is that the SEA is focused on the objectives, stakeholder engagement, strategic options, key restrictions, primary interests, and which policies are the most important.

Another component in SEA that should be fulfilled are the technical components; a process component; an institutional component; communication and engagement component (OECD., 2006). In the technical component it is usually needed to have expert knowledge and specialized studies such as priority setting, data collecting, culture trend analysis, and guidelines to minimize the uncertainty things on strategic issues. A process component establishes the link between SEA and decision process with consideration of flexibility-adaptive SEA and through the decision windows and government rules. An institutional component is the one that will make the decision making with a review of institutional analysis by formal and informal government rules. Lastly, communication and engagement are crucial to know the awareness and interest from stakeholders' engagement, public participation, and networking to support decision making.

Forming an ethical SEA framework requires several structural elements that must be met, namely object of assessment, driving forces, ESI, strategic reference network, CDF, governance framework, strategic options, opportunities and risks, and follow-up (Partidário, 2012). The object of assessment is crucial because this is the main point that needs to be explained about what object will be discussed. Driving forces are pressure points divided into two things: internal forces (such as knowledge and competence) and external forces (such as technology, society, economy), which collect several perspectives to describe the roots of problems. The environmental and sustainability issues (ESI) are adjusted with the geographical and decision of the object scale, which is contributing to the identification of CDF, problems, and potentials. The strategic reference framework is a regulatory reference framework from international and national contexts to support ESI in legal terms. CDF is a window of observation that is focused on what matters most on strategic issues (SI), and CDF should be an indicative not descriptive. The link between SI, ESI, CDF, and strategic reference framework can be seen in Figure 6.

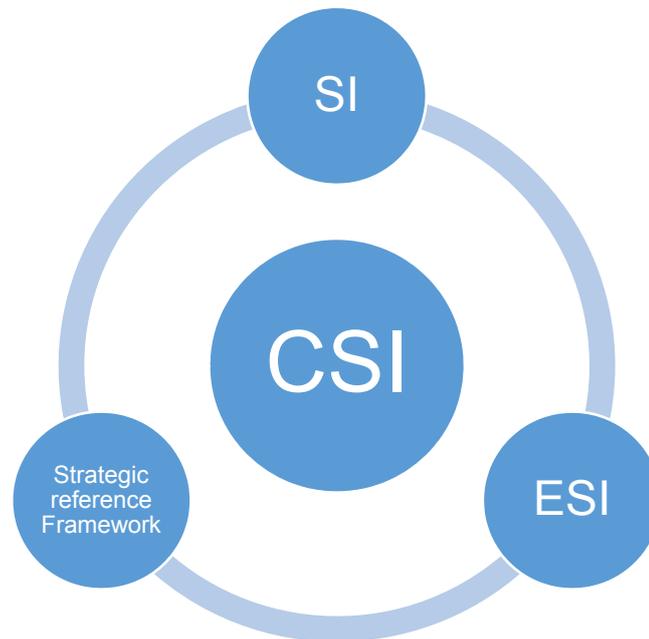


Figure 6. The link between CSI with SI, ESI and strategic reference framework

### 5.3 Environmental and Social Impacts

In the development of industry, the main factor influencing social aspects is the generation of traffic and also the availability of labor concerning the needs of various social facilities. One of the effects of the development of the shipbuilding industry is that it can open jobs and improve the quality of human resources, especially for human resources in Indonesian regions. Based on an analysis by Widagdo of labor absorption by referring to the industrial estate standard is about 90-110 Workers/Ha, so the number of workers will work on 113,25 Ha of land, for example, between 10.193 to 12.458 people (Widagdo, 2017).

With the increase in employment, it must be accompanied by an increase in the quality of human resources. To fulfill this, one of the efforts that can be done by the government and industry is the implementation of an apprenticeship program in an industry that is specific to the community around the shipbuilding industry (McConnell, 2002). With this program, it is expected that community expertise and skills can be increased, so that in the future it can produce workers who are ready to work in the

industry (Smith, Courvisanos, Tuck, & McEachern,, 2011). Other social aspects that need to be considered are related to the need for public and social facilities for workers around industrial areas (Bovaird, & Löffler, 2004). The need for such facilities and infrastructure, among others are roads, electricity, street lighting, clean water, telecommunications, transportation systems, drainage systems, sewage treatment systems, green open spaces, fire fighting units, educational facilities, health facilities, religious facilities, sports facilities body, commercial facilities, and security post.

The development of the shipbuilding industry will have an influence on the surrounding environment, both the industrial and marine environment. In the industrial environment, several impacts that may occur include the growth of supporting industries, both in small, medium and large enterprises. In the aspect of the situation that needs to be considered is the improvement of environmental management around the industry. Management of industrial environments such as waste, hazardous and dirty water must be integrated with the environment around the industry. Planning for environmental infrastructure systems in the ship consists of a waste management system; dirty water waste management system; liquid, solid and hazardous waste management systems; river system; and raw water treatment systems.

## 6. Conclusion

The HKC 2009 is guidelines to shipowners and member states to develop their ship recycling activities and ship recycling facilities to a maximum potential life cycle system. The objective is to prevent, reduce, and eliminate the possibility of injuries and adverse effects on human health safety and the environment by ship recycling activities. From the analysis of the HKC 2009, there are several key elements that have to be of primary concern by the HKC 2009 users, such as the definition, guidelines application, documents related to HKC 2009, IHM, HSE and entry to force.

Indonesia, an archipelagic country in tropical South-East Asia, is considered as one of the countries with the most ocean energy potential. Indonesia has an area of two thirds covered by ocean and the length of coastline is 54,716km. Indonesia has a high potential of investments in the maritime industry due to strategic geographical location and two thirds of Indonesia is covered with water, that is why there is high governmental interest in maritime infrastructure, and acceleration in trade. In recent years, the Indonesian government with the elected president Joko Widodo started to move towards and started to focus on maritime activities such as developing maritime infrastructure, maritime security and fishing industries.

To answer the challenges, Indonesia has to process the ratification of the HKC 2009. The researcher used the SWOT methodology. From the SWOT, the strengths, weaknesses, opportunities, and threats could be seen. These must be achieved by Indonesia if Indonesia decides to ratifies the HKC 2009 and optimally adopts it into Indonesia's regulatory framework.

Indonesia needs to formulate new regulations to maximize the performance of the ship recycling industry. In formulating a new regulation framework, the Indonesian government requires a regulatory framework assessment methodology. It is suggested that the Indonesian government should use strategic environmental assessment and power, influence and social circles methodology with support of environmental studies relating environmental, social and economic impacts from building the ship recycling industry in Indonesia. After SWOT has been done,

Indonesian policy maker can use the strategic environmental assessment to plan and programme the new policy for Indonesian ship recycling. In addition to stakeholders' engagement and environmental impact studies, Indonesian policy makers can build a sustainable looping system ship recycling activity. With the HKC 2009 as fundamental strategic reference framework, the Indonesian government can pursue being one of the countries that practice an environmentally sound ship recycling.

The researcher suggests that the Indonesian government should accelerate the preparation process to ratify the HKC 2009 and build a special committee to conduct a meeting between Indonesian shipping industry stakeholders to discuss and formulate a new sustainable policy for the improvement of the Indonesian ship recycling industry by using SWOT methodology, SEA, stakeholders engagement, and environmental impact studies as the policy decision making tool.

# References

## Monography

Brodie, P. (2013). *Dictionary of shipping terms*. Informa Law from Routledge.

Eade, D. (1997). *Capacity-building: An approach to people-centred development*. Oxfam.

Puthucherril, T. G. (2010). *From shipbreaking to sustainable ship recycling: Evolution of a legal regime*. Brill

Smith, A., Courvisanos, J., Tuck, J., & McEachern, S. (2011). *Building Innovation Capacity: The Role of Human Capital Formation in Enterprises--A Review of the Literature. Occasional Paper*. National Centre for Vocational Education Research Ltd. PO Box 8288, Stational Arcade, Adelaide, SA 5000, Australia.

## International Organization

Asian Shipowners' Forum. (2007). The 10th Interim Meeting of the ASF Ship Recycling Committee. Vietnam

Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships. (2019). Accession by Germany. IMODOCS: HKSRC.1/Circ. 13.

International Conference on the Safe and Environmentally Sound Recycling of Ships (a). (2009). Consideration of the Draft International Convention for the Safe and Environmentally Sound Recycling of Ships submitted by Norway. IMODOCS: SR/CONF/11.

International Conference on the Safe and Environmentally Sound Recycling of Ships (b). (2009). Consideration of the Draft International Convention for the Safe and Environmentally Sound Recycling of Ships, reporting upon completion (regulation 25) by France. IMODOCS: SR/CONF/20.

International Conference on the Safe and Environmentally Sound Recycling of Ships (c). (2009). Consideration of the Draft International Convention for the Safe and Environmentally Sound Recycling of Ships submitted by Malta. IMODOCS: SR/CONF/31.

International Conference on the Safe and Environmentally Sound Recycling of Ships (d). (2009). Consideration of the Draft International Convention for the Safe and Environmentally Sound Recycling of Ships submitted by Malta. IMODOCS: SR/CONF/32.

International Maritime Organization. (1969). International Convention on Tonnage Measurement of Ships.

International Maritime Organization. (2013). The development of the HKC. [Referred 5.5.2013]

<http://www.imo.org/ourwork/environment/shiprecycling/pages/Default.aspx>

Marine Environment Protection Committee 58. (2008). Revised draft Guidelines for the development of the Inventory of Hazardous Materials (Japan and Germany). IMODOCS: MEPC 58/3/2.

Marine Environment Protection Committee 60. (2010). Relationship between Ship Recycling Facility Plan and Ship Recycling Plan submitted by Japan. IMODOCS: MEPC 60/3/4.

Marine Environment Protection Committee 61 (a). (2010). Report of the intersessional correspondence group on ship recycling guidelines – Guidelines for Safe and Environmentally Sound Ship Recycling and Guidelines for the Development of the Ship Recycling Plan (SRP). IMODOCS: MEPC 61/3.

Marine Environment Protection Committee 61 (b). (2010). Draft Guidelines for authorization of Ship Recycling Facilities Submitted by France, Germany and Turkey. IMODOCS: MEPC 61/3/1.

Marine Environment Protection Committee 61 (c). (2010). Comments and proposals for the development of threshold values and exemptions for materials to be included in the inventory of Hazardous Materials (ICS, BIMCO, INTERTANKO, IPTA). IMODOCS: MEPC 61/3/8.

Marine Environment Protection Committee 62. (2011). Report of the intersessional correspondence group on ship recycling guidelines – Guidelines for the development of the Ship Recycling Plan. IMODOCS: MEPC 62/3/1.

Marine Environment Protection Committee. (2011). Guidelines for the Development of the Ship Recycling Plan. (Referred 5.5.2013)

OECD. Publishing. (2006). *Applying strategic environmental assessment: good practice guidance for development co-operation*. Organisation for Economic Co-operation and Development.

Sub-Committee on Pollution Prevention and Response. (2015). Revised Guidelines for the Inventory of Hazardous Materials. IMODOCS: PPR2/WP.7.

## **Europe Union**

European Maritime Safety Agency (EMSA). (2008). Study on the certification of ship recycling facilities final report

Regulation (EU) No. 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling (OJ 2013 L 330/1)

## **Peer-review Literature**

Agastia, I. G. B. D., & Perwita, A. A. B. (2015). Jokowi's Maritime Axis: Change and Continuity of Indonesia's Role in Indo-Pacific. *Journal of ASEAN Studies*, 3(1), 32-41.

Akriananta, W., & Suastika, K. (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), 33-34.

Andersen, A. B. (2001). Worker safety in the ship-breaking industries. *International Labour Office, Geneva*.

Arif, M., & Kurniawan, Y. (2018). Strategic Culture and Indonesian Maritime Security. *Asia & the Pacific Policy Studies*, 5(1), 77-89.

Aufiya, M. A. (2017). Indonesia's Global Maritime Fulcrum: Contribution in the Indo-Pacific Region. *Andalas Journal of International Studies (AJIS)*, 6(2), 143-158.

Agastia, I. G. B. D., & Perwita, A. A. B. (2015). Jokowi's Maritime Axis: Change and Continuity of Indonesia's Role in Indo-Pacific. *Journal of ASEAN Studies*, 3(1), 32-41.

- Bache, I., Bartle, I., & Flinders, M. (2016). Multi-level governance. In *Handbook on theories of governance*. Edward Elgar Publishing.
- Barlas, B. (2012). Shipyard fatalities in Turkey. *Safety science*, 50(5), 1247-1252.
- Bhattacharjee, S. (2009). From Basel to Hong Kong: international environmental regulation of ship-recycling takes one step forward and two steps back. *Trade L. & Dev.*, 1, 193.
- Bovaird, T., & Löffler, E. (2004). Understanding public management and governance. In *Public management and governance* (pp. 27-38). Routledge.
- Brown, A. L., & Thérivel, R. (2000). Principles to guide the development of strategic environmental assessment methodology. *Impact Assessment and project appraisal*, 18(3), 183-189.
- Books, H. S. E. (1997). Successful health and safety management. *HS (G)*.
- Carey Jr, T. (2012). The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships: Progress.
- Chang, Y. C., Wang, N., & Durak, O. S. (2010). Ship recycling and marine pollution. *Marine pollution bulletin*, 60(9), 1390-1396.
- Choudhary, G. K. (2011). An analysis of the creation of a global ship recycling fund in the framework of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009.
- Coly, R. A. (2012). Development and implementation of the polluter pays principle in international hazardous materials regulation. *Environmental Claims Journal*, 24(1), 33-50.
- Cordato, R. E. (2006). The polluter pay principle. *Washington, DC: Institute For Research for Economics Taxation*.
- CSIR (Council for Scientific and Industrial Research). (2000). Strategic Environmental Assessment in South Africa – guideline document, Department of Environmental Affairs and Tourism, Pretoria.
- Daigneault, P. M. (2013). The blind men and the elephant: A metaphor to illuminate the role of researchers and reviewers in social science. *Methodological Innovations Online*, 8(2), 82-89.
- Datta, A., Jones, H., Febriany, V., Harris, D., Dewi, R. K., Wild, L., & Young, J. (2011). The political economy of policy-making in Indonesia. *Overseas Development Institute (ODI), London, UK*.
- Deichmann, U., Kaiser, K., Lall, S. V., & Shalizi, Z. (2005). *Agglomeration, transport, and regional development in Indonesia*. The World Bank.
- Denzin, N. K. (2009). The elephant in the living room: Or extending the conversation about the politics of evidence. *Qualitative research*, 9(2), 139-160.
- Engels, U. D. (2013). *European ship recycling regulation: entry-into-force implications of the Hong Kong Convention*(Vol. 24). Springer Science & Business Media.
- Fariya, S. (2017). Penilaian Risiko Keselamatan Kerja pada Industri Ship Recycling di Indonesia. *INOVTEK POLBENG*, 7(2), 194-202.

- Fariya, S., Gunbeyaz, S. A., Kurt, R. E., Sunaryo, S., & Djatmiko, E. B. (2019). Developing sustainable green ship recycling facilities in Indonesia: Investigation of current situation. In *Sustainable Development and Innovations in Marine Technologies: Proceedings of the 18th International Congress of the Maritime Association of the Mediterranean (IMAM 2019), September 9-11, 2019, Varna, Bulgaria* (p. 439). CRC Press.
- Ferdinand, P. (2016). Westward ho—the China dream and ‘one belt, one road’: Chinese foreign policy under Xi Jinping. *International Affairs*, 92(4), 941-957.
- Gardiner, S. M. (2006). A core precautionary principle. *Journal of Political Philosophy*, 14(1), 33-60.
- Ghazinoory, S., Abdi, M., & Azadegan-Mehr, M. (2011). SWOT methodology: a state-of-the-art review for the past, a framework for the future. *Journal of business economics and management*, 12(1), 24-48.
- Gindarsah, L. (2014). *Politics, security and defence in Indonesia: interactions and interdependencies*. National Security College.
- Gindarsah, I. and Priamarizki, A. (2015). Indonesia’s Maritime Doctrine and Security Concerns.
- Green, C., & Fernández-Bilbao, A. (2006). Implementing the Water Framework Directive: How to define a “competent authority”. *Journal of contemporary water research & education*, 135(1), 65-73.
- Guess, G. M. (2005). Comparative decentralization lessons from Pakistan, Indonesia, and the Philippines. *Public Administration Review*, 65(2), 217-230.
- Hayman, B., Dogliani, M., Kvale, I., & Fet, A. M. (2000). Technologies for reduced environmental impact from ships-Ship building, maintenance and dismantling aspects. *ENSUS-2000, Newcastle upon Tyne, UK*.
- Institute of Hazardous Materials management. (2019). What Are Hazardous Material?. <https://www.ihmm.org/about-ihmm/what-are-hazardous-materials>
- Jain, K. P., Pruyn, J. F. J., & Hopman, J. J. (2013). Critical analysis of the Hong Kong international convention on ship recycling. *International Journal of Environmental, Ecological, Geological and Mining Engineering*, 7 (10), 2013.
- Jain, K. P., & Hopman, J. J. (2017). Improving the Competitiveness of Green Ship Recycling Platform, N.S.B., 2016. Substandard Ship Breaking: A Global challenge.
- Kadushin, C. (1968). Power, influence and social circles: A new methodology for studying opinion makers. *American Sociological Review*, 685-699.
- Karlis, T., & Polemis, D. (2016). Ship demolition activity: A monetary flow process approach. *Pomorstvo*, 30(2), 128-132.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
- Lenski, G. E. (2013). *Power and privilege: A theory of social stratification*. UNC Press Books.
- Liu, W., Baihaqi, I., Tezdogan, T., Kurt, R. E., Nugroho, S., Yuan, Z., ... & Incecik, A. (2016). Designing safe, green and sustainable vessels for Indonesian coastal transport and fishing operations.

- Loska, A. (2015). Modeling of decision-making process using scenario methods in maintenance management of selected technical systems. *International Journal of Strategic Engineering Asset Management*, 2(2), 190-207.
- McConnell, M. (2002). Capacity building for a sustainable shipping industry: a key ingredient in improving coastal and ocean and management. *Ocean & coastal management*, 45(9-10), 617-632.
- Mikelis, N. E. (2008). A statistical overview of ship recycling. *WMU Journal of Maritime Affairs*, 7(1), 227-239.
- Moen, A. E. (2008). Breaking Basel: The elements of the Basel Convention and its application to toxic ships. *Marine Policy*, 32(6), 1053-1062.
- Moncayo, G. A. (2016). International law on ship recycling and its interface with EU law. *Marine pollution bulletin*, 109(1), 301-309.
- Nassar, M. H., & Moursy, A. H. (2016). Evaluation of Hong Kong Convention in the Maritime Industry. *Journal of Shipping and Ocean Engineering*, 6, 117-122.
- Neşer, G., Ünsalan, D., Tekoğul, N., & Stuer-Lauridsen, F. (2008). The shipbreaking industry in Turkey: environmental, safety and health issues. *Journal of cleaner production*, 16(3), 350-358.
- Partidário, M. D. R. (2007). Good Practice Guide for Strategic Environmental Assessment - methodological guidelines. Portuguese Environment Agency.
- Partidário, M. D. R. (2012). Strategic environmental assessment better practice guide. Portuguese Environment Agency and National Energy Networks, Lisbon.
- Pattiradjawane, R. L., & Soebagjo, N. (2015). Global maritime axis: Indonesia, China, and a new approach to Southeast Asian regional resilience. *International Journal of China Studies*, 6(2), 175.
- Presiden RI. (2015). Indonesia Sebagai Poros Maritim Dunia. Presidenri.go.id: 29 July 2019.  
<http://presidenri.go.id/berita-aktual/indonesia-sebagai-poros-maritim-dunia.html>
- Puthucherril, T. G. (2010). *From shipbreaking to sustainable ship recycling: Evolution of a legal regime*. BRILL.
- Roberts, C. B., Habir, A. D., & Sebastian, L. C. (Eds.). (2014). *Indonesia at Home and Abroad: Economics, Politics and Security*. Australian National University, National Security College.
- Rochwulaningsih, Y., Sulistiyono, S. T., Masrurroh, N. N., & Maulany, N. N. (2019). Marine policy basis of Indonesia as a maritime state: The importance of integrated economy. *Marine Policy*, 108, 103602.
- Samiotis, G., Charalampous, K., & Tselentis, V. S. (2013). Recent developments in the institutional framework of ship recycling and the positive impact on international ship dismantling practices. *SPOUDAI-Journal of Economics and Business*, 63(3-4), 158-171.
- Sriyanto, N. (2018). global maritime fulcrum, indonesia-china growing relations, and indonesia's middlepowermanship in the east asia region. *Jurnal Kajian Wilayah*, 9(1), 1-19.
- Stoeglehner, G., Brown, A. L., & Kørnø, L. B. (2009). SEA and planning: 'ownership' of strategic environmental assessment by the planners is the key to its effectiveness. *Impact assessment and project appraisal*, 27(2), 111-120.

- Sunaryo, S., & Pahalatua, D. (2015). Green ship recycle yard design. *Journal of Naval Architecture and Marine Engineering*, 12(1), 15-20.
- Therivel, R., Wilson, E., Heaney, D., & Thompson, S. (2013). *Strategic environmental assessment*. Routledge.
- Toro, J., Requena, I., & Zamorano, M. (2010). Environmental impact assessment in Colombia: critical analysis and proposals for improvement. *Environmental Impact Assessment Review*, 30(4), 247-261.
- Trace, K., Frielink, B., & Hew, D. (2009). Maritime connectivity in archipelagic Southeast Asia: An overview.
- Treadway, D. C., Breland, J. W., Williams, L. M., Cho, J., Yang, J., & Ferris, G. R. (2013). Social influence and interpersonal power in organizations: Roles of performance and political skill in two studies. *Journal of Management*, 39(6), 1529-1553.
- Tumonggor, M. K., Karafet, T. M., Hallmark, B., Lansing, J. S., Sudoyo, H., Hammer, M. F., & Cox, M. P. (2013). The Indonesian archipelago: an ancient genetic highway linking Asia and the Pacific. *Journal of human genetics*, 58(3), 165.
- Pietrzykowski, Z., & Uriasz, J. (2009). The ship domain—a criterion of navigational safety assessment in an open sea area. *The Journal of Navigation*, 62(1), 93-108.
- Van Hoecke, M. (2015). Methodology of comparative legal research. *Law and Method*, 1-35.
- Vardar, E., Kumar, R., Dao, R., Harjono, M., Besieux, M., Brachet, I., & Wrzoncki, E. (2005). End of Life Ships The Human Cost of Ship Breaking: A greenpeace-FIDH report in cooperation with YPSA.
- Vuori, J. (2013). Environmental impacts of ship dismantling: screening for sustainable ways.
- Wever, L., Glaser, M., Gorris, P., & Ferrol-Schulte, D. (2012). Decentralization and participation in integrated coastal management: Policy lessons from Brazil and Indonesia. *Ocean & coastal management*, 66, 63-72.
- Widagdo, S. (2017). Perencanaan Pengembangan Industri Penutuhan Kapal (Ship Recycling) di Kabupaten Tanggamus, Lampung. *Jurnal Paradigma (JP)*, 6(3), 185-203.
- Wood, C. (2003, November). Environmental impact assessment in developing countries: an overview. In *Conference on new directions in impact assessment for development: methods and practice* (Vol. 24). Manchester, United Kingdom: EIA Centre School of Planning and Landscape University of Manchester.
- Zuin, S., Belac, E., & Marzi, B. (2009). Life cycle assessment of ship-generated waste management of Luka Koper. *Waste Management*, 29(12), 3036-3046.

### **Grey Literature**

- Acts of Indonesia. (1970). Act of Indonesia No.1 about work safety. Indonesia
- Acts of Indonesia. (2011). Act of Indonesia No.12 about Established law establishment. Indonesia
- ClassNK. (2019). Ship Recycling Convention (the Hong Kong Convention). <http://www.classnk.or.jp/HP/en/activities/statutory/shiprecycle/index.html#wrapper>

Coordinating Ministry for Maritime Affairs Republic of Indonesia. (2017). Indonesia Ocean Policy. Indonesia.

ESDM. (2017). Focus Group Discussion: Marine Energy Development Policy in Indonesia. Bali, Indonesia.

Indonesia Classification bureau, 2014. Klasifikasi Indonesia Classification Bureau Technic Publication. Jakarta: BKI Pusat.

Indonesia government regulation (a). (2001). Law of the Republic of Indonesia No. 74 about Hazardous Materials management. Indonesia

Indonesia government regulation (b). (2008). Law of the Republic of Indonesia No. 17 about Voyage. Indonesia

Indonesia government regulation (c). (2010). Law of the Republic of Indonesia No. 21 about Maritime Environment Protection. Indonesia

Indonesia government regulation (d). (2012). Law of the Republic of Indonesia No. 50 about Health, Safety and Environment system management. Indonesia

International Law and Policy Institute. (2016). Ship Breaking Practices in Bangladesh, India, and Pakistan.

Indonesian National Shipowners' Association. (2019). History of INSA. Indonesia  
<http://insa.or.id/about-us/>

Ministry of Industry of Indonesia (a). (2009). Regulation of ministry of industry no. 124/M-IND/PER/10/2017. Indonesia

Ministry of Industry of Indonesia (b). (2017). Regulation of ministry of industry no. 30/M-IND/PER/7/2017. Indonesia

Ministry of Manpower of Indonesia (a). (2010). Regulation of ministry of manpower no. PER.08/MEN/VII/2010. Indonesia

Ministry of Manpower of Indonesia (b). (2015). Ministry of Manpower of Indonesia decision no. 437 about Indonesia work national standard in Shipping industry. Indonesia

Ministry of Manpower of Indonesia (c). (2019). History of Ministry of Manpower of Indonesia. Indonesia

<https://beta.kemnaker.go.id/information/about>

Ministry of Transportation of Indonesia (a). (2014). Law of the Ministry of Transportation No. 29 about Maritime Incrimination Precaution. Indonesia

Ministry of Transportation of Indonesia (b). (2019). Duty and Function of Ministry of Transportation of Indonesia. Indonesia.

<http://hubla.dephub.go.id/profil/Pages/Tugas-dan-Fungsi.aspx>

Ministry of Transportation of Indonesia (c). (2019). Indonesia ships total and gross tonnage total. Indonesia.

Regulation of President of Indonesia. (2008). Law of president of Indonesia regulation No. 28 about National Industry Policy. Indonesia.

Secretariat of the Basel Convention/UNEP. (2007): The Global Programme for Sustainable Ship Recycling.

Secretariat of the Basel Convention. (2013). Guidance for Competent Authorities of Ship Recycling Facilities.

<http://www.basel.int/Portals/4/Basel%20Convention/docs/pub/leaflets/leafShips.pdf>

Secretary of State, Republic of Indonesia. (1985): Indonesian Law No. 17, 1985 on The Ratification of United Nation Convention of the Law of the Sea (UNCLOS) 1982.

Secretary of State, Republic of Indonesia. (2005): Presidential Instruction No. 5, 2005 on The Empowerment of National Shipping Industry.

United Nations Convention on the Law of the Sea. (1982). Article 92 : Status of Ships.

U.S. Environmental Protection Agency. (2000): A Guide for Ship Scrappers: Tips For Regulatory Compliance.