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Effective implementation of the international convention for the safe and environmentally sound recycling of ships

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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**EFFECTIVE IMPLEMENTATION OF THE
INTERNATIONAL CONVENTION FOR THE
SAFE AND ENVIRONMENTALLY SOUND
RECYCLING OF SHIPS**

By

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Republic of Korea

A dissertation submitted to the World Maritime University in partial
fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS

(MARITIME SAFETY AND ENVIRONMENTAL ADMINISTRATION)

2008

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:



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ABSTRACT

Title of Dissertation: **Effective Implementation of the International Convention for the Safe and Environmentally Sound Recycling of Ships**

Degree: **MSc**

This dissertation is a study concerning how the proposed International Convention for the Safe and Environmentally Sound Recycling of Ships (the Ship Recycling Convention) will be effectively implemented in order to achieve the ultimate goal of the Convention.

As a way to identify the necessary measures that should be taken to ensure the effective implementation of the Ship Recycling Convention, the obligations of a State as a Party, a flag State, a recycling State and a port State under the Convention are examined firstly through comparison with those under MARPOL 73/78. Then, the detailed obligations of a flag State under the Ship Recycling Convention are examined, taking into account the draft Guidelines for the Inventory of Hazardous Materials and draft Guidelines for Survey and Certification, and the consequent implications for the flag State are identified through the application of the framework of the audit standard in the Code for the Implementation of Mandatory IMO Instruments. Furthermore, the detailed obligations of a recycling State are also examined, taking into account the draft Guidelines for the Authorization of Ship Recycling Facilities, and the consequent implications for the recycling State are identified in the same way as for the flag State. Then, as the last necessary measure to ensure effective implementation, the relationship between a flag State, a recycling State and a port State is examined.

Finally, the factors affecting the effectiveness of the Ship Recycling Convention are investigated since these factors will also affect the effective implementation of the

Convention. The concluding chapter provides the way how the Ship Recycling Convention will be effectively implemented in order to achieve the ultimate goal of the Convention, the safe and environmentally sound recycling of ships, summarizing the examinations above.

KEY WORDS: Ship Recycling Convention, Safe and Environmentally Sound Recycling, Ship Recycling, Survey and Certification, Authorization of Ship Recycling Facilities, Implementation

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LIST OF ABBREVIATIONS

Basel Convention	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
BIMCO	Baltic and International Maritime Council
CG	Correspondence Group
COLREG 72	Convention on the International Regulations for Preventing Collisions at Sea, 1972
DASR	Document of Authorization to conduct Ship Recycling
DG ENV	European Commission Directorate General Environment
DG TREN	European Commission Directorate General Energy and Transport
EFTA	European Free Trade Area
ESM	Environmentally Sound Management
IACS	International Association of Classification Societies
ILL 66	International Convention on Load Lines, 1966
ILL Protocol 88	International Convention on Load Lines, 1966, as modified by the 1988 Protocol relating thereto
ILO	International Labour Organization
IMO	International Maritime Organization
ISO	International Organization for Standardization
ISRWG	Intersessional Meeting of the Working Group on Ship Recycling
LDT	Light Displacement Ton
London Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter

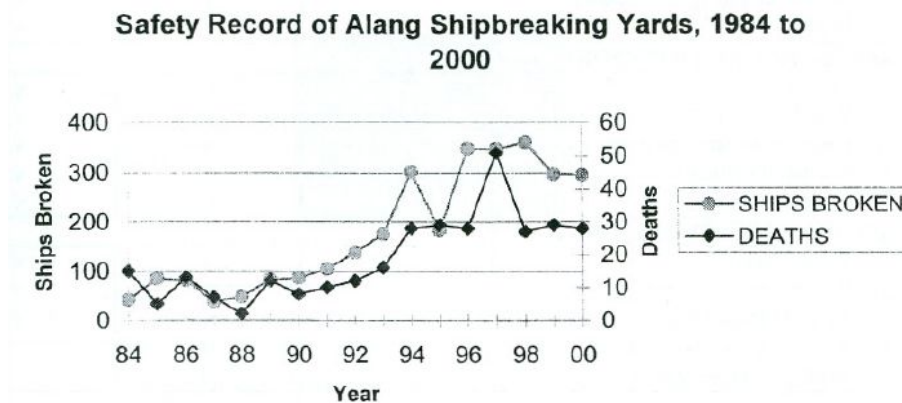
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto
MEPC	Marine Environment Protection Committee
MIDN	Interdepartmental Committee on the Dismantling of Civilian and Military End-of-Life Ships
OECD	Organization for Economic Co-operation and Development
OSHMS	Occupational Safety and Health Management System
PCB	Polychlorinated Biphenyls
RO	Recognized Organization
Ship Recycling Convention	International Convention for the Safe and Environmentally Sound Recycling of Ships
SOLAS 74	International Convention for the Safety of Life at Sea, 1974
STCW 78	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978
TBT	Tributyltin
TONNAGE 69	International Convention on Tonnage Measurement of Ships, 1969
UNEP	United Nations Environment Programme
WWF	World Wide Fund for Nature

CHAPTER 1

INTRODUCTION

The recycling of ships involves safety and environment issues such as the safety and health of workers in, and the environment around, the recycling facilities. From the environmental perspective, various types of waste from ship recycling facilities during the dismantling process may become the cause of pollution along the nearby coast. For example, in accordance with the study by Reddy, Basha, Kumar, Joshi and Ghosh, the average estimated quantity of solid waste¹ accumulated on Alang-Sosiya coastline in India, where an average of 365 ships are recycled every year, reaches approximately 96.71 tons per day (2003, p. 1609). One may easily imagine the seriousness of the adverse impact on the environment caused by this amount of waste. In addition, from the perspective of workers' safety, the workers are exposed to hazards from various accidents such as fires, explosions, crushing, suffocation and falling (Wijngaarden, 2005, April, section 2). Figure 1.1 below shows the correlation between the number of ships recycled and the number of deaths due to accidents in Alang in India, indicating that, if the recycling volume increases in coming years without devising the appropriate measures to prevent accidents, then the possibility of an increase in the number of deaths due to accidents is likely. Furthermore, ships currently being recycled were built 20-30 years ago when hazardous materials such as asbestos, Polychlorinated Biphenyls (PCB), Tributyltin (TBT), and other heavy metals were not restricted or prohibited unlike today (Bailey, 2005, May, p. 63) and the improper handling of these hazardous materials causes a serious impact on the health of those working in recycling facilities.

¹ Solid waste in the study includes paper, metals, glass and ceramics, plastics, leather, textiles, wood, food waste, chemical, ash, paint scrap, thermocol, oiled sponge, miscellaneous combustible, miscellaneous non-combustible.



(Source: Wijngaarden, 2005)

Figure 1.1 Alang annual safety and production records

The aforementioned examples of issues involved in the safety and health of workers and the environment are only parts of the whole picture since there also exists a great many ship recycling facilities around the world, especially in the South Asian region, experiencing similar problems.

Within the International Maritime Organization (IMO), ship recycling issues were first raised at the 42nd session of the Marine Environment Protection Committee (MEPC 42) in 1998, and the development of the IMO Guidelines on Ship Recycling was agreed at MEPC 47 in 2002, and the Guidelines was finalized at MEPC 49 and adopted at the IMO 23rd Assembly in 2003 (Mikelis, 2006, December, p. 2). However, recognizing the urgent need for IMO to develop an effective solution to the issues of ship recycling, IMO adopted Assembly Resolution A.981(24) in 2005 requesting MEPC to develop a new legally binding instrument on ship recycling (IMO, 2005d). This instrument is the proposed International Convention for the Safe and Environmentally Sound Recycling of Ships, hereinafter referred to as “the Ship Recycling Convention” or “the Convention”. Since the decision to develop the new convention, the MEPC has been actively working on the development of the Convention from MEPC 54 and, according to the recent work plan revised by MEPC 57 in 2008, the 4th Intersessional Working Group on Ship Recycling (ISRWG) will

attempt to resolve the remaining issues and prepare the final version of the draft text of the Convention which will be finalized by the Drafting Group of MEPC 58 in October, 2008. The Convention will then be adopted at a Diplomatic Conference in Hong Kong in May, 2009 (IMO, 2008, April 7, p. 27).

1.1 Objectives of the dissertation

In dealing with ship recycling issues, there are many stakeholders involved such as flag States, port States, recycling States, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (the Basel Convention), the International Labour Organization (ILO), the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Convention 1972) and the 1996 Protocol thereto, shipping industry, ship recycling industry, and other interested parties (IMO, 2004, pp.17-25). Especially once the Convention is adopted and enters into force, flag States, recycling States and port States will play important roles in terms of its implementation since they are the main bodies which will carry out the surveys, certification and control measures for the effective implementation of the Convention.

This dissertation examines how the Convention will be effectively implemented in order to achieve its ultimate goal, the safe and environmentally sound recycling of ships, focusing on the survey and certification scheme and control measures of flag States, recycling States and port States and the relationship between these States. In addition, the factors affecting the effectiveness of the Convention are also examined since it is important to secure its effectiveness for ensuring the effective implementation. All these examinations are carried out through answering the following research questions.

1. What are the obligations of flag States, recycling States and port States under the Convention?

2. What are the implications of the requirements of the Convention for flag States, recycling States and port States?
3. What is the relationship between flag States, recycling States and port States for the effective implementation of the Convention?
4. What are the factors affecting the effectiveness of the Convention and consequently affecting its effective implementation?
5. How will the Convention be effectively implemented?

As mentioned above, the Convention is currently being discussed and the text is not finalized yet. The latest draft currently available is the one in MEPC 57/WP.6 which is the working paper used by the Working Group on Ship Recycling during MEPC 57. All the regulations of the Convention referred to in this dissertation are those from the draft text in MEPC 57/WP.6. Furthermore, the word “draft” is not used in this dissertation for convenient reference to the Convention although the text of the Convention is a draft. However, although the text of the Convention is not the final one, it is expected that its current draft text will not be changed substantially and, in the author’s opinion, would be enough for the purpose of examining measures to ensure the effective implementation of the Convention.

In addition, the focus of this dissertation is placed on the effective implementation of the Convention, excluding the measures for the interim period until the entry into force of the Convention after the adoption in 2009. There exists the opinion that interim measures are necessary (Commission of the European Communities, 2007b, p. 12; European Commission Directorate General Environment (DG ENV), 2007, pp. 141-142; Mortensen, 2007, May). However, this dissertation does not deal with the interim measures since they, in the author’s opinion, could be carried out through the Convention itself. In other words, through the voluntary early implementation of the Convention as interim measures, the endeavour to achieve the ultimate goal of safe and environmentally sound recycling of ships could start even before entry into force.

The examples of early implementation of important amendments in IMO conventions and mandatory codes or of a convention itself can also be found in various IMO resolutions and circulars².

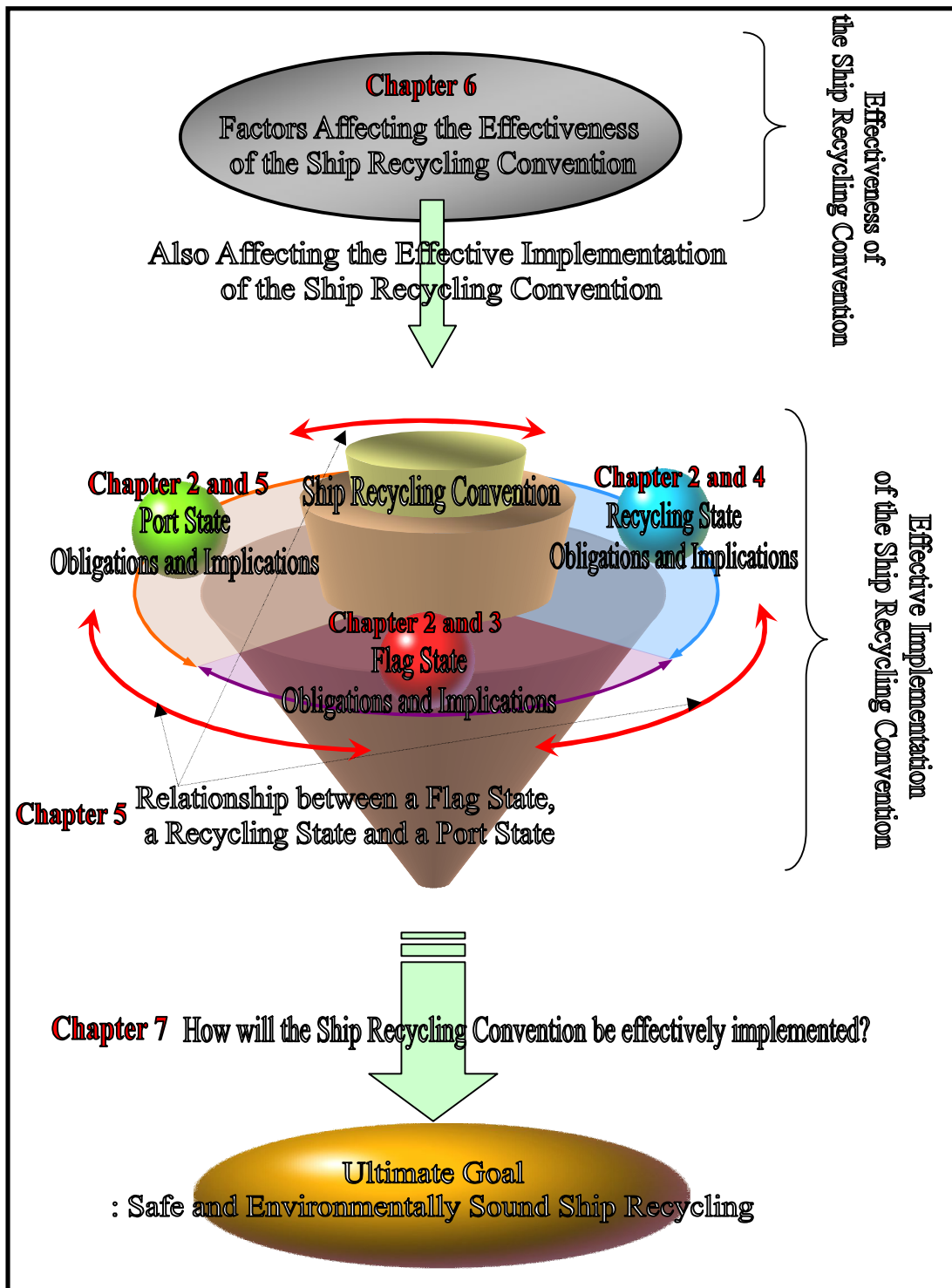
Lastly, it would be beneficial to flag States, recycling States and port States if their obligations and the consequent implications for them are identified for the effective implementation of the Convention at the early stage. Thus, this preliminary research is intended to benefit future studies once the Convention is adopted.

1.2 Organization of the dissertation

The synopsis of organization of the dissertation is illustrated in the following Figure 1.2. All the examinations in each chapter are carried out to identify the answer to the final research question “How will the Convention be effectively implemented?” In Chapter 2, the obligations of a State as a Party, a flag State, a recycling State and a port State under the Convention are examined in comparison with those under MARPOL 73/78. Then, in Chapter 3, the more specific obligations of a flag State are examined taking into account the draft Guidelines for the Inventory of Hazardous Materials and draft Guidelines for Survey and Certification. Then, the implications for the flag State are identified through the application of the framework of the audit standard in the Code for the Implementation of Mandatory IMO Instruments,

²Assembly Resolution A.928(22) (Resolution on early and effective applications of the International Convention on the Control of Harmful Anti-Fouling Systems on Ships), Resolution MEPC.145(54) (Early and effective application of the 2006 amendments to the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code)), Resolution MEPC.114 (50) (Early and effective application of the amendments to Annex I of MARPOL 73/78 (Revised regulation 13G and new regulation 13H)), MSC/Circ.771 (Implementation of the International Safety Management (ISM) Code), MSC/Circ.1067 (Early implementation of the special measures to enhance maritime security), MSC/Circ.1127 (Early implementation of amendment to SOLAS regulation III/19.3.3.3 adopted by resolution MSC.152(78)), MSC/Circ.1204 (Early application of amendment to SOLAS Chapter II-2), MSC/Circ.1207: Early implementation of draft SOLAS regulation III/19.3.3.4), MSC/Circ.1215 (Early implementation of amendments to SOLAS Chapter III and the International Life-Saving Appliance (LSA) Code), MEPC/Circ.412 (Early and effective application of the amendments to Annex I of MARPOL 73/78 (Revised regulation 13G and new regulation 13H)), MSC-MEPC.2/Circ.4 (Early application of the amendments to the fire protection requirements of the revised IBC Code)

hereinafter referred to as “the Code”. In Chapter 4, the detailed obligations of a recycling State are examined taking into account the draft Guidelines for the Authorization of Ship Recycling Facilities and the implications for the recycling State are identified in the same way as for the flag States in Chapter 3. With regard to the detailed obligations of a port State under the Convention and the consequent implications, unlike the flag State or the recycling State, the obligations and implications appear to be similar to those under other IMO instruments except that the contents of port State inspection are about the control of ships’ hazardous materials for the safe and environmentally sound recycling of ships. Therefore, this dissertation does not deal with the port State aspect in detail and, instead, the implications for a port State are introduced in Chapter 5 in order to explain the relationship between a flag State, a recycling State and a port State in the same chapter. Chapters 2, 3, 4 and 5 deal with the measures to ensure the effective implementation of the Convention, answering the first three research questions concerning the obligations, the implications and the relationship. However, all these measures can become meaningful only after the effectiveness of the Convention is secured. There are some factors which affect the effectiveness of the Convention and consequently its effective implementation. In Chapter 6, these factors are examined, answering the fourth research question. In the concluding chapter, the answer for the final research question “How will the Convention be effectively implemented?” is provided as the way to achieve the ultimate goal of the Convention, the safe and environmentally sound recycling of ships, summarizing the discussion in the previous chapters.



(Source: Author)

Figure 1.2 Organization of the dissertation

1.3 Miscellaneous

There are several ways of referring to ship recycling; it may be called ship dismantling, ship scrapping, or ship breaking. Especially, as indicated by Parkinson in the Ship Recycling Conference 2005, the expression “recycling” is the proper name to be used since most items from the ship are re-used after dismantling (2005, April, pp.1-2) and, according to the definition of the World Wide Fund for Nature (WWF), recycling is “the processing of waste or rubbish back into raw materials so that it can be made into new items and it is undoubtedly beneficial to the individual, the community and the planet” (as cited in Parkinson, 2005, April, p. 2). In addition, the practice of recycling has sustainable characteristics by itself since more than 95% of a ship can be recycled (Secretariat of the Basel Convention, 2008, p. 1). The subject of this dissertation concerns the Ship Recycling Convention, thus the expression “recycling” is preferred instead of “dismantling”, “scrapping” or “breaking” although all these words have the same meaning in this context.

With regard to the terms “Administration” and “Competent Authority” used in this dissertation, “Administration” and “Competent Authority” will mean respectively the Government of the flag State and the governmental authority of the recycling State in accordance with the definitions in Art.2 of the Convention.

CHAPTER 2

**OBLIGATIONS OF A STATE AS A PARTY, A FLAG STATE, A
PORT STATE AND A RECYCLING STATE UNDER THE SHIP
RECYCLING CONVENTION: COMPARISON WITH THOSE
UNDER MARPOL 73/78**

In order to know what is necessary for a State to prepare in advance for the effective implementation of the Convention, the first thing it has to do could be to identify its obligations under the Convention since knowing the obligations may be able to provide it with insight regarding what is to be prepared under the Convention. However, these obligations may vary from one State to another since it, as a Party to the Convention, may be a flag State, a port State, or a recycling State, or certain combinations of these States³. For example, if a Party to the Convention is a flag State and a recycling State at the same time, then it has to comply to all the obligations as a Party, a flag State and a recycling State, meaning that it has to know its obligations as a Party, a flag State and a recycling State respectively. Therefore, the identification of a State's obligations respectively as a Party to the Convention, a flag State, a port State, and a recycling State is important in order to facilitate the State to clearly identify its roles as a flag State, a port State, or a recycling State, or certain combinations of these States and to prepare what has to be done regarding its obligations for the effective implementation of the Convention.

³ The variation of a State's obligations as a flag State, a port State and a coastal State can be found in the Code for the Implementation of Mandatory IMO Instruments (IMO, 2005a, p. 3).

With regard to a State's obligations under the other IMO mandatory instruments⁴, the obligations are already well identified in the Code which was adopted at the 24th Assembly for guiding the implementation and enforcement of mandatory IMO instruments (IMO, 2005a). However, there is no reference regarding a State's obligations under the Convention since the scope of IMO mandatory instruments is limited to major conventions such as SOLAS 74, MARPOL 73/78, ILL 66, STCW 78, TONNAGE 69, COLREG 72 (IMO, 2005b, pp. 6-7). In the author's opinion, the identified State's obligations under the other IMO mandatory instruments may also help in identifying obligations under the Convention through comparison with a certain instrument. Among various IMO conventions, the author has chosen MARPOL 73/78 in order to identify a State's obligations under the Convention as a Party thereto, a flag State and a port State⁵. The reason why the author has selected MARPOL 73/78 for this purpose is because the Convention may have similar consequences as MARPOL 73/78 if breached, for instance, oil pollution by fuels from all types of ships or by cargo residues from oil tankers, pollution by hazardous substances from cargo residues of chemical tankers, pollution by sewage and garbage from all types of ships and air pollution from burning harmful substances without appropriate cares. Regarding obligations as a recycling State, it is necessary to identify them through examination of the Convention itself, not through comparison with MARPOL 73/78 since a recycling State is the newly emerged State entity with the introduction of ship recycling issues and, therefore, there exists no reference to the obligations as a recycling State under MARPOL 73/78 nor in other IMO conventions.

⁴ These mandatory instruments include the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74), the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), the International Convention on Load Lines, 1966 (ILL 66), the International Convention on Load Lines, 1966, as modified by the 1988 Protocol relating thereto (ILL Protocol 88), International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 78), International Convention on Tonnage Measurement of Ships, 1969 (TONNAGE 69), Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREG 72), etc.

⁵ Obligations of a coastal State have not been identified since there is no mention regarding obligations as a coastal State in the Ship Recycling Convention.

2.1. Obligations of a State as a Party to the Convention

Table 2.1 Obligations of a Party under the Ship Recycling Convention

Obligations of a Party under the Ship Recycling Convention		
Source	Summary description	Comments
Art.1	General obligations	
Art.3.4	Application - no more favourable treatment	
Art.9.1	Detection of violations – co-operation	
Art.10.2 and 10.3	Violations	
Art.11	Undue delay or detention of ships	
Art.12	Communication of information	
Art.13	Technical assistance and co-operation	
Reg.2bis	Relationship with other standards, recommendations and guidance	
Reg.12.12	Issuance and endorsement of certificates - acceptance of certificates	
Reg.13	Issuance or endorsement of a certificate by another Party	

(Source: Author)

The obligations of a State as a Party to the Convention in Table 2.1 above are identified through comparison with those under MARPOL 73/78 in Annex 1 in the Code.

Table 2.2 Obligations of a Party commonly identified in both the Ship Recycling Convention and MARPOL 73/78

Obligations of a Party	Ship Recycling Convention	MARPOL 73/78
Responsibility to give effect to the Convention requirements	Art.1	Art.1
No more favourable treatment	Art.3.4	Art.5(4)
Co-operation in detection of violations of the Convention requirements	Art.9.1	Art.6(1)
Establishment of sanctions under its law in case of violations	Art.10.2 and 10.3	Art.4(2) and (4)
Avoidance of undue delay of ships	Art.11	Art.7
Communication of information relevant to the Convention implementation	Art.12	Art.11

Technical assistance and co-operation	Art.13	Art.17
Acceptance of certificates by other Parties	Reg.12.12	Art.5(1)
Issuance or endorsement of a certificate by another Party	Reg.13	Reg.8 in Annex I, Reg.9.3.1 to 9.3.4 in Annex II ⁶ , Reg.6 in Annex IV and Reg.7 in Annex VI

(Source: Author)

As observed in Table 2.2 above, most of the obligations of a Party under the Convention in Table 2.1 can also be found in MARPOL 73/78.

Besides the commonly identified obligations, the other obligations of a Party under the Convention are specifically for safe and environmentally sound ship recycling, such as requiring Parties to take into account various standards, recommendations and guidance developed by ILO and under the Basel Convention in implementing the Convention⁷ whereas the other obligations under MARPOL 73/78 are also specifically for prevention of pollution from ships, such as investigation regarding discharge of oil⁸, measures regarding uncategorized liquid substances in bulk⁹, issuance of detailed requirements regarding packing, marking, labelling, documentation, stowage, quantity limitations and exceptions¹⁰, obligations regarding fuel oil quality¹¹, etc.

⁶ Annexes I and II of MARPOL 73/78 were revised respectively by Res.MEPC.117(52) and Res.MEPC.118(52), resulting in the change in the regulation numbers therein, and currently the revised ones are effective. However, in the Code for the Implementation of Mandatory IMO Instruments, the previous regulation numbers are referred to. Although the contents regarding obligations of a Party remains the same even after the complete revision of those Annexes, here the reference to regulations are made to the currently effective regulation numbers in order to avoid the confusion in making reference.

⁷ Reg.2*bis* of the Ship Recycling Convention

⁸ Reg.15.7 and Reg.34.7 in Annex I of MARPOL 73/78

⁹ Reg.6.3 in Annex II of MARPOL 73/78

¹⁰ Reg.1(3) in Annex III of MARPOL 73/78

¹¹ Reg.18(7) in Annex VI of MARPOL 73/78

One item necessary to note is that a Party's obligations regarding casualty investigations under Art.12 in MARPOL 73/78 are not shown under the Convention. A Party's obligations regarding casualty investigations can be also found in other major conventions such as in Reg.I/21 in SOLAS 74, Art.23 in ILL 66. According to the Code for the Investigation of Marine Casualties and Incidents adopted by Res.A.849(20) at the 20th Assembly, the investigation procedure exists to prevent similar types of accidents from happening again through identifying the circumstance of the accidents and establishing causes and contributing factors (IMO, 1997, Section 2). In the case of the Convention, there would be two State entities, that is, the flag State and the recycling State which would have been subject to safety investigations if there were the relevant requirements regarding investigations as in other IMO conventions. However, the flag States' relevance to safety investigation under the Convention seems to be unlikely. There is the requirement of investigation for accidents regarding recycling facilities whereas there is no direct requirement of investigation for accidents regarding ships. According to Reg.24 of the Convention, it is a ship recycling facility that is required to report to the competent authority "any incident, accident, occupational diseases, or chronic effects causing, or with the potential of causing, risks to workers safety, human health and environment", meaning that the facility itself may need to investigate the incident or accident for the purpose of reporting to the competent authority. In this context, under the Convention, it can be said that ship recycling facilities carry out investigations regarding the accident and incident instead of the recycling State even if the incident or accident under this Convention does not exactly mean the same as in other IMO conventions.

2.2. Specific obligations of a flag State

Table 2.3 Obligations of a flag State under the Ship Recycling Convention

Specific flag State obligations under the Ship Recycling Convention		
Source	Summary description	Comments
Art.4.1	Controls related to ship recycling - ensuring its flag ships' compliance with the requirements in the Convention and taking effective measures for ensuring the compliance	
Art.5	Survey and certification of ships	
Art.10.1.1	Violations – prohibition by national laws and establishment of sanctions under national laws	
Reg.4.1	Controls of ships' hazardous materials	
Reg.5	Inventory of Hazardous Materials - verification	
Reg.8.1.5	General requirement – certification of ships destined to be recycled as ready for recycling	
Reg.9.3	Ship Recycling Plan – available for inspection by officers of the Administration	
Reg.11	Surveys	
Reg.12	Issuance and endorsement of certificates	
Reg.15.1.2	Transfer of flag	

(Source: Author)

Obligations of a flag State under the Convention in Table 2.3 are identified through comparison with those under MARPOL 73/78 in Annex 2 of the Code.

Some of the obligations of a flag State under the Convention seem to be the same as those of a flag State under MARPOL 73/78. For instance, as shown in Table 2.4 below, a flag State's general obligations regarding sanctions against violations of its flag ships and the obligations in case of transfer of the flag are the same. With regard to the survey and certification, flag State's obligations that the survey is to be carried out by officers of the flag State or the nominated surveyors or recognized organizations (ROs) and its empowerment to them, the responsibility to ensure completeness and efficiency of the survey, and the obligations regarding issuance or endorsement of certificates by the flag State or recognized person or organization are

also the same even if the type and contents of surveys under the Convention consisting of an initial survey, a renewal survey, an additional survey, a final survey appears a little bit different from those under MARPOL 73/78 consisting of an initial survey, a renewal survey, an intermediate survey, an annual survey and an additional survey in accordance with Annexes I, II and VI and an initial survey, a renewal survey and an additional survey in accordance with Annex IV.

Table 2.4 Obligations of a flag State commonly identified in both the Ship Recycling Convention and MARPOL 73/78

Obligations of a flag State	Ship Recycling Convention	MARPOL 73/78
Obligations regarding sanctions against violations of its flag ship	Art.10.1.1	Art.4(1) and (3) and Art.6(4)
Obligations in case of transfer of flag	Reg.15.1.2	Reg.10.9.3 in Annex I, Reg.10.9.3 in Annex II, Reg.8.8.2 in Annex IV and Reg.9(9)(c) in Annex VI
Obligations regarding survey	Reg.11	Reg.6 in Annex I, Reg.8 in Annex II, Reg.4 in Annex IV and Reg.5 in Annex VI
Obligations regarding issuance or endorsement of certificates	Reg.12	Reg.7 in Annex I, Reg.9.1 and 9.2 in Annex II, Reg.5 in Annex IV and Reg.6 in Annex VI

(Source: Author)

With regard to the specific flag State's obligations which are fit for the purpose of each convention, most of a flag State's obligations under one convention are a little different from the other since the obligations are specifically designed for the specific convention. For example, in the case of MARPOL 73/78, the obligations are

regarding exceptions¹², notifications and communications of information¹³, establishment of requirements or measures¹⁴, approval of equipment, arrangement, procedure, plan or system¹⁵, agreement with port States¹⁶ etc. whereas, under the Convention, the obligations are about ensuring its flag ships' compliance with the requirements in the Convention and taking effective measures for ensuring compliance¹⁷, prohibition and restriction of installation or use of hazardous materials¹⁸, verification of inventory of hazardous materials¹⁹, certification of ships as ready for recycling prior to any recycling activity being carried out²⁰, and inspection of Ship Recycling Plan²¹.

What can be observed regarding a flag State's obligations is that its obligation regarding approval of certain documents, which can be considered as one of the obligations most frequently found in IMO conventions, does not exist under the Convention even if there is an obligation regarding the verification of the Inventory of Hazardous Materials. In addition, with regard to ROs, Reg.11 of the Convention stipulates that surveys of ships may be carried out by nominated surveyors or ROs as is the case in most IMO conventions. However, criteria for recognizing organizations to conduct survey and certification functions on behalf of a flag State, which is one of the flag State's obligations in other IMO conventions such as SOLAS 74, MARPOL

¹² Reg.4.3 of Annex I and Reg.3.1.3 of Annex II of MARPOL 73/78.

¹³ Reg.3.3, Reg.5.2, Reg.18.10.3, Reg.20.8.1, Reg.21.8.1, Reg.25.5 and Reg.38.8 of Annex I, Reg.4.1.2, Reg.4.3.4, Reg.4.4.5, Reg.5.2, Reg.6.3 and Reg.18.5 of Annex II, Reg.12.2 of Annex IV, Reg.7(2) of Annex V, Reg.4(2) and Reg.17(2) of Annex VI of MARPOL 73/78.

¹⁴ Reg.18.8.2, Reg.30.6.5.2, Reg.33.2 of Annex I, Reg.11.2 of Annex II, Reg.13(1)(b)(ii) of Annex VI of MARPOL 73/78.

¹⁵ Reg.4.3, Reg.14.6 and 14.7, Reg.15.6.2, Reg.18.8.3, Reg.18.10.1.1, Reg.27.3.1, Reg.29.2.1, Reg.31.1, Reg.31.4, Reg.32, Reg.37.1 and Reg.39.2.2 of Annex I, Reg.3.1.3, Reg.4.3.1, Reg.4.4.1, Reg.4.4.4, Reg.5.3.5, Reg.12.5, Reg.13.3, Reg.13.4.3, Reg.13.5.1, Reg.13.6.1.3.1, Reg.14.1 and Reg.17.1 of Annex II, Reg.9 of Annex IV, Reg.13(2)(b), Reg.13(3)(b), Reg.14(4)(b) and (c), Reg.15(5) and Reg.16(2)(a) of Annex VI of MARPOL 73/78.

¹⁶ Reg.2.6.2 and Reg.18.10.1.2 of Annex I of MARPOL 73/78.

¹⁷ Art.4.1 of the Ship Recycling Convention.

¹⁸ Reg.4.1 of the Ship Recycling Convention.

¹⁹ Reg.5 of the Ship Recycling Convention.

²⁰ Reg.8.1.5 of the Ship Recycling Convention.

²¹ Reg.9.3 of the Ship Recycling Convention.

73/78 to follow when recognizing the organizations, is not referred to in the Convention. Reg.XI-1/1 of SOLAS 74 stipulates that when the flag State recognizes organizations to carry out surveys on its behalf, it shall comply with Res.A.739(18) concerning guidelines for authorization of ROs and Res.A.789(19) concerning specifications on survey and certification functions of ROs. Under MARPOL 73/78, Reg.6 of Annex I and Reg.8 of Annex II stipulate the same requirements.

2.3. Specific obligations of a port State

Table 2.5 Obligations of a port State under the Ship Recycling Convention

Specific port State obligations under the Ship Recycling Convention		
Source	Summary description	Comments
Art.8	Inspection of ships	
Art.9.2	Detection of violations – inspection upon request - reporting	
Art.9.3	Detection of violations – informing the Administration and the Organization of actions taken	
Reg.4.2	Controls of ships' hazardous materials	

(Source: Author)

Specific port State's obligations under the Convention in Table 2.5 above are identified through comparison with those under MARPOL 73/78 in Annex 3 of the Code.

As seen in Table 2.6 below, a port State's obligations which are commonly found in both the Convention and MARPOL 73/78 are about limiting inspections to verifying valid certificates except when there are clear grounds for the detailed inspection, inspection upon request and the subsequent reporting to the requesting Party and to the flag State. With regard to the notification obligation of any action taken, a port State needs to inform only the flag State of any action taken against the ship concerned in the case of MARPOL 73/78 whereas it needs to inform not only the flag State but also IMO of the action in the case of the Convention.

Table 2.6 Obligations of a port State commonly identified in both the Ship Recycling Convention and MARPOL 73/78

Obligations of a port State	Ship Recycling Convention	MARPOL 73/78
Obligation regarding inspections	Art.8	Art.5(2)
Obligation regarding inspection upon request and subsequent report to the requesting Party and to the flag Administration	Art.9.2	Art.6(5)
Obligation regarding notification of any action taken	Art.9.3	Art.5(3)

(Source: Author)

Although a port State's general obligations regarding its inspection on ships in its ports show the similarity in both the Convention and MARPOL 73/78, the port State's obligations which are suited for the purpose of one convention are quite different from the other. For instance, under MARPOL 73/78, the obligations are about provision of reception facilities²², agreement with flag States²³, communication to IMO²⁴, port State control on operational requirements²⁵, expeditious inspections of various record books without causing the ship concerned to be unduly delayed²⁶, etc. whereas, under the Convention, a port State is required to prohibit and restrict the installation or use of hazardous materials on ships while in its ports, offshore terminals, or repair yards under its jurisdiction.²⁷

2.4. Specific obligations of a recycling State

The newly emerged State entity, that is, the ship recycling State, has its own characteristics in terms of the obligations under the Convention. In Table 2.7, the obligations of the recycling State under the Convention are identified.

²² Reg.38 sections A and B of Annex I, Reg.18.1 to 18.4 of Annex II, Reg.12.1 of Annex IV, Reg.5(4) and (5)(a), Reg.7(1) of Annex V, Reg.17(1) of Annex VI of MARPOL 73/78

²³ Reg.2.6.2 and Reg.18.10.1.2 of Annex I of MARPOL 73/78

²⁴ Reg.20.8 and Reg.21.8 of Annex I, Reg.14(4)(b) and Reg.15(2) of Annex VI of MARPOL 73/78

²⁵ Reg.11 of Annex I, Reg.16.9 of Annex II, Reg.8 of Annex III, Reg.8 of Annex V, Reg.10 of Annex VI of MARPOL 73/78

²⁶ Reg.17.7 and 36.8 of Annex I, Reg.15.6 of Annex II, Reg.9(5) of Annex V of MARPOL 73/78

Table 2.7 Obligations of a recycling State under the Ship Recycling Convention

Specific recycling State obligations under the Ship Recycling Convention		
Source	Summary description	Comments
Art.4.2	Controls related to ship recycling – ensuring recycling facilities’ compliance with the requirements in the Convention and taking effective measures for ensuring the compliance	
Art.6 and Reg.17	Authorization of ship recycling facilities	
Art.7	Exchange of information – relevant information on which its decision for authorization was based	
Art.9.4	Detection of violations – investigations and reporting	
Art.10.1.2	Violation – prohibition by national laws and establishment of sanctions under national laws	
Reg.16	Controls on ship recycling facilities	

(Source: Author)

Although the recycling State is a new entity, some of its obligations are similar to those of a flag State. For example, those obligations concerning investigation of ship recycling facilities regarding violations informed by another Party²⁸ and ensuring ship recycling facilities’ compliance with the Convention and taking effective measures for ensuring their compliance²⁹ have the same characteristics as those of the flag State except that the recycling State’s target is ship recycling facilities whereas the flag State’s target is ships. In addition, with regard to the controls of ship recycling facilities³⁰, this has similar features to those of a flag State’s controls in terms of requirements of design, construction and operation in a safe and environmentally sound way although the detailed requirements are a little bit different to each other.

²⁷ Reg.4.2 of the Ship Recycling Convention

²⁸ Art.10.1.2 of the Ship Recycling Convention

²⁹ Art.4.2 of the Ship Recycling Convention

³⁰ Reg.16 of the Ship Recycling Convention

All the other obligations of a recycling State under the Convention are also related to ship recycling facilities. In particular, most of them concern the authorization of ship recycling facilities. If ship recycling facilities are authorized by the recycling State, then this shall be done taking into account the guidelines developed by IMO which are currently being developed³¹. In addition, a recycling State shall provide IMO or other Parties with information regarding the basis of authorization if requested³².

In the course of authorization of ship recycling facilities, a recycling State may delegate its functions relevant thereto to ROs in accordance with Reg.17.2 as in the case of a flag State's delegation of its survey and certification functions in other IMO conventions. When delegating its functions to ROs, it shall notify IMO of the responsibilities and conditions of the delegated authority. Unlike the case of the flag State's obligations in other IMO conventions such as SOLAS 74 and MARPOL 73/78³³, there are no such criteria as Res.A.739(18) and Res.A.789(19) for the competent authority of a recycling State to refer to when recognizing organizations to carry out its functions on its behalf. The minimum standards for ROs in Res.A.739(18) and specifications on functions of ROs in Res.A.789(19) focus mainly on a ship's design and construction as well as the survey and certification of ships and the associated equipment. Therefore, it seems obvious that the present criteria for ROs stipulated in Res.A.739(18) and Res.A.789(19) can not be used as criteria for authorizing the ROs under Reg.17.2 of the Convention.

³¹ Reg.17.1 of the Ship Recycling Convention

³² Art.7.1 of the Ship Recycling Convention

³³ Reg.XI-1/1 of SOLAS 74 and Reg.6 of Annex I and Reg.8 of Annex II of MARPOL 73/78 requires that guidelines for authorization of recognized organizations (Res.A.739(18)) and specifications of survey and certification functions of recognized organizations (Res.A.789(19)) be complied with when delegating an Administration's functions related to survey and certification.

CHAPTER 3

OBLIGATIONS OF AND IMPLICATIONS FOR FLAG STATES UNDER THE SHIP RECYCLING CONVENTION: FROM THE SURVEY AND CERTIFICATION PERSPECTIVE

Identifying the obligations of a flag State under the Convention may provide the flag State with insight regarding what has to be done for the effective implementation of the Convention as introduced in Chapter 2. In this chapter, the more detailed requirements relevant to the flag State's obligations are examined for the same reason. In addition, since identifying the implications for the flag State could be helpful in its preparation for the effective implementation of the Convention, the implications for the flag State are also identified.

3.1 A tool used to identify the implications for flag States

Implications of a new convention for a flag State may be related to how it should implement and enforce the requirements of the new convention in the national context in order to meet the obligations under the new convention. There could exist various documents which can be used in identifying the implications for a flag State. "Guidance to assist flag States in the self-assessment of their performance" in Annex I of Res.A.912(22) adopted by IMO Assembly 22nd session could be one of them since it provides guidance to enable the flag State to self-assess its capabilities and performance in implementing and enforcing the requirements of various IMO instruments to which it is a Party, showing what it needs to do. This guideline provides internal criteria³⁴ for the assessment of flag State performance such as the legal framework, enforcement, responsibility of ROs acting on its behalf, casualty and incident investigation (IMO, 2001, pp. 5-6) and this, in turn, shows what the flag

³⁴ There are also external criteria for the assessment of flag State performance. The examples of external criteria are port State control data and casualty accident data regarding its ships as indicated

State should do in implementing and enforcing the requirements of IMO instruments. In the same sense, Voluntary IMO Member State Audit Scheme, hereinafter referred to as “the IMO Audit Scheme”, could also be used as a tool for identifying the implications for a flag State³⁵ since it provides an objective evaluation regarding how well the flag State implements and enforces some of the IMO mandatory instruments and, in turn, shows what the flag State should do to implement and enforce them. Since the IMO Audit Scheme generally incorporates the contents of guidance for flag’s State’s self-assessment in some way, the focus here is placed only on the IMO Audit Scheme in identifying the implications of obligations under the Convention for the flag State.

With regard to the IMO Member State Audit, hereinafter referred to as “the IMO Audit”, if there exist audit criteria to a flag State, those criteria could be used in identifying the implications of the flag State’s obligations under the Convention because these may guide the flag State in deciding what they need to do under the Convention. However, one thing that has to be observed is that the Convention is not included in the scope of the IMO Audit Scheme (IMO, 2005b, para.7.2 of Part I of Annex). Nonetheless, according to Res.A.975(24), there is also a possibility to include conventions other than those within the scope of the IMO Audit Scheme (IMO, 2005c, p. 2). Therefore, the IMO Audit Scheme could be applied to evaluating how well flag States implement and enforce the requirements of the Convention in order to meet its obligations. In other words, the audit criteria of the IMO Audit Scheme could be used as a tool for identifying the implications of a flag State’s obligations under the Convention since the criteria may guide the flag State regarding the measures to be taken.

in Res.A.912(22). Since these criteria seem not much relevant to the Ship Recycling Convention, only internal criteria are referred to here.

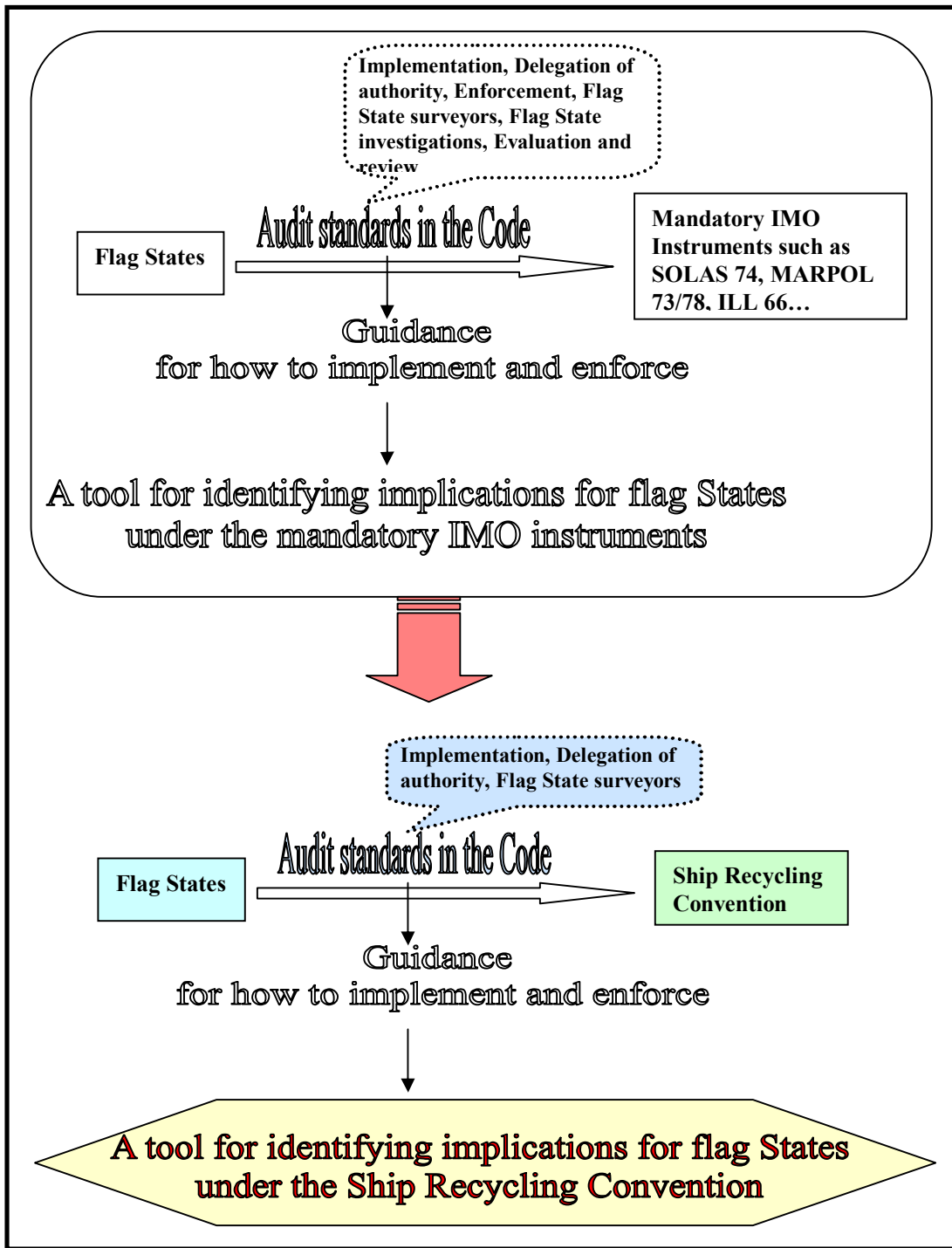
³⁵ The IMO Member State Audit Scheme could be used as a tool for identifying not only the implications to flag States but also those to port States and, with some modifications, to recycling States. However, in this Chapter, all the relevant contents regarding the audit are explained in the context of flag States.

With regard to the audit criteria, we may find these from the actual audits. Recently, various IMO Member States such as Canada, Denmark, Sweden, the U.K., etc. have applied for the voluntary audit, successfully completing it and producing final audit reports. In the audit reports of these countries, it is noticed that they have used the same audit process. According to the final reports of these countries, the audits have gone through the process which initially tries to determine the strategy for implementation of IMO mandatory instruments, the review processes in place and the adequate measures for continued improvement. Then, examination of the national legislation for implementation and enforcement was carried out, finally the processes by which they develop and communicate the interpretation, policies and instructions regarding the instruments, and the practical implementation of these arrangements, were reviewed (Canada, 2007, para. 7.6; Denmark, 2007, para. 7.4; Sweden, 2007, para. 7.5; United Kingdom, 2006, para. 7.5). In addition, the contents of these countries' audits in the audit reports also appear to be similar in general, examining the overall organizational performance including strategy, flag State, port State and coastal State activities, although the detailed areas for each audit varies from country to country. These similarities in the audit processes and contents may be, of course, natural since the basis for the identification of auditable areas in the IMO Audit scheme comes from the Code (IMO, 2005b, p. 2) and, in addition, it is clearly stated in para.3 of Part I of the Annex of the Code that the IMO Audit standard shall be the Code. Therefore, the Code is the audit criteria and could be used in identifying the implications of a flag State's obligations under the Convention since it shows indirectly what flag States should do.

It is true that the audit standard in the Code provides guidance for the implementation and enforcement of IMO mandatory instruments. However, the audit standard has been devised for such IMO mandatory instruments as SOLAS 74, MARPOL 73/78, ILL 66, STCW 78, TONNAGE 69, COLREG 72, etc., excluding the Convention in the scope of its application as mentioned above. Furthermore, the audit standard

applies generally to all the mandatory IMO instruments within the scope of the IMO Audit Scheme but not to a specific instrument, meaning that a different way of application of the general audit standard may be required for identifying the implications under each instrument. Therefore, if the audit standard in the Code applies to identify the implications for the flag State under the Convention, then it may also require a different application.

In the Code, the audit criteria for a flag State are classified into 6 areas: implementation, delegation of authority, enforcement, flag State surveyors, flag State investigations, evaluation and review. The areas of enforcement, evaluation and review are not examined here since, if a flag State is already capable of carrying out these functions under other IMO conventions, it may be able to do under the Convention in the similar manner. In the case of the flag State investigation, since there is no requirement of investigation under the Convention, it is not dealt with here. On the contrary, in the author's opinion, the areas of implementation, delegation of authority and flag State surveyors may require a flag State's additional capabilities to implement and enforce the requirements of the Convention. Therefore, the focus is placed on these 3 areas to identify the implications for a flag State for the effective implementation of the Convention. A tool used to identify the implications for flag States under the Convention is illustrated in Figure 3.1 below, summarizing the explanation above. In following sections, the detailed requirements related to obligations of the flag State are examined first and then the implications for it are examined based on the detailed requirements.



(Source: Author)

Figure 3.1 A tool used to identify implications for flag States under the Ship Recycling Convention

3.2 Obligations of flag States under the Convention and Guidelines for Survey and Certification and Guidelines for the Inventory of Hazardous Materials

As identified in Table 2.3 in Chapter 2, a flag State's obligations under the Convention are mostly related to the survey and certification scheme. Therefore, implications of the obligations may be examined from the perspective of survey and certification taking into account the tool in Figure 3.1.

The Convention consists of Preamble, Articles, Regulations, Appendices and Guidelines (Oftedal, Ormond, Watkinson, and Jenssen, 2007, May, Slide 6). The guidelines play important roles in providing more detailed guidance to the relevant regulations in the Convention, even if it is of recommendatory nature. Six guidelines are currently under development including Guidelines for the Inventory of Hazardous Materials, Guidelines for Survey and Certification, Guidelines for Inspection of Ships, Guidelines for the Authorization of Ship Recycling Facilities, Guidelines for the Safe and Environmentally Sound Ship Recycling and Guidelines for the Development of the Ship Recycling Plan (IMO, 2007, July 30, para. 3.12). Among these, the most relevant for the flag State are the Guidelines for the Inventory of Hazardous Materials and Guidelines for Survey and Certification.

As indicated above, most IMO instruments usually provide the general requirements and, for detailed guidance, the guidelines developed by IMO are usually referred to. This is the same in the case of the Convention. The guidelines under the Convention focus on the establishment of procedures which further specify the requirements of the Convention and on ensuring their uniform application (IMO, 2007, April 13, Annex 5). The regulations showing the flag State's obligations are not specific by themselves and would not be enough for identifying the implications under the Convention. Therefore, these detailed guidelines would be helpful in identifying the implications of the requirements for the flag State.

However, since the guidelines are currently under development, there no final version exists yet. With regard to the Guidelines for the Development of the Inventory of Hazardous Materials³⁶, Japan and Germany submitted the draft to the MEPC 56 as document MEPC 56/3/2 and the United States also submitted an outline of the draft guidelines as document MEPC 56/3/20. The draft guidelines in MEPC 56/3/2 is quite detailed with the explanation for procedures but seems somewhat complicated. On the contrary, the United States proposed that the guidelines should be easily understood and user-friendly to a wide range of potential users, providing a relatively simple version of the outline of the guidelines (IMO, 2007, May 18). Regarding the Guidelines for Survey and Certification, the draft guidelines was also submitted by Japan to the MEPC 56 as document MEPC 56/3/3, this being the only guideline regarding survey and certification so far.

Since these guidelines are not the final version, there is a possibility that the draft text will be changed and the revised draft proposed. However, since the purpose of the use of the guidelines in this dissertation is to identify the implications of the detailed obligations relevant to the Convention, in the author's opinion, the current draft text is detailed enough and would not cause problems in terms of that purpose. In addition, Draft Guidelines for the Development of the Inventory of Hazardous Materials (MEPC 56/3/2 by Japan and Germany), hereinafter referred to as "the Inventory Development Guidelines" and Draft Guidelines for Survey and Certification of Ships under the International Convention for the Safe and Environmentally Sound Recycling of Ships (MEPC 56/3/3 by Japan), hereinafter referred to as "the Survey and Certification Guidelines" seem to fit the purpose of identification of the implications since they explain the relevant procedures in detail and are inter-related to each other. Therefore, these two guidelines are examined in the following sections together with the relevant regulations in the Convention and, based on the examination, the

³⁶ This guideline means Guidelines for the Inventory of Hazardous Materials aforementioned.

implications for flag States are identified taking into account the tool in Figure 3.1. During the examination of these guidelines, the author has attempted to prove these two guidelines' appropriateness through taking similar examples if available since appropriateness is important due to the fact that they are not yet final versions.

3.3 Survey and Certification

Art.5 of the Convention stipulates that flag States shall ensure that their ships subject to survey and certification are surveyed and certified and, in Part C of chapter 2, the requirements for survey and certification are provided. According to Reg. 11, there are four types of surveys in the Convention: an initial survey, a renewal survey, an additional survey and a final survey. In addition, Reg.12 also specifies the certification in accordance with the respective survey. In the following subsections, the detailed requirements regarding survey and certification are examined for the purpose of identifying their implications for flag States.

3.3.1 Initial Survey

3.3.1.1 Initial survey for new ships

Table 3.1 Outline of the scheme on the initial survey and certification for new ships

Prior to survey (Reg.5 & 11)	Survey (Reg.11)	Certification (Reg.12 to 15)
<u>Reg.5.1 & 11.1.1</u> - Having onboard Inventory Part I - Before the ship is put in service	<u>Reg.11.1.1</u> - Verification of Inventory Part I (whether it is in accordance with requirements of the Convention or not)	<u>Reg.12.1</u> - Issuance of the International Certificate on Inventory of Hazardous Materials
<u>Guidelines* Para.4.1 & 4.2</u> - Application with ship's data + Inventory Part I + Material Declaration with the Supplier's declaration of conformity	<u>Guidelines Para.4.3</u> - Check of Material Declaration with the Supplier's declaration of conformity - Onboard Visual Inspection (verification of the location of hazardous Materials)	<u>Guidelines Para.4.4</u> - Issuance of the International Certificate on Inventory of Hazardous Materials

	- Verification of Inventory Part I (whether it is in accordance with requirements of the Convention or not)	
--	--	--

(Source: Annex of MEPC 56/3/7)³⁷

* Guidelines in this Table mean Draft Guidelines for the Survey and Certification of Ships under the International Convention for the Safe and Environmentally Sound Recycling of Ships in Annex 1 of MEPC 56/3/3 submitted by Japan. The same applies to Tables 3.2, 3.3, 3.4, and 3.5, and Figures 3.2, 3.4, 3.5, 3.6 and 3.7.

As seen in Table 3.1, in an initial survey for new ships, it is verified by flag States in accordance with Reg.11.1.1 of the Convention that Part I of the Inventory of Hazardous Materials identifies hazardous materials listed in Appendices 1 and 2 and contained in ship's structure and equipment including the location and estimated quantities and complies with the requirements of the Convention³⁸. After the completion of this survey, the Certificate on Inventory of Hazardous Materials is issued.

The Survey and Certification Guidelines additionally requires verification, through onboard visual inspection, of the Inventory Part I's consistency with the ship's structure and equipment³⁹. This onboard visual inspection for verifying the location of hazardous materials can also be found in the DNV Green Passport service where an onboard survey is required to identify hazardous materials (Andersen & Sverud, 2005, May, p. 21). In addition, the draft Guidelines introduces, as a way of verification of Inventory Part I, Material Declarations with the Supplier's declaration of conformity⁴⁰. This declaration is to impose the responsibility on manufacturers regarding the inventory of hazardous materials of products which is not a new concept. A similar approach can be found in the IMO Guidelines on Ship Recycling where the

³⁷ The format of original contents in Annex of MEPC 56/3/7 is a little bit modified in this Table, being divided into two sections (the regulations of the Convention and the requirements of the Guidelines). The same applies to Table 3.2, 3.3, 3.4 and 3.5.

³⁸ Reg.5.1 of the Ship Recycling Convention.

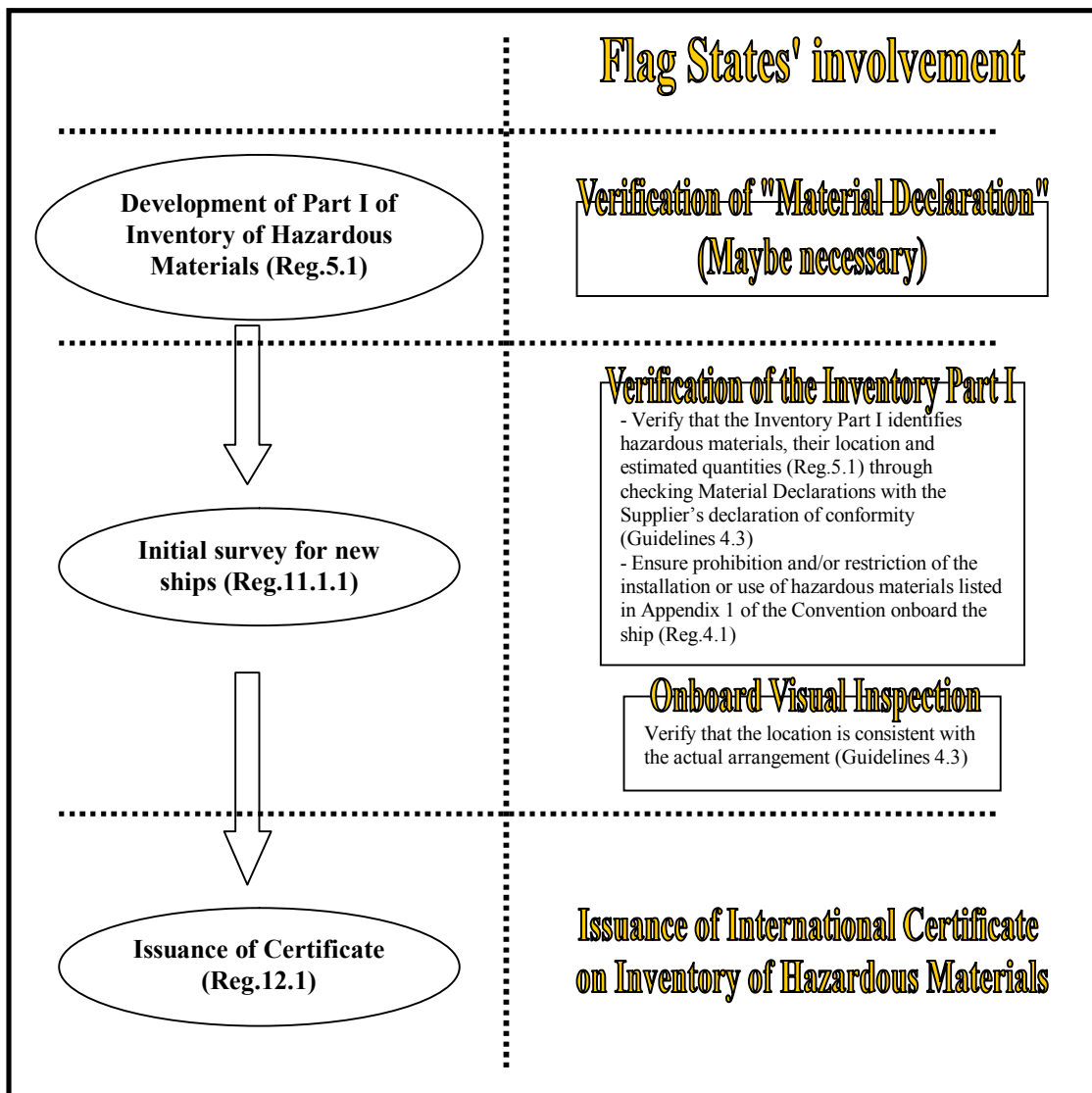
³⁹ Para.4.3 of the Survey and Certification Guidelines.

minimization of hazardous substances used in the construction and equipment of ships is recommended and where manufacturers of marine equipment are encouraged to incorporate a design in the ways to facilitate their safe removal (IMO, 2004, pp. 10-11). Details regarding this are explained during the examination of Inventory of Hazardous Materials below.

The flag States seem to be not involved in the development of Part I of the Inventory of Hazardous Materials for new ships but in the verification of its appropriateness during the initial survey. During the development of the Inventory Part I, the check on materials will be conducted based on Material Declaration in accordance with the Inventory Development Guidelines (IMO, 2007, April 6c, para.4.1.4 of Annex), meaning that the quality of Material Declaration may influence that of the Inventory Part I. The requirement on Material Declaration with the Supplier's declaration of conformity does not exist in the Convention but only in the Inventory Development Guidelines. Material Declaration is that suppliers declare whether their products contain hazardous materials listed in the Inventory Development Guidelines or not. The Supplier's declaration of conformity is the suppliers' declaration of their own responsibility that their products are manufactured in compliance with the requirements such as the management system shown in section 7.2 of the Inventory Development Guidelines (IMO, 2007, April 6c, sections 6 and 7 of the Annex). Even if it does not exist as a requirement of the Convention, a similar concept can be found in the IMO Guidelines on Ship Recycling as explained above. In addition, this can be found in Lloyd's Register's procedures regarding the Inventory of Hazardous Materials for newbuildings where manufacturers are required to declare the material they have used in their products and the manufacturer's declarations may be checked during site visits to the manufacturers (Townsend, 2007, May, section 2.0). Since the Inventory Part I is developed based on Material Declaration and its verification by a flag State is also based on the Material Declaration, the flag State's involvement to

⁴⁰ Para.4.3 of the Survey and Certification Guidelines.

ensure the quality of the Material Declaration may be necessary and this issue is examined during identifying the implications for flag States in section 3.4.1.2. Figure 3.2 shows the flag States' involvement with regard to the initial survey for new ships.



(Source: Author)

Figure 3.2 Flag States' involvement in the initial survey for new ships

3.3.1.2 Initial survey for existing ships

Table 3.2 Outline of the scheme on the initial survey and certification for existing ships

Prior to survey (Reg.5 & 11)	Survey (Reg.11)	Certification (Reg.12 to 15)
<p><u>Reg.5.2 & 11.1.1</u></p> <ul style="list-style-type: none"> - Having onboard Inventory Part I - Preparing Visual/Sampling Check Plan(VSCP) - Not later than 5 years after the entry into force of the Convention or before going for recycling if this is earlier 	<p><u>Reg.11.1.1</u></p> <ul style="list-style-type: none"> - Verification of Inventory Part I (whether it is in accordance with requirements of the Convention or not) 	<p><u>Reg.12.1</u></p> <ul style="list-style-type: none"> - Issuance of the International Certificate on Inventory of Hazardous Materials except for existing ships for which both an initial survey and a final survey are conducted at the same time. <p><u>Reg.5.2, 11.1.1, 11.1.4 & 12.11</u></p> <ul style="list-style-type: none"> - An initial survey and a final survey may be conducted at the same time for a ship which is going for recycling not later than 5 years after the entry into force of the Convention. Only International Ready for Recycling Certificate is issued to such a ship
<p><u>Guidelines Para.5.1 & 5.2</u></p> <ul style="list-style-type: none"> - Application with ship's data + VSCP + Supporting information (all documents used to develop VSCP) <p><u>Guidelines Para.5.3</u></p> <ul style="list-style-type: none"> - Approval of VSCP (as a part of initial survey) <p><u>Guidelines Para.5.4</u></p> <ul style="list-style-type: none"> - Submission of Inventory Part I + Supporting information (such as report of visual check and/or sampling check, and/or the Material Declarations with the Supplier's declaration of conformity(if any)) 	<p><u>Guidelines Para.5.6</u></p> <ul style="list-style-type: none"> - Check of supporting information (such as report of visual check and/or sampling check, and/or the Material Declarations with the Supplier's declaration of conformity(if any)) - Onboard visual inspection (verification of the location of hazardous materials) - Verification of Inventory Part I (whether it is in accordance with requirements of the Convention or not) 	<p><u>Guidelines Para.5.7</u></p> <ul style="list-style-type: none"> - Issuance of the International Certificate on Inventory of Hazardous Materials except for existing ships for which both an initial survey and a final survey are conducted at the same time

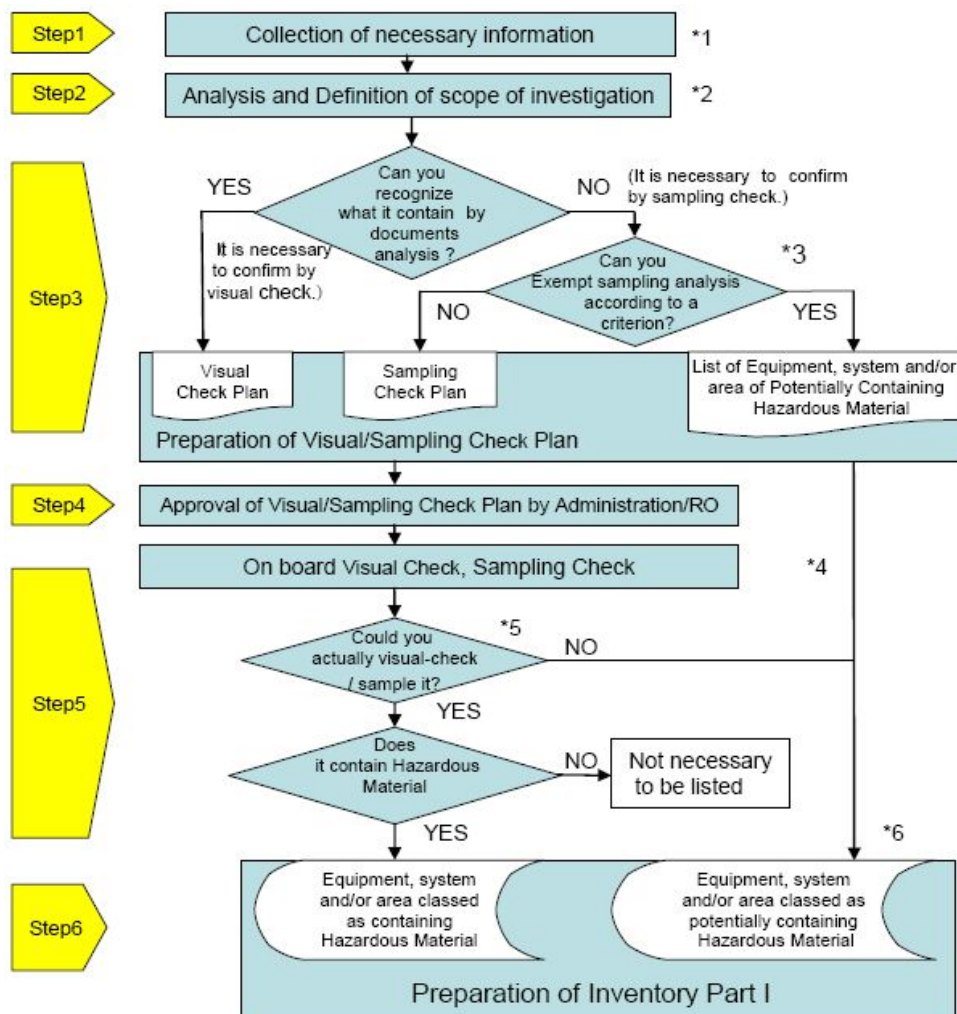
(Source: Annex of MEPC 56/3/7)⁴¹

As shown in Table 3.2, in an initial survey for existing ships, the procedures for survey and certification are almost the same as those of an initial survey for new ships except the detailed procedure for the development of Part I of the Inventory of Hazardous Materials and accordingly the documents necessary for verification of the Inventory Part I and exemption of the initial survey for existing ships for which both an initial survey and a final survey are conducted at the same time. Regarding verification of the Inventory Part I through onboard visual inspection, this is additionally required in the Survey and Certification Guidelines⁴². However, this approach can also be identified in DNV's practice in the Green Passport service where an onboard survey is required including visual inspection of all accessible areas, identification of hazardous materials, etc. for ships in operation (Andersen & Sverud, 2005, May, p. 21). In addition, as the methodology of survey in issuing a Green Passport for existing ships in accordance with IMO Recycling Guidelines, the review of onboard archives and visual inspection with spot check sampling were introduced (Gramman, Haugen, and Townsend, 2007, May, Slide 12).

With regard to the development of the Inventory Part I, the Survey and Certification Guidelines provide the detailed step-by-step procedure in conjunction with the Inventory Development Guidelines. Figure 3.3 below shows by flow diagram the development of the Inventory Part I for existing ships. A flag State is involved in a certain step in the development of the Inventory Part I for existing ships, which is Step 4 "Approval of Visual/Sampling Check Plan" in Figure 3.3. Originally, the Visual/Sampling Check Plan was referred to only in the Inventory Development Guidelines (MEPC 56/3/2) and the Survey and Certification Guidelines (MEPC 56/3/3) and was not included in the text of the Convention. However, due to the importance of the plan raised by the International Association of Classification Societies (IACS) through document MEPC-ISRWG 3/2/2, the requirement for

⁴¹ Some of the contents such as the regulation number etc. are modified by the author to reflect the recent developments of the Convention in MEPC57/WP.6.

Visual/Sampling Check Plan was included in Reg.5.2 of the Convention. According to the Inventory Development Guidelines, the Visual/Sampling Check Plan should be prepared and, after approval, checked onboard by any expert or expert party recognized by the flag State. However, it states that the expert and expert party should exclude any person or organizations authorized by the flag State for the approval of the plan and the relevant survey (IMO, 2007, April 6c, section 4.2 of Annex).

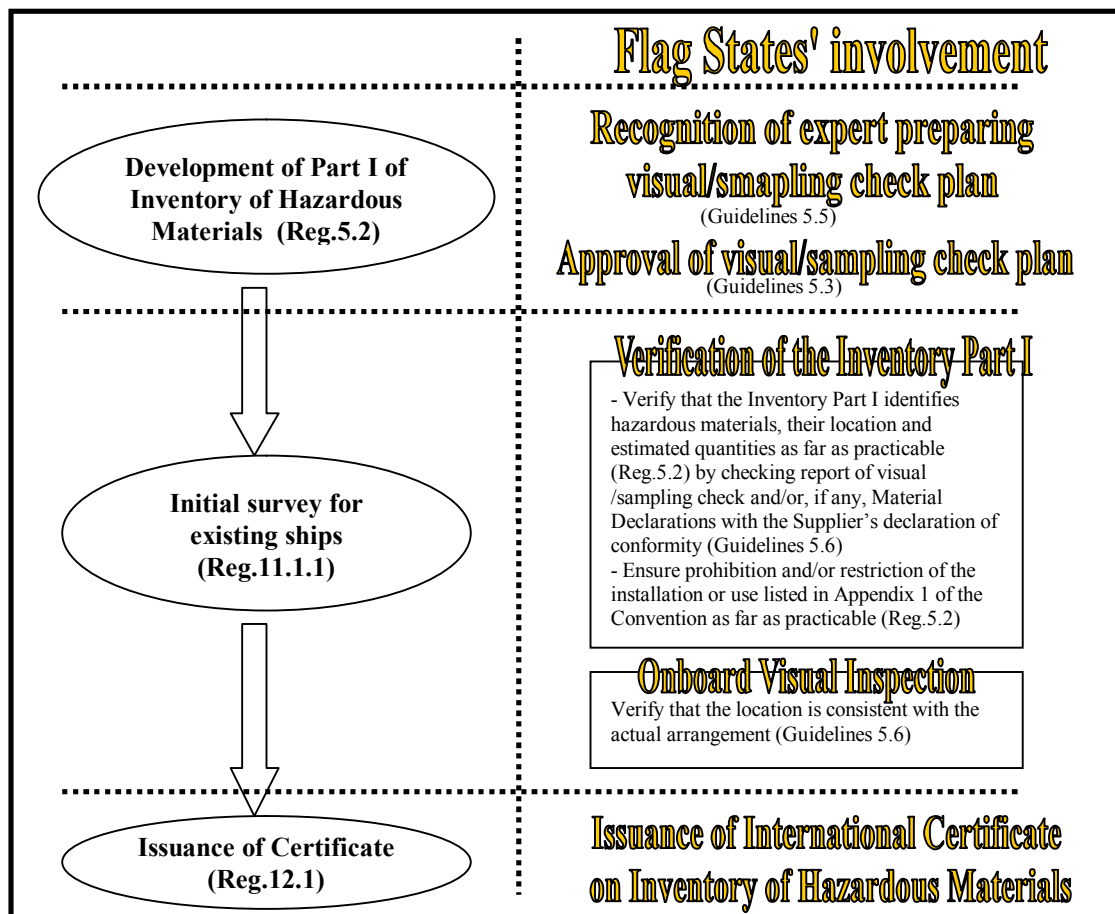


(Source: Appendix 3 of Annex of MEPC 56/3/2)

Figure 3.3 Flow diagram for development of the Inventory Part I for existing ships

⁴² Para.5.6 of the Survey and Certification Guidelines.

After the Inventory Part I for existing ships is developed, it is verified in the initial survey for existing ships in accordance with Reg.11.1.1 through identifying hazardous materials, the location and the estimated quantities and clarifying the adherence to the requirements of the Convention as far as practicable⁴³ and also through visually inspecting onboard the ship to confirm the Inventory Part I's consistency with the actual structure and equipment onboard⁴⁴. After the completion of this survey, the Certificate on Inventory of Hazardous Materials is issued. Flag States' involvement regarding the initial survey for existing ships is summarized in Figure 3.4 below.



(Source: Author)

Figure 3.4 Flag States' involvement in the initial survey for existing ships⁴⁵

⁴³ Reg.5.2 of the Ship Recycling Convention

⁴⁴ Para.5.6 of the Survey and Certification Guidelines

⁴⁵ Exemption of the initial survey for existing ships for which both an initial survey and a final survey are conducted at the same time is not dealt with here since this is more relevant to the final survey.

3.3.2 Renewal Survey

Table 3.3 Outline of the scheme on the renewal survey and certification

Prior to survey (Reg.5 & 11)	Survey (Reg.11)	Certification (Reg.12 to 15)
<p><u>Reg.5.3 & 11.1.2</u></p> <ul style="list-style-type: none"> - Maintaining/updating Inventory Part I - At intervals specified by the Administration, but not exceeding 5 years 	<p><u>Reg.11.1.2</u></p> <ul style="list-style-type: none"> - Verification of Inventory Part I (whether it complies with the requirements of the Convention) 	<p><u>Reg.12.3 to 12.5</u></p> <ul style="list-style-type: none"> - the new International Certificate on Inventory of Hazardous Materials (ICIHM) is issued and the period of validity of the certificate is specified <p><u>Reg.12.7</u></p> <ul style="list-style-type: none"> - Endorsement of existing ICIHM in case a new certificate cannot be issued or placed on board the ship before the expiry date of the existing certificate <p><u>Reg.12.8 to 12.10</u></p> <ul style="list-style-type: none"> - Extension of the period of validity of the certificate - Special circumstance
<p><u>Guidelines Para.6.1 & 6.2</u></p> <ul style="list-style-type: none"> - Application with ship's data + the latest Inventory Part I + Material Declarations with the Supplier's declaration of conformity regarding a change, replacement, or significant repair if any after the last survey 	<p><u>Guidelines Para.6.3</u></p> <ul style="list-style-type: none"> - Check of Material Declarations with the Supplier's declaration of conformity - Onboard Visual Inspection (verification of the location of hazardous Materials) - Verification of Inventory Part I (whether it complies with the requirements of the Convention) 	<p><u>Guidelines Para.6.4 & 6.5</u></p> <ul style="list-style-type: none"> - the new ICIHM is issued and the period of validity of the certificate is specified⁴⁶ - Extension of the period of validity of the certificate - Special circumstance

(Source: Annex of MEPC 56/3/7)⁴⁷

⁴⁶ In the original document (MEPC 56/3/7), the term “the periodical survey” is used instead of “the renewal survey” and accordingly, “endorsement” of the certificate is used instead of “issuance” of the new certificate regarding ICIHM. However, recently it has been decided that the renewal survey is used in place of the periodical survey in the Convention. Therefore, reflecting this amendment, the

As seen in Table 3.3, in a renewal survey, it is verified by the flag States in accordance with Reg.11.1.2 that Part I of the Inventory of Hazardous Materials is properly maintained and updated, reflecting new installations including any hazardous materials as listed in Appendix 2 of the Convention and changes in ship structure and equipment, if any⁴⁸. After the completion of the renewal survey, the new Certificate on Inventory of Hazardous Materials is issued.

The Survey and Certification Guidelines additionally ensures that the verification of the Inventory Part I is done by checking the Material Declarations with the Supplier's declaration of conformity⁴⁹. In addition, the Guidelines also requires that it is verified through visual inspection onboard that the Inventory Part I is consistent with a ship's actual structure and equipment⁵⁰.

The flag States are not involved in the maintenance and update of Part I of the Inventory of Hazardous Materials but in the verification of its appropriate maintenance and update during the renewal survey and the subsequent issuance of the International Certificate on Inventory of Hazardous Materials as seen in Figure 3.5 below.

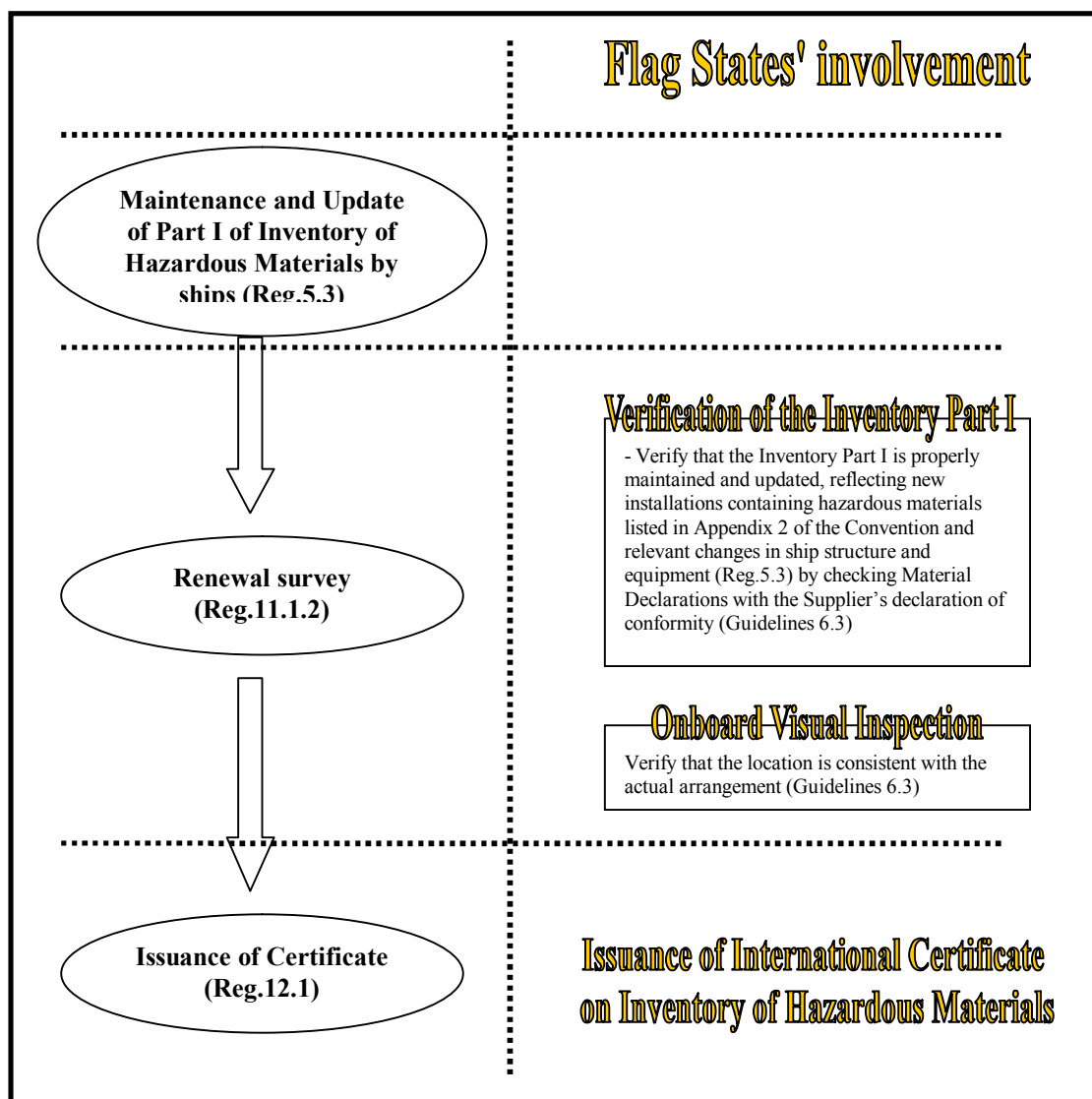
author has slightly modified the contents of the table in order to fit the contents to those of the Convention.

⁴⁷ Some of the contents, such as the regulation number, the term regarding survey, etc. are modified by the author to reflect the recent developments of the Convention in MEPC57/WP.6.

⁴⁸ Reg.5.3 of the Ship Recycling Convention.

⁴⁹ Para.6.3 of the Survey and Certification Guidelines.

⁵⁰ Para.6.3 of the Survey and Certification Guidelines.



(Source: Author)

Figure 3.5 Flag States' involvement in the renewal survey

3.3.3 Additional Survey

Table 3.4 Outline of the scheme on the additional survey and certification

Prior to survey (Reg.5 & 11)	Survey (Reg.11)	Certification (Reg.12 to 15)
<u>Reg.5.3 & 11.1.3</u> - Maintaining/updating Inventory Part I - At the request of the	<u>Reg.11.1.3</u> - Verification of the continuous compliance with the requirements of the Convention after any change,	<u>Reg.12.2</u> - International Certificate on Inventory of Hazardous Materials is endorsed

<p>shipowner after a change, replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material</p>	<p>replacement, or significant repair having been made</p> <ul style="list-style-type: none"> - Part I of the Inventory is amended as necessary 	
<p><u>Guidelines Para.7.1 &7.2</u></p> <ul style="list-style-type: none"> - Application with ship's data + the latest Inventory Part I + Material Declarations with the Supplier's declaration of conformity regarding a change, replacement, or significant repair after the last survey 	<p><u>Guidelines Para.7.3</u></p> <ul style="list-style-type: none"> - Check of Material Declarations with the Supplier's declaration of conformity - Onboard Visual Inspection (verification of the location of hazardous Materials) - Verification of the continuous compliance with the requirements of the Convention after any change, replacement, or significant repair having been made - Part I of the Inventory is amended as necessary 	<p><u>Guidelines Para.7.4</u></p> <ul style="list-style-type: none"> - International Certificate on Inventory of Hazardous Materials is endorsed

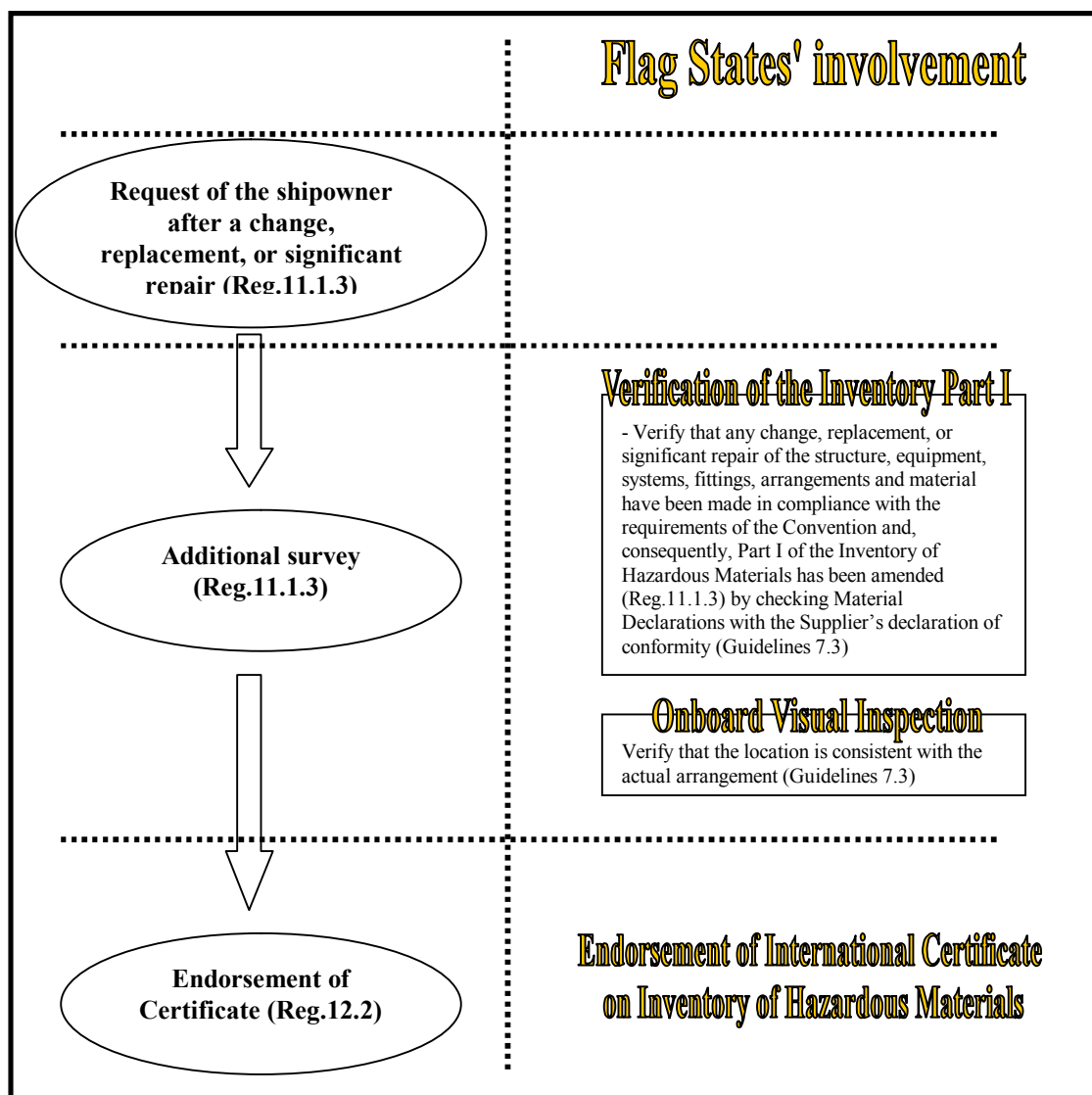
(Source: Annex of MEPC 56/3/7)⁵¹

When requested by the shipowner, an additional survey may be carried out. As identified in Table 3.4, in this additional survey, flag States should verify, in accordance with Reg.11.1.3, that any change, replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material have been made in compliance with the requirements of the Convention and, consequently, Part I of the Inventory of Hazardous Materials has been amended. After the completion of the additional survey, the International Certificate on Inventory of Hazardous Materials is endorsed.

⁵¹ Some of the contents are modified by the author to reflect the recent developments of the Convention in MEPC57/WP.6.

The Survey and Certification Guidelines further confirms the way of checking the Inventory Part I and verification through the onboard visual inspection in the same way as that of the renewal survey.

Figure 3.6 below summarizes the flag States' involvement with regard to the additional survey.



(Source: Author)

Figure 3.6 Flag States' involvement in the additional survey

3.3.4 Final Survey

Table 3.5 Outline of the scheme on the final survey and certification

Prior to survey (Reg.5 & 11)	Survey (Reg.11)	Certification (Reg.12 to 15)
<p><u>Reg.5.4 & 11.1.4</u></p> <ul style="list-style-type: none"> - Prior to recycling, development of Inventory Part II and III with the latest Part I - Prior to the ship being taken out of service and before the recycling of the ship has started 	<p><u>Reg.11.1.4</u></p> <ul style="list-style-type: none"> - Verification of Inventory of Hazardous Materials (Part I, II & III) (whether it is in accordance with requirements of the Convention or not) - Verification of Ship Recycling Plan (whether it is finalized and complies with the requirements of the Convention) 	<p><u>Reg.12.11</u></p> <ul style="list-style-type: none"> - International Ready for Recycling Certificate (IRRC) is issued <p><u>Reg.15.2</u></p> <ul style="list-style-type: none"> - IRRC is issued for a period specified by the Administration not exceeding 3 months
<p><u>Guidelines Para.8.1 to 8.3</u></p> <ul style="list-style-type: none"> - Application with ship's and facility's data + International Certificate on Inventory of Hazardous Materials & Inventory (Part I, II & III) + Material Declarations with the Supplier's declaration of conformity regarding a change, replacement, or significant repair if any after the last survey + Copy of Document of Authorization to conduct Ship Recycling (DASR) + Ship Recycling Plan ++ Operation plan prior to entering the recycling facility after final survey ++ Prior removal report of Hazardous Materials etc. 	<p><u>Guidelines Para.8.4</u></p> <ul style="list-style-type: none"> - Verification of Operation plan - Onboard Visual Inspection (verification of the location of Hazardous Materials & prior removal of Hazardous Materials) - Verification of Inventory of Hazardous Materials (Part I, II & III) (whether it is in accordance with requirements of the Convention or not) - Verification of Ship Recycling Plan (whether it is finalized and complies with the requirements of the Convention) 	<p><u>Guidelines Para.8.5</u></p> <ul style="list-style-type: none"> - International Ready for Recycling Certificate is issued <p><u>Guidelines Para.3.5</u></p> <ul style="list-style-type: none"> - After the final survey, the ship should not be used on commercial service in principle

(Source: Annex of MEPC 56/3/7)⁵²

⁵² Some of the contents are modified by the author to reflect the recent developments of the Convention in MEPC57/WP.6.

As shown in Table 3.5 above, in the final survey, flag States should verify, in accordance with Reg.11.1.4, that Parts I, II and III of the Inventory of Hazardous Materials are in accordance with the requirements of the Convention and that the Ship Recycling Plan is finalized and complies with the requirements of the Convention. After the completion of the final survey, the International Ready for Recycling Certificate is issued

The Survey and Certification Guidelines requires the verification of the appropriateness of the operation plan for minimizing the amount of cargo and bunker residues and remaining waste onboard⁵³. This requirement is also stipulated in Reg.8.1.2 of the Convention and is in line with the approach in the IMO Guidelines on Ship Recycling where the shipowner is required to minimize the amount of fuel, diesel, and other oils and chemicals onboard at delivery to the recycling facility and to remove ship generated waste at the last port of call with appropriate reception facilities in case the would-be recycling facility is not equipped with reception facilities (IMO, 2004, p. 15). The Survey and Certification Guidelines also provides more detailed guidance regarding the manner of the verification, for example, as to the Inventory Part I, by checking the Material Declarations with the Supplier's declaration of conformity⁵⁴ and, as to the Inventory Parts II and III, by identifying hazardous materials, the location and estimated amounts considering the present situation and the operation plan⁵⁵ and, for the Ship Recycling Plan, by checking whether it is compatible with the Inventory and the capability of the would-be recycling facility⁵⁶. With regard to the Ship Recycling Plan, a similar approach can also be found in the IMO Guidelines on Ship Recycling where stated that the plan should be developed taking into account the facilities available at the relevant recycling facility in the light of its capability (IMO, 2004, p. 14). In addition, the

⁵³ Para.8.4.1 of the Survey and Certification Guidelines.

⁵⁴ Para.8.4.2 of the Survey and Certification Guidelines.

⁵⁵ Para.8.4.2 of the Survey and Certification Guidelines.

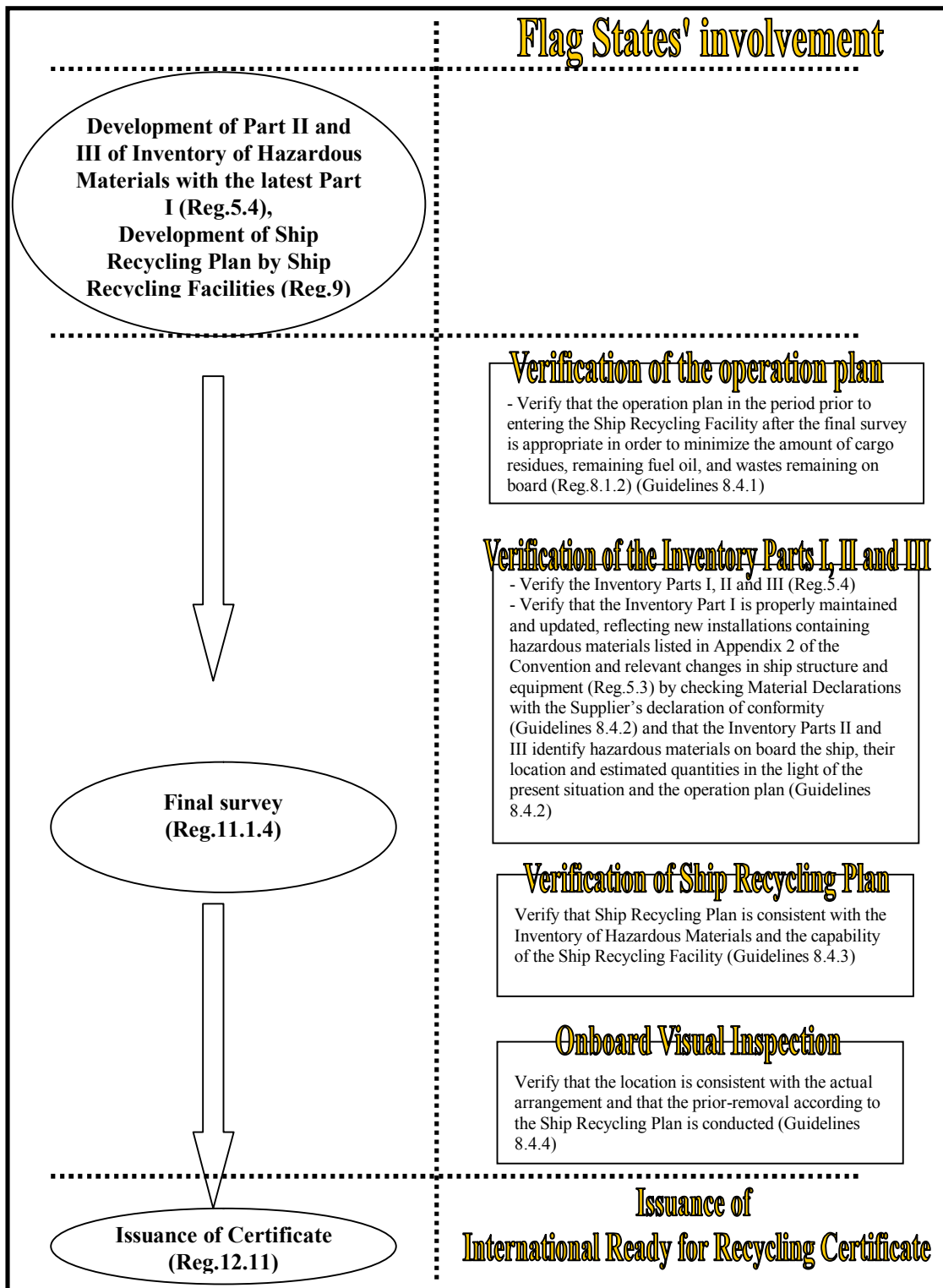
⁵⁶ Para.8.4.3 of the Survey and Certification Guidelines.

Survey and Certification Guidelines requires flag States to verify, through onboard inspection, that the location of hazardous materials in the Inventory fits the ship's real structure and equipment and that the prior-removal is carried out in accordance with Ship Recycling Plan⁵⁷.

The flag States seem to be not involved in the development of Parts II and III of the Inventory of Hazardous Materials but in the verification of the operation plan, the Inventory Parts I, II and III and the Ship Recycling Plan and the consequent issuance of the International Ready for Recycling Certificate as shown in the following Figure 3.7.

The Inventory Part II is related to operationally ship-generated waste. The items included in Part II are waste oil (sludge), bilge, oily cargo tank residues, fuel tank residues, oily/contaminated rags, ballast water, raw sewage, treated sewage, non-oily liquid cargo residues, medical waste/infectious waste, incinerator ash, garbage, dry tank and dry cargo residues, and cargo residue (IMO, 2007, April 6c, Appendix 1 of Annex). A similar classification regarding operationally generated waste can be also found in the Green Passport where the waste is classified into 3 categories: dry tank residues, bulk (non-oily) waste and oily waste/oily residues (IMO, 2004, Part 2 of Appendix 3 of Annex). With regard to the Inventory Part III, this is relevant to stores and has a similar classification to that of Green Passport such as liquids (chemicals in Green Passport) in store, gases in store, liquid/gases sealed in machinery and equipment, except that Part III in the draft Guidelines adds the item of regular consumable goods (IMO, 2004, Part 3 of Appendix 3 of Annex; IMO, 2007, April 6c, Appendix 1 of Annex).

⁵⁷ Para.8.4.4 of the Survey and Certification Guidelines.



(Source: Author)

Figure 3.7 Flag States' involvement in the final survey

3.4 Implications for flag States

3.4.1 Implementation

3.4.1.1 Policies

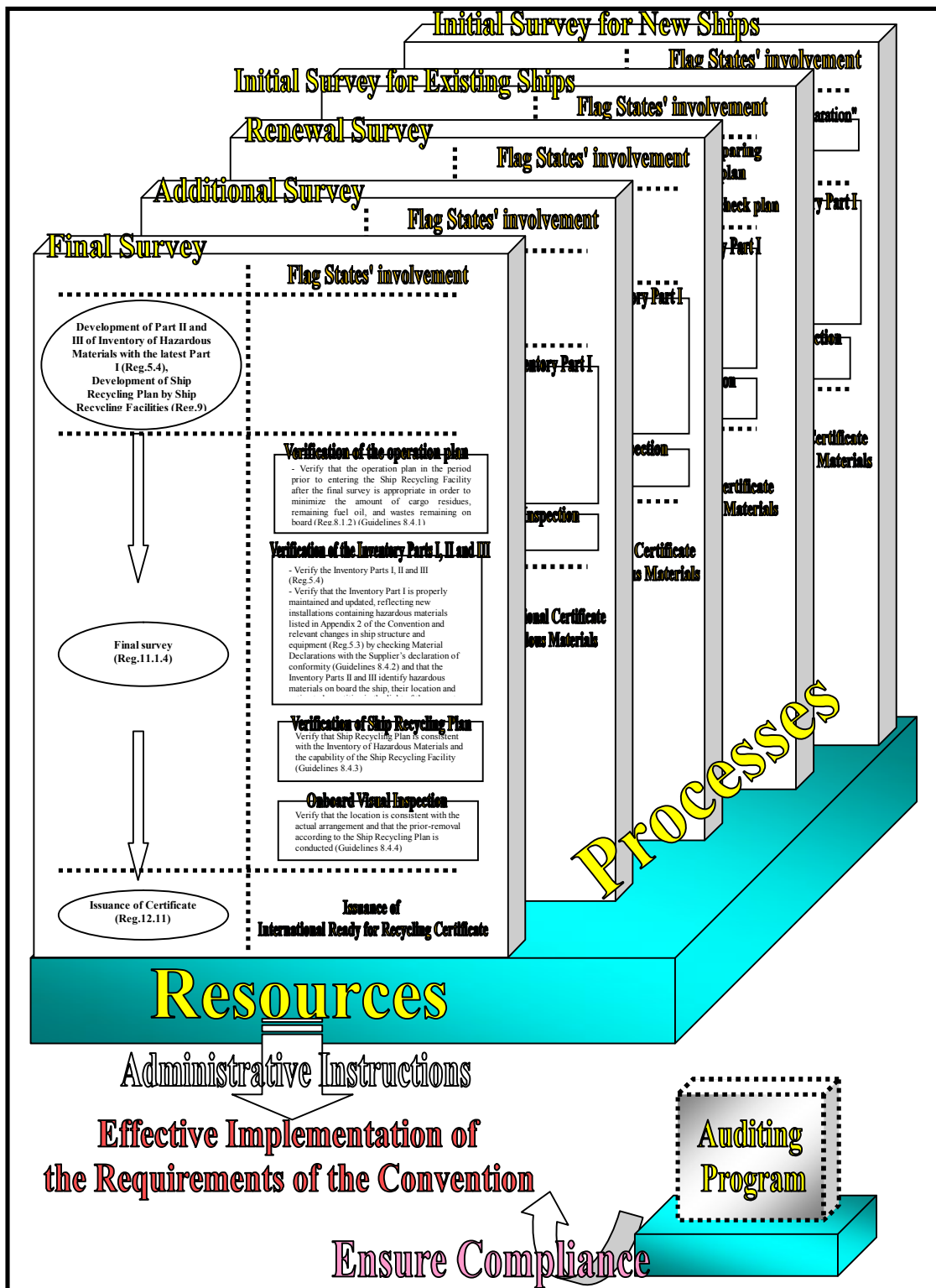
Flag States may need to implement policies, through the adoption of national legislation and guidance, which will assist in the implementation and enforcement of such requirements as survey and certification and control of hazardous materials aforementioned and assign responsibilities to update and revise the policies when necessary, just like the case of flag States under other mandatory IMO instruments as required in Part 2 of the Code (IMO, 2005a, p. 6). For instance, when implementing the policies, the flag States may have to take into account the scope of the application of the legislation. With regard to the scope of the application of the Convention, Arts. 3.2 and 3.3 state that any warships, naval auxiliary, other ships owned or operated by a Party and used only on government non-commercial service, any ships less than 500 GT, or ships operating only inside the waters subject to the sovereignty or jurisdiction of the flag States do not fall into the scope of the application. In addition, the same articles also require that each Party shall ensure, through the adoption of suitable measures, that those ships act in a manner consistent with the Convention, as far as reasonable and practicable, meaning that how to apply the requirements regarding survey and certification and control of hazardous materials to those ships depends on their flag States. Therefore, flag States may have to decide on policies regarding what kind of appropriate measures they will adopt to ensure the safe and environmentally sound recycling of those ships and how they will reflect those measures in the policies.

3.4.1.2 Resources and processes

Flag States should establish resources and processes to implement the applicable regulations (IMO, 2005a, p. 6). All the processes related to surveys and certification, introduced in the previous section 3.3, from the application stage to the certificate issuance stage, may need to be newly added to current processes relevant to survey and certification. In addition, the relevant instructions, which includes all the

processes and the detailed guidelines to help surveyors in carrying out all the surveys and subsequent certification, may need to be drawn up. Furthermore, the resources for carrying out audits to ensure that the processes relevant to survey and certification actually comply with the requirements of the Convention would be required for flag States (IMO, 2005a, p. 6). The following Figure 3.8 illustrates flag States' resources and processes with this regard. The processes and resources regarding the authorization of ROs are not shown in this Figure and they are dealt with in section 3.4.2 entitled "Delegation of authority".

In the case of development of the Inventory Part I for new ships, this may be influenced a lot by the equipment, parts, and material suppliers in the shipbuilding supply chain since, as stipulated in para.4.1.4 of the Inventory Development Guidelines, the check on the materials is to be based on their Material Declarations during the development of the Inventory Part I (IMO, 2007, April 6c, Annex). In addition, the verification of the Inventory Part I may be also affected by the quality of Material Declaration since the verification by flag States is also based on the Material Declaration. Therefore, flag States may also need to be involved in the procedure of the development of the Inventory Part I for ensuring the suppliers' quality in terms of providing information related to materials like Material Declaration. Some equipment, parts, or materials supplied by them may have been subject to type approval. However, the current type approval certificates do not include material certification but only functional requirements (Gramman et al., 2007, May, Slide 24). Therefore, as one way for ensuring the quality of material information, flag States may consider whether they should incorporate processes relevant to Material Declaration and the Supplier's declaration of conformity into type approval processes.



(Source: Author)

Figure 3.8 Flag States' processes and resources for the implementation of the requirements of the Ship Recycling Convention and ensuring compliance

3.4.2 Delegation of authority

In the case of authorization of ROs to act on behalf of a flag State, the flag State should regulate the authorization (IMO, 2005a, p. 7). Even if criteria for ROs to conduct survey and certification functions on behalf of the flag State is not referred to in the Convention as identified in Chapter 2, it may have to follow Res.A.739(18) and Res.A.789(19) in the case of the authorization of ROs. Especially, Res.A.789(19) provides specifications on the survey and certification functions of ROs acting on behalf of the flag State. Four areas of interest exist covered by elementary modules which are management, technical appraisal, surveys and qualifications and training (IMO, 1995, Annex). If the guidelines and specifications are applied to the authorization of ROs to conduct the survey and certification functions on a flag State's behalf under the Convention, the flag State should ensure that the ROs have the capability to carry out all the aforementioned surveys and hold the knowledge regarding the relevant tasks such as identification of hazardous materials, their location and the estimated quantities and onboard verification of the location. In addition, the flag State should have sufficient resources and also be able to monitor the performance of ROs with regard to the survey and certification functions delegated by a flag State under the Convention.

Concerning the approval of the Visual/Sampling Check Plan during the development of Part I of the Inventory of Hazardous Materials for existing ships, delegation of authority with this regard requires precautions since the Inventory Development Guidelines distinguishes the person preparing the Visual/Sampling Check Plan and carrying out Onboard Visual/Sampling Check from the person approving the Visual/Sampling Check Plan although all the persons involved in the preparation, onboard check and approval of the plan are to be recognized by the flag State (IMO, 2007, April 6c, section 4.2 of Annex). Therefore, if the Inventory Development Guidelines is adopted and implemented as it is, then the flag State may need to distinguish its authorization between these two different entities for the preparation

and onboard check and for approval in cases where it delegates both functions to the ROs.

3.4.3 Flag State Surveyors

What flag States need to do in order to fulfil their obligations regarding flag State surveyors under the Convention is similar to what they need to do under other IMO conventions except for requiring additional knowledge regarding identification of hazardous materials, Ship Recycling Plan, etc. For example, with regard to flag States' implementation of the Convention, just as that of other IMO conventions, they should determine and document the responsibilities, authority and interrelation of all relevant personnel involved in the survey and certification scheme explained above and ensure their qualifications and practical and theoretical knowledge. Most importantly, flag States should maintain the qualification standards for their surveyors and implement a documented system for qualification of personnel and continuous updating of their knowledge relevant to their tasks (IMO, 2005a, pp. 9-11).

With regard to the additional knowledge, all the surveys mentioned above are relevant to the identification of hazardous materials, their location and the estimated quantities and onboard verification of the location and the surveyors are required to have knowledge to carry out these tasks. More specifically, the knowledge regarding which hazardous materials are found in which place onboard the ship would be important and necessary in carrying out the survey and this information can be found in the so-called "Indicative List" in Inventory Development Guidelines (IMO, 2007, April 6c, Appendix 4 of Annex). In addition, since the verification by surveyor that the prior-removal is carried out in accordance with the Ship Recycling Plan could be required, the flag State surveyor may need proper knowledge regarding the Ship Recycling Plan.

Regarding the flag State surveyor's knowledge for the approval of the Visual/Sampling Check Plan during the development of Part I of the Inventory of

Hazardous Materials for existing ships, the same knowledge as required in the surveys such as identification of hazardous materials, their location and the estimated quantities would be necessary for the surveyor.

In the case of the DNV Green Passport Survey on ships in operation, the survey is required to be carried out by surveyors having adequate experience on identifying and quantifying hazardous materials (Andersen & Sverud, 2005, May, p. 21) and, likewise, flag State surveyors who carry out surveys and certification under the Convention may be required to have enough experience. However, the surveys related to hazardous materials are new and consequently there may be not many surveyors available who have enough experience to carry out the tasks. Therefore, training would be necessary with regard to these tasks and the qualifications of surveyors needs to be changed to accommodate this ability, accordingly requiring a new documented system for the qualification of personnel and the continuous updating of their knowledge relevant to these tasks.

CHAPTER 4

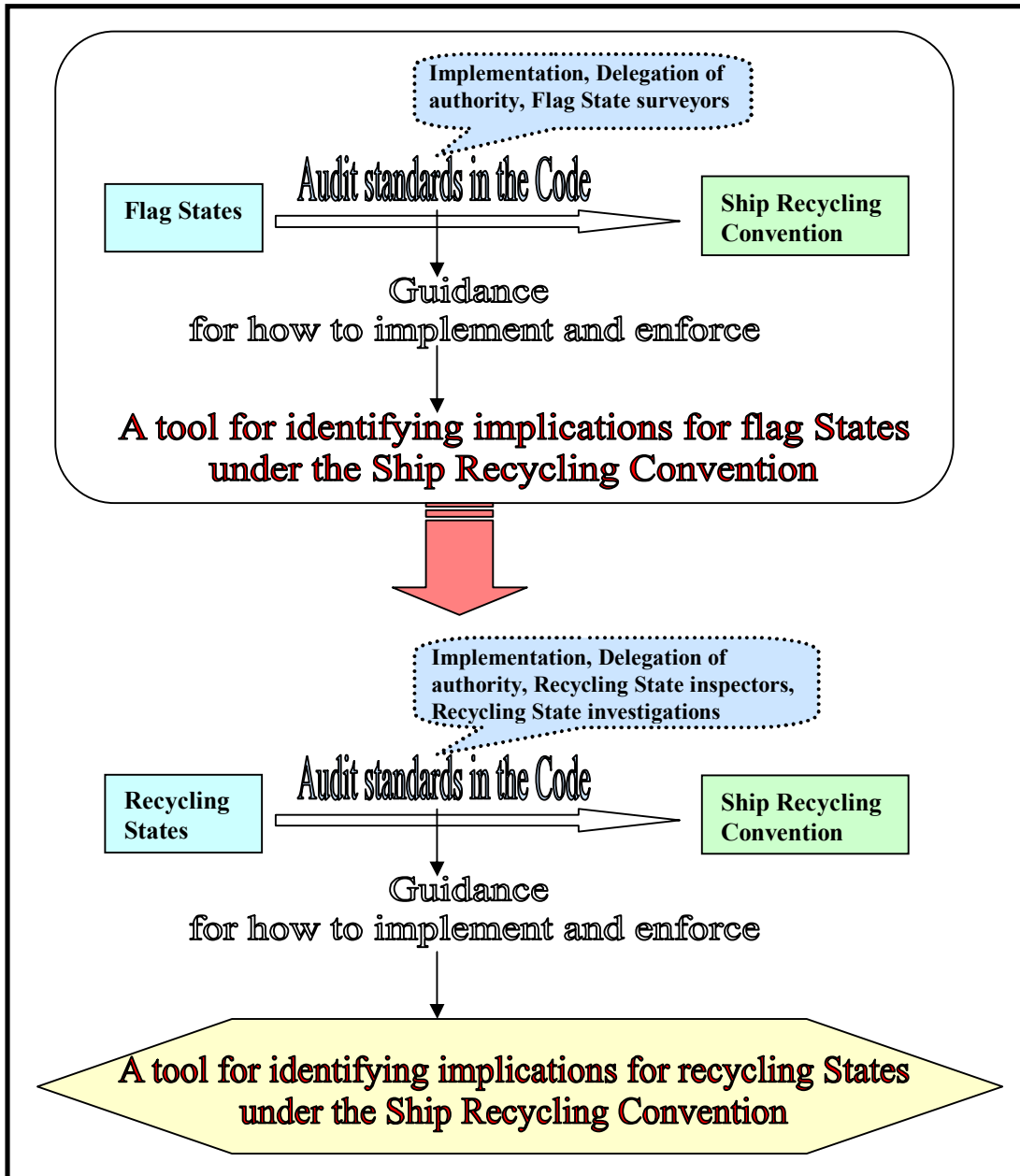
**OBLIGATIONS OF AND IMPLICATIONS FOR RECYCLING
STATES UNDER THE SHIP RECYCLING CONVENTION:
FROM THE PERSPECTIVE OF THE AUTHORIZATION OF
SHIP RECYCLING FACILITIES**

In this chapter, the more detailed requirements relevant to a recycling State's obligations are examined for the purpose of providing insight regarding what has to be done for the effective implementation of the Convention. In addition, for the same purpose, the implications for the recycling State are also identified, like for the flag States.

4.1 A tool used to identify the implications for recycling States

In Chapter 3, the audit standard in the Code was used in identifying implications for flag States in the Convention. However, in the case of recycling States, it may be difficult for the Code to be used as the way to identify the implications for them since the audit standard provides guidance only for flag States, port States and coastal States in implementing and enforcing IMO mandatory instruments. Since the concept of recycling States has emerged with the development of ship recycling issues, the application of the audit standard in the Code to recycling States under the Convention has not been examined yet. However, there was an opinion in the 3rd ISRWG that the mechanism to ensure Parties' compliance under the Convention could rely on the IMO Audit Scheme (IMO, 2008, January 25b, p. 4) and MEPC 57 instructed its Working Group to continue to discuss a feasible voluntary auditing scheme as a compliance mechanism (IMO, 2008, April 7, p. 18). In line with this opinion and the MEPC's instruction, in the author's opinion, the framework of the audit standard in the Code could also be used in identifying the implications for recycling States under the Convention in the same manner as for flag States. In other words, the framework

used for identifying the implications for flag States could be also applied, with some modifications, to recycling States as seen in the following Figure 4.1.



(Source: Author)

Figure 4.1 A tool used to identify implications for recycling States under the Ship Recycling Convention

As introduced in Chapter 3, there are 6 areas of the audit criteria for flag States in the Code which could be used in identifying the implications for flag States under the mandatory IMO instruments and the only 3 areas of them are used in identifying the implications for flag States under the Convention. In the author's opinion, if applied to recycling States, the areas of enforcement, evaluation and review may not need to be examined since, if a recycling State is already capable of carrying out these functions as a flag State under a certain IMO convention, it may be able to do under the Convention in the same manner.

Therefore, the focus is placed on these 4 areas of implementation, delegation of authority, recycling State surveyors and recycling State investigations to identify the implications for recycling States. The identification of the implications would be helpful for recycling States in implementing the Convention. In following sections, the detailed requirements related to the obligations of recycling States are examined and then the implications for them are examined based on the detailed requirements.

4.2 Obligations of recycling States under the Convention and Guidelines for the Authorization of Ship Recycling Facilities

As identified in Table 2.7 in Chapter 2, the obligations of recycling States under the Convention are relevant to the authorization of ship recycling facilities. Therefore, the implications of the requirements related to a recycling State's obligations may be examined from the perspective of the authorization of ship recycling facilities taking into account the tool in Figure 4.1 above.

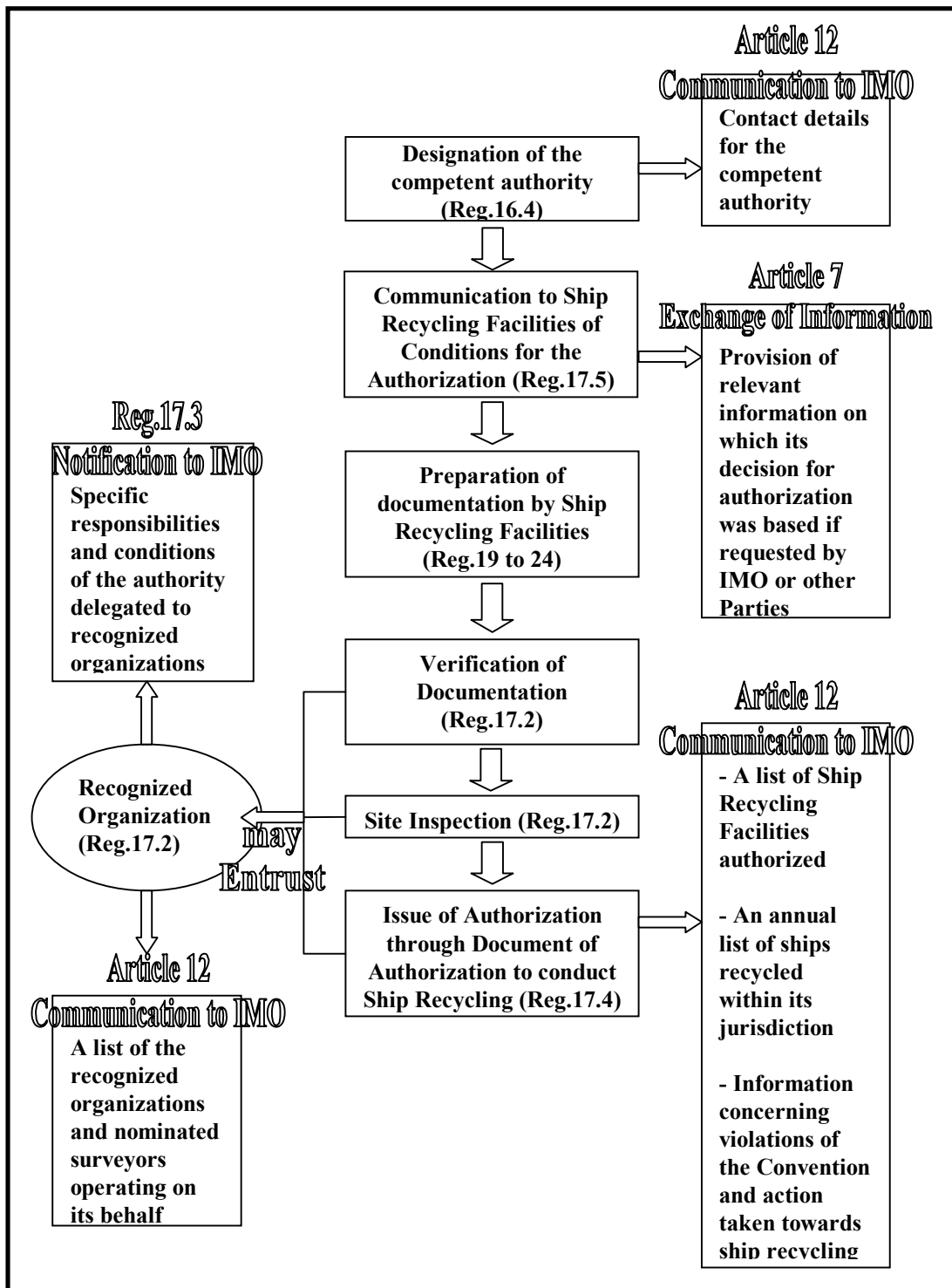
Six guidelines are under development together with the Convention as introduced in Chapter 3. Among these, the most relevant for the recycling State is the Guidelines for the Authorization of Ship Recycling Facilities. Currently, the draft Guidelines for the Authorization of Ship Recycling Facilities, hereinafter referred to as "the

Authorization Guidelines”, has been developed by the Correspondence Group (CG) on Ship Recycling and was submitted to the 2nd ISRWG; the draft can be found in Annex 6 of the document MEPC-ISRWG 2/2 which contains the report of the CG (IMO, 2007, April 13). Since this is the only available Authorization Guidelines at this point and would be helpful in identifying the implications for recycling States, the contents together with the requirements of the Convention are examined in the following section 4.3.

4.3 Authorization of Ship Recycling Facilities

Art.6 of the Convention states that recycling States shall ensure that ship recycling facilities operating under its jurisdiction are authorized in accordance with the requirements of the Convention and chapter 3 of the Convention provides the requirements for ship recycling facilities. This can be compared with the survey and certification scheme of ships by flag States. The survey and certification by flag States could be considered as the authorization by recycling States and, in addition, the target is “ships” in the survey and certification scheme whereas the target is “ship recycling facilities” in the authorization scheme. From the requirements regarding controls on ship recycling facilities in Reg.16 and authorization of ship recycling facilities in Reg.17, the procedure for the authorization may be drawn up as seen in the following Figure 4.2. Firstly, the recycling States need to designate the competent authority for controlling ship recycling facilities under their jurisdiction (Reg.16.4). Secondly, they need to identify the conditions on which the authorization is issued, withdrawn, suspended, amended and renewed and also inform the ship recycling facilities under their jurisdiction of these conditions (Reg.17.5). Then, the ship recycling facilities may prepare the necessary documentation to apply for the authorization taking into account the requirements in Reg.19 to Reg.24. Thirdly, the recycling States are required to verify the documentation prepared by the ship recycling facilities (Reg.17.2). Fourthly, the recycling States need to carry out a site inspection to compare the submitted documentation with the real facilities (Reg.17.2).

Lastly, once confirmation is made, then authorization is granted to the facilities in the form of the Document of Authorization to conduct Ship Recycling, hereinafter referred to as “DASR” (Reg.17.4). During this procedure, there are also requirements for communication to IMO and provision of information to IMO or other Parties if requested in accordance with Arts. 7 and 12. Furthermore, in accordance with Reg.17.2, the competent authority of recycling States may delegate to ROs its functions to authorize ship recycling facilities on its behalf. Similar contents to the procedures mentioned above can also be found in the Authorization Guidelines where such contents as introduction, background, definition, identification of the competent authority and/or ROs responsible for the authorization of ship recycling facilities, basic elements, verification of documentation, site inspection, issuance of the authorization, validity, exchange of information are shown (IMO, 2007, April 13, Annex 6). In the following subsections, the steps in the procedure which are relevant to the obligations of recycling States are examined.



(Source: Author)

Figure 4.2 Procedure relevant to authorization of Ship Recycling Facilities

4.3.1 Conditions for which authorization is issued, withdrawn, suspended, amended and renewed

The conditions for which authorization is issued may be relevant to the requirements in the Convention regarding what ship recycling facilities should do since Art.6 stipulates that Parties shall ensure that ship recycling facilities under their jurisdiction are authorized in accordance with the requirements of the Convention. In other words, what the Convention requires ship recycling facilities to do can be considered as the conditions for authorization. These requirements are stipulated in Reg.18 to Reg.24 which are general requirements regarding the establishment of management systems, procedures and techniques for safe and environmentally sound ship recycling (Reg.18), recycling facility management plan (Reg.19), prevention of adverse effects to human health and the environment (Reg.20), safe and environmentally sound management of hazardous materials (Reg.21), emergency preparedness and response (Reg.22), the safety and training of workers at ship recycling facilities (Reg.23) and reporting on incidents, accidents, occupational diseases and chronic effects (Reg.24).

In addition, the guideline which specifies these requirements for ship recycling facilities is at present under development and the draft Guidelines for Safe and Environmentally Sound Ship Recycling, hereinafter referred to as “the Ship Recycling Facility Guidelines”, is available which was submitted by Japan as the document of MEPC 56/3/4 and MEPC 56/3/5 at MEPC 56. The purpose of the Ship Recycling Facility Guidelines is to assist the competent authority of recycling States to apply the requirements of the Convention in a consistent manner and to assist ship recycling facilities to understand these requirements (IMO, 2007, April 6a, p.4 of Annex 2). Since Reg.2*bis* requires that Parties take into account the relevant standards, recommendations and guidelines developed by ILO and under the Basel Convention when implementing the requirements of the Convention, the Ship Recycling Facility Guidelines also makes references to the “Safety and Health in Shipbreaking Guidelines for Asian countries and Turkey” developed by ILO and the “Technical Guidelines for

the Environmentally Sound Management of the Full and Partial Dismantling of Ships” developed under the Basel Convention. Therefore, recycling States could use the requirements provided in Reg.18 to Reg.24 together with the Ship Recycling Facility Guidelines as conditions for which the authorization is issued.

With regard to the management systems referred to in Reg.18, the core concept of the management systems is Environmentally Sound Management (ESM). In the Ship Recycling Facility Guidelines, it is required that the ship recycling facilities should carry out safe and environmentally sound recycling through ESM (IMO, 2007, April 6a, p.7 of Annex 2). The technical Guidelines developed under the Basel Convention also states that the purpose of the Guidelines is to assist ship recycling facilities to attain ESM through providing information regarding procedures, processes and practices (United Nations Environment Programme (UNEP), 2002, p. 14). Therefore, these guidelines could provide assistance for ship recycling facilities in establishing management systems through the establishment of ESM. With regard to the application of ESM, the recycling industry sets up criteria for management systems such as the International Organization of Standardization (ISO) certification scheme. For example, the International Ship Recycling Association was established in October 2007 consisting of 10 members and, according to the chairman of the association, in order to become a member, all the members must have gone through the unified assessment, one item of which is that the member should have the ISO 14001 and Occupational Safety and Health Management System (OSHMS) 18000 certificates (as cited in Tsui, 2008, February 14). ISO 14001 is the international standard for environmental management systems and OSHMS 18000 is the international standard for occupational health and safety management system. Furthermore, ISO has decided to develop ISO 30000 which is specifications for management systems for safe and environmentally sound ship recycling facilities and follows the approach of the ISO 14000 series etc. ("Work starts on ISO Ship Recycling Standard," 2007, p. 16). In ISO/PAS 30000:2008, which is the publicly available specifications for management

systems for safe and environmentally sound ship recycling facilities, it is actually stated that ISO 30000 is a model for the management system required in Reg.18 of the Convention (ISO, 2008, January 15, p. 15). When recycling States draw up the conditions for which the authorization is issued, they could also make a reference to the certification scheme for management systems mentioned above.

Concerning conditions for which the authorization is withdrawn or suspended, Reg.17.5 states that, in cases where ship recycling facilities reject the inspection by the competent authority of recycling States, then the authorization is to be suspended or withdrawn and Reg.17.6 that the competent authority may decide the suspension or withdrawal of the authorization in cases when the conditions for the authorization are no longer fulfilled due to incidents or actions taken at the ship recycling facilities. In addition, the Authorization Guidelines provides conditions for which the authorization could be withdrawn, suspended, amended or renewed, explaining cases for the change of ownership of ship recycling facility, the modification affecting the conditions for the authorization, the incidents causing death and/or injury and/or acute pollution, etc. (IMO, 2007, April 13, p.9 of Annex 6).

4.3.2 Verification of documentation

Documentation by ship recycling facilities is required for verification by the competent authority of a recycling State.

With regard to the procedure for prevention of adverse effects to humans, the importance of “gas-free-for-hot-work” is highlighted in Reg.20.1 where ship recycling facilities are required to ensure that “gas-free-for-hot-work” conditions are maintained throughout the recycling operations. In addition, recognizing the high frequency of accidents involving explosion, MSC/Circ.466 also urges interested parties to take necessary measures to implement the IMO Guidelines on Ship Recycling emphasizing the gas-free-for-hot-work, including measures to continuously monitor enclosed

spaces during the recycling operation (IMO, 2005, July 25). In the case of the USA, the procedure for hot work also exists. For example, a Marine Chemist who is certified by the National Fire Protection Association is required to test for hot work in enclosed spaces during the shipbreaking process in the shipyard and, after the Marine Chemist has tested and certified the spaces, then workers can begin their hot work in the spaces (*Hot Work - Testing and Certifying for Hot Work*). Therefore, the procedure for “gas-free-for-hot-work”, as one of the procedures for the prevention of adverse effects to humans, could be one documentation to be submitted to the competent authority of the recycling States which, in turn, verifies the procedure. Other than the procedure for “gas-free-for-hot-work”, the procedure for prevention against damage to human health such as prevention against hazardous materials to human, prevention of slip and fall accidents and prevention against dropping of objects, and the procedure for prevention of human health and/or the environment against spillage of hazardous materials could be necessary for carrying out safe and environmentally sound ship recycling (IMO, 2007, April 6b, pp.10-13 of Annex) and, therefore, the documentation for these procedures may need to be submitted to the competent authority of the recycling States for verification.

Regarding the safe and environmentally sound management of hazardous materials, the procedure for identification, labeling, package, and removal of hazardous materials could be necessary as required in Reg.21.2 and the management plan for all hazardous materials and waste could be necessary as required in Reg.21.3. As for the emergency preparedness and response plan, the documentation regarding emergency response equipment and procedures for its usage, the chain of command in the emergency, and the response to human injuries and environmental accidents (IMO, 2007, April 6b, pp.17-19 of Annex) could be necessary and needs to be submitted to the competent authority for verification. In addition, measures for worker safety and training programs as required in Reg.23 of the Convention may need to be documented and submitted to the competent authority of recycling States for

verification and the procedure for reporting on incidents, accidents, occupational diseases and chronic effects as required in Reg.24 could be the same.

Other than the aforementioned requirements in the Convention regarding documentation, it can be assumed from the Supplement to DASR that information regarding the capability of a ship recycling facility, such as the size limitation that the ship recycling facility can accommodate, hazardous materials that the ship recycling facility can handle including removal and storage, etc., needs to be prepared by the ship recycling facility and submitted to the competent authority of the recycling State for verification. In the Authorization Guidelines, it is also stated that specification of capacity and capability in terms of ship size and type, specification of capacity and capability of waste management, physical facilities for recycling operations, etc. need to be developed by the ship recycling facility and forwarded to the competent authority (IMO, 2007, April 13, pp.6-7 of Annex 6).

Lastly, concerning the recycling facility management plan, examples of necessary documentations for verification are stipulated in Reg.19. However, the management plan could mean, from a broader perspective, the recycling facility management system as referred to in Reg.18.1. In this case, the documentation to be verified by the competent authority could be related to the documentation under ISO/PAS 30000 since the ISO standard may be considered as criteria for a recycling facility management system certification. Table 4.1 implies that the management system certified in accordance with ISO/PAS 30000 can fulfill the objectives of requirements of Regs.18 to 24 of the Convention, meaning that all the relevant procedures required here could be incorporated into the management system. Therefore, in this case, all the documentation to be verified by the competent authority may be related to the documentation of the management system.

Table 4.1 Table of comparison of ISO/PAS 30000:2008 and the requirements of the Ship Recycling Convention regarding ship recycling facilities

IMO Convention	ISO/PAS 30000	Explanation
Regulation 18 - General requirements	ISO 30000 is a model for the management system	all aspects of these requirements are in the PAS. No conflict
1	4.2 a)	covers health, safety and the environment consistent with IMO
2.1	4.3.2	legal requirement - IMO applies
2.2	4.3.1	procedures to ensure IMO complied with
2.3	4.3.2	documents shall be available
2.4	4.4.4 i)	procedure replied to show compliance with IMO
Regulation 19 - Recycling facility management plan		
1	4.2	policy requirements identical to IMO in different words
2	4.2 e) and f)	fulfils IMO objectives
3	4.4.1	fulfils IMO objectives
4	4.4.2	fulfils IMO objectives
5	4.4.7	fulfils IMO objectives
6	4.5.1	fulfils IMO objectives
7	4.5.2	
Regulation 20 - Prevention of accidents	4.4.6	fulfils IMO objectives
Regulation 21 - safe and environmentally sound removal and management of hazardous materials	4.4.6	fulfils IMO objectives
Regulation 22 – Emergency preparedness and	4.4.7	essentially identical in different words

response		
Regulation 23 – Worker safety and training	4.4.2 for training, 4.4.6 <i>inter alia</i> is safety	standard ensures procedures for all IMO requirements
Regulation 24 Reporting on incidents and chronic effects	4.5	fulfils IMO objectives

(Source: Annex of ISO/PAS 30000:2008(E))

4.3.3 Site Inspection

The purpose of the site inspection is to compare the submitted documentation with the arrangements at the recycling facility and confirm the appropriateness of the actual arrangements (IMO, 2007, April 13, p.7 of Annex 6). Therefore, the contents of site inspection could almost be the same as those of the documentation to be verified. For example, regarding the prevention of adverse effects to humans and the environment, the procedure for “gas-free-for-hot-work”, procedure for prevention against hazardous materials to humans, prevention of slip and fall accidents and the prevention against dropping of objects, and the procedure for the protection of human health and/or the environment against the spillage of hazardous materials may need to be verified through site inspection. Likewise, the Authorization Guidelines also requires that the site inspection includes a practical test for assessing the implementation of safety procedures (IMO, 2007, April 13, p.8 of Annex 6). With regard to the safe and environmentally sound management of hazardous materials, the procedure for identification, labeling, packaging, and removal of hazardous materials and the management plan for all hazardous materials and waste also needs to be verified through the site inspection and the Authorization Guidelines requires that procedures, methods, arrangements and facilities for the handling of hazardous materials and waste be verified through site inspection (IMO, 2007, April 13, p.8 of Annex 6). The same principle applies to the emergency preparedness and response plan and the capability of the recycling facility, and the Authorization Guidelines requires the site inspection for this plan including a practical test for assessing its implementation and for verifying the availability, size, restriction of all slots (IMO,

2007, April 13, p.8 of Annex 6). Other than the Authorization Guidelines, the U.S. Environmental Protection Agency (EPA) provides recycling yards with guidance regarding the items that the inspectors may focus on in accordance with federal requirements during a site inspection. According to this guidance, the removal and disposal procedures of asbestos, PCBs, bilge and ballast water, oil and fuel, paint, and miscellaneous ship machinery are verified through a site inspection by federal or state inspectors, including verification for training, and the ability of the recycling yards for handling the hazardous materials, etc. (U.S. EPA, 2000, Appendix C).

In the case of the recycling facility management plan, it should be verified for the existence and implementation of the plan through the site inspection (IMO, 2007, April 13, p.8 of Annex 6) and, if the plan means the whole management system, then the site inspection may imply the audit for the management system, meaning that the whole relevant procedures may need to be verified through the audit by the competent authority. Whether the already certified management system, such as through ISO 30000 certification, can be recognized by the competent authority could be another aspect and therefore it is not dealt with here.

4.3.4 Issuance of Authorization through the Document of Authorization to conduct Ship Recycling (DASR)

Once all the documentations are verified and the consequent site inspection is completed, the DASR is issued, resulting in granting the authorization of the ship recycling facility. According to Reg.17.5, the validity of the DASR shall not exceed 5 years.

4.3.5 Recognized Organizations (ROs)

Recycling States may delegate authority to carry out the authorization of recycling facilities, such as the verification of documentation and a site inspection as mentioned above, to ROs in accordance with Reg.17.2 of the Convention. ROs carrying out the

authorization of recycling facilities on behalf of recycling States may look similarly to ROs to carry out the survey and certification on behalf of flag States. However, the delegated functions are different to each other. In addition, in the case of ROs on behalf of flag States under the Convention, their delegated functions, which are survey and certification, have the same characteristics as those under other IMO conventions such as SOLAS 74, MARPOL 73/78, etc. whereas the delegated functions of ROs for the authorization of ship recycling facilities on behalf of recycling States cannot be found in other IMO conventions. Furthermore, there exists guidelines for the authorization of organizations acting on behalf of the flag State in IMO Assembly Resolution A.739(18) and specifications on the survey and certification functions of ROs acting on behalf of the flag State in IMO Assembly Resolution A.789(19) whereas, as identified in Chapter 2, there is neither the guidelines for the authorization of organizations carrying out the authorization of ship recycling facilities on behalf of recycling States nor the specifications on the ship-recycling-facility-authorization functions of ROs acting on behalf of recycling States. Issues relevant to ROs carrying out the authorization of recycling facilities on behalf of recycling States are dealt with in detail during the examination of implications for recycling States in section 4.4.2.

4.4 Implications for recycling States

4.4.1 Implementation

4.4.1.1 Policies

Recycling States may need to implement policies, through the enactment of national laws, which will assist in the implementation and enforcement of the requirements regarding the authorization of ship recycling facilities ensuring that those facilities comply with the requirements of the Convention. In addition, they need to assign responsibilities to update and revise the policies when necessary just like the case of flag States in section 3.4.1.1.

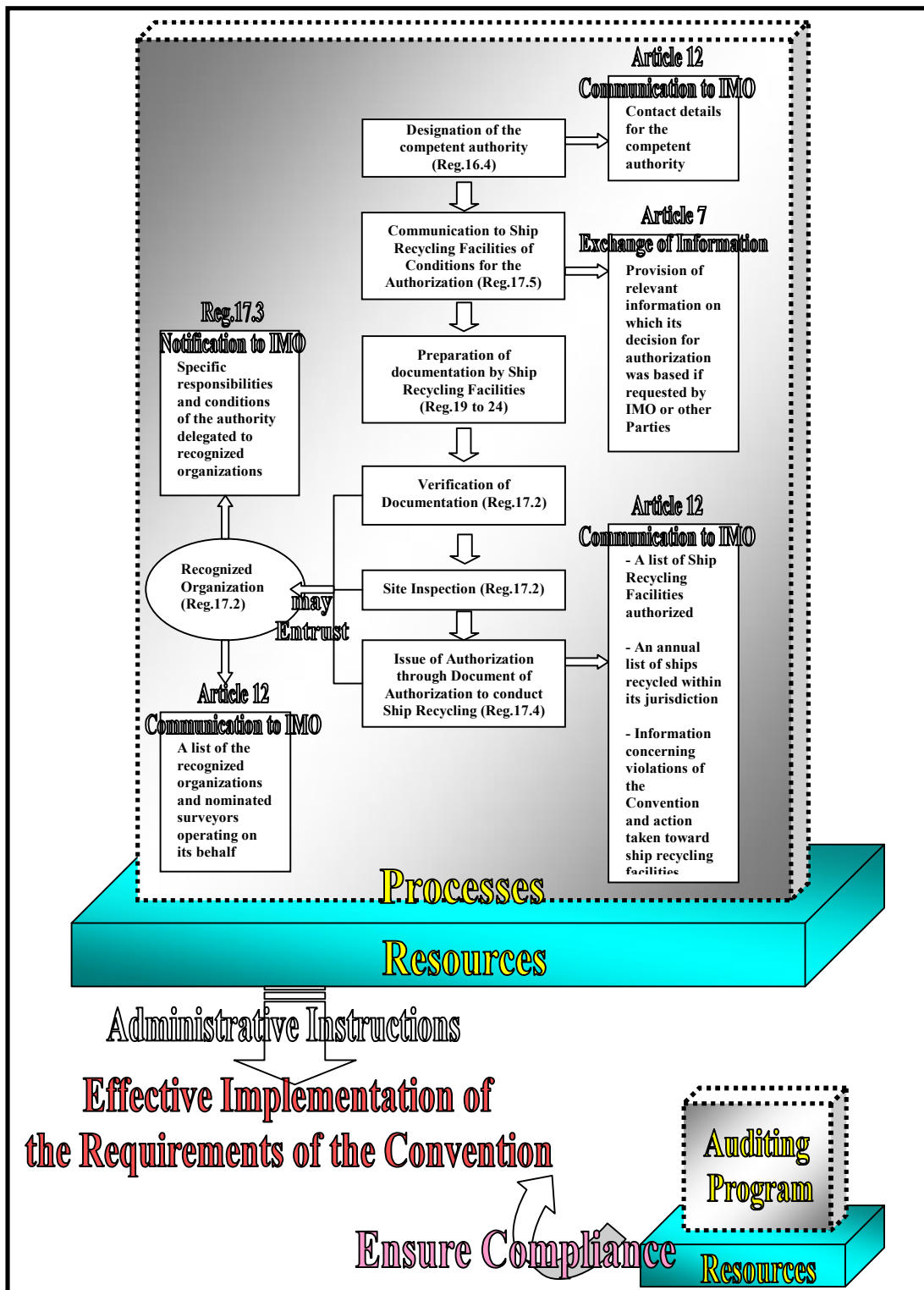
Reg.18 of the Convention requires that ship recycling facilities only accept ships that comply with the Convention or meet the requirements of the Convention, limiting its application to ships to which the Convention applies and ships of non-Parties treated non-favourably in accordance with Art.3.4. In addition, the Supplement to the DASR also requires that the ship recycling facilities accept only ships to which the Convention applies and ships subject to no more favourable treatment of Art.3.4 in the same way as Reg.18. In the case of the ships of non-Parties, the no more favourable treatment principle will be reflected in the adoption of the national laws. However, for non-convention ships defined in Arts. 3.2 and 3.3 which do not fall under the scope of the application of the Convention but act in a way consistent with the Convention through adoption of appropriate measures by their flag States, it is not shown whether it is allowed for the authorized ship recycling facilities to accept those ships flying Parties' flags, meaning that it depends on recycling States and is a matter of their national legislation (IMO, 2008, February 8, p. 2). In the case of those non-convention ships, recycling States need to decide on policies concerning how they will deal with these non-convention ships to ensure safe and environmentally sound ship recycling and implement the policies through the adoption of the appropriate national legislation and guidance.

4.4.1.2 Resources and processes

As required of flag States in para.16 of the Code, recycling States may need to establish resources and processes enabling themselves to administer a safe and environmentally sound ship recycling program, consisting of administrative instructions, resources to ensure compliance with the requirements of the Convention using an audit and inspection program, etc.

With regard to administrative instructions, all the processes in Figure 4.2 "Procedure relevant to Authorization of Ship Recycling Facilities" should be defined in a detailed way and communicated to all the relevant personnel for the proper and effective

implementation of the Convention. As shown in the following Figure 4.3, all the processes relevant to the designation of competent authority for the purpose of controlling ship recycling facilities, identification of the conditions for issuance, withdrawal, suspension, amendment and renewal of the authorization and communication of the conditions to ship recycling facilities, the verification of documentations, the site inspection and the issuance of DASR, including the procedures related to communication to IMO, as explained in section 4.3, are to be converted into administrative instruction, helping the relevant personnel to implement the requirements of the Convention. In addition, processes regarding the authorization of ROs need also to be established, which is explained during examining the implications related to the delegation of authority. Furthermore, recycling States should establish resources to ensure compliance with the requirements of the Convention which can be achieved through auditing the administrative processes.



(Source: Author)

Figure 4.3 Recycling States' processes and resources for the implementation of the requirements of the Ship Recycling Convention and ensuring compliance

4.4.1.3 The implementation issue related to MARPOL 73/78

When recycling States implement the policies and establish the resources and processes aforementioned, they should also take into account the provisions of MARPOL 73/78 regarding reception facilities. The requirement of reception facilities is originally devised for port States in Reg.38 of Annex I for the reception of oily residue and oily mixtures from ships, Reg.18 in Annex II for the reception of residues and mixtures of noxious liquid substances from ships, Reg.12 in Annex IV for the reception of sewage from ships, and Reg.7 of Annex V for the reception of garbage from ships. The requirement of reception facilities may also need to apply to recycling States as port States under MARPOL 73/78 since they may have to receive oily residues and oily mixtures, residues and mixtures of noxious liquid substances, sewage and garbage from ships destined for recycling in their ship recycling facilities which may be subject to the application of MARPOL 73/78 (UNEP, 2002, p. 32). Therefore, their recycling facilities would be required to be equipped with the reception facilities from the perspective of MARPOL 73/78. For those recycling States which have not ratified the relevant Annexes of MARPOL 73/78 and which, even if they have ratified, do not have reception facilities in place, they have to consider the provision of recycling facilities for receiving various residues and mixtures, sewage, and garbage from ships which are supposed to be recycled in ship recycling facilities under their jurisdiction and this aspect should be reflected in their policies to implement the requirements of the Convention.

4.4.2 Delegation of authority

Recycling States may need to regulate the delegation of their authority to ROs which carry out the authorization of the ship recycling facilities on their behalf. In the case of flag States under other IMO conventions, the flag States' authorization to ROs is regulated in accordance with IMO Assembly Resolutions A.739(18) (IMO, 2005a, p. 7) and, as an additional guideline with regard to flag States' authorization to ROs, IMO Assembly Resolution A.789(19) is also provided. Therefore, if flag States follow

these two guidelines, they can fulfill their obligations regarding delegation of authority. However, in the case of recycling States' authorization to ROs carrying out the authorization of ship recycling facilities on behalf of recycling States, as mentioned in section 4.3.5, there are no such guidelines and specifications providing recycling States with the guidance of how they can fulfill their obligations regarding the delegation of authority and, from Reg.17.3 where stated that recycling States shall notify IMO of the specific responsibilities and conditions of the authority delegated to ROs, it can be assumed that all the matters relevant to the authorization of ROs may depend upon the recycling States themselves, meaning that they may need to determine their own standards for authorization of ROs and specifications on the ship-recycling-facility-authorization functions that ROs carry out on their behalf. However, the determination of such standards and specifications by each recycling State could lead to various standards and specifications among recycling States in general. Therefore, to prevent this situation from happening, it would be necessary to have uniform standards and specifications just like those of flag States' authorization to ROs and the framework and contents of the existing guidelines and specifications for flag States' authorization to ROs could be helpful in devising the uniform standards and specifications for recycling States' authorization to ROs. For the purpose of the uniform application by recycling States, "The Guidelines for the authorization of ROs acting on behalf of recycling States" attached in Appendix 1 is devised by the author through utilizing the Guidelines for the authorization of ROs acting on behalf of the flag States shown in Assembly Resolution A.739(18) and "the Specifications on the ship-recycling-facility-authorization functions of ROs acting on behalf of recycling States" in Appendix 2 through utilizing the Specifications on the survey and certification functions of ROs acting on behalf of flag States shown in Assembly Resolution A.789(19).

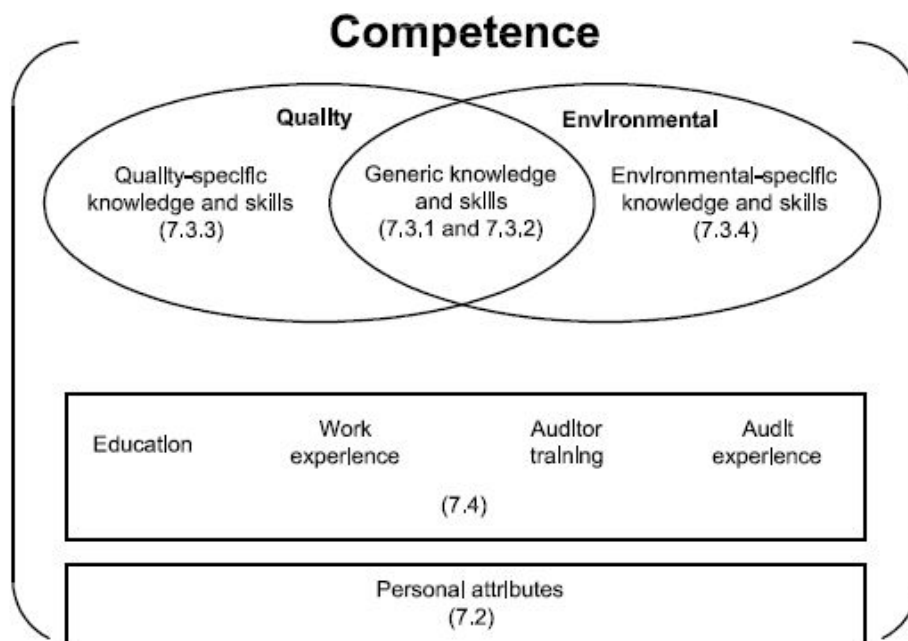
4.4.3 Recycling State inspectors⁵⁸

Recycling States may also need to determine and document the responsibilities, authority and interrelation of all relevant personnel involved in the authorization of the ship recycling facilities aforementioned, ensure their qualification and practical and theoretical knowledge, maintain the qualification standards for their inspectors and implement a documented system for the qualification of personnel and continuous updating of their knowledge relevant to tasks involved in the authorization of the ship recycling facilities just as flag States should do regarding their surveyors under the Convention. These general responsibilities of recycling States regarding their inspectors would be similar to those of flag States. However, the qualification of recycling State inspectors to carry out the verification of documentations and site inspections would be somewhat different from that of flag States' surveyors since the recycling State inspectors deal with the authorization of the ship recycling facilities whereas the flag State surveyors deal with the ship survey. In addition, the appropriate practical and theoretical knowledge would be relevant to the operation of ship recycling facilities rather than the knowledge of ships and their operation.

With regard to the qualification of the recycling States' inspectors, ISO 19011 standards "Guidelines for quality and/or environmental management systems auditing" could be referred to since, in the author's opinion, the ultimate target of recycling States' inspection for the authorization of the ship recycling facilities is the overall management system which can ensure the safe and environmentally sound recycling of ships. Especially, section 7 states the competence and evaluation of auditors (ISO, 2002, October 1, pp. 21-31). The concept of competency of auditors, illustrated in the following Figure 4.4, who carry out the quality management system and environmental management system audits could be applied to the competency of

⁵⁸ The term "inspector" is used here since the term "inspection" is used in Reg.16.3 where stated that the competent authority of a recycling State is required to ensure Ship Recycling Facilities' compliance with the requirements of the Convention through the establishment and effective use of inspection, monitoring and enforcement provisions.

inspectors who carry out document verification and a site inspection since the items for document verification and consequent inspections are the recycling facility management plan (Reg.19), procedures for prevention of adverse effects to human health and the environment (Reg.20), procedures for safe and environmentally sound management of hazardous materials (Reg.21), emergency preparedness and response plan (Reg.22), worker safety and training (Reg.23) and procedures for reporting on incidents, accidents, occupational diseases and chronic effects (Reg.24) and these items are all relevant to the safety and/or environmental management system.



(Source: ISO 19011:2002(E), p.22)

Figure 4.4 Concept of competence

In addition, ISO/PAS 30003:2008 provides the publicly available specification for requirements for bodies providing audit and certification of ship recycling management. In particular, in section 7.2 “Personnel involved in the certification

activities”⁵⁹, the more detailed requirements for personnel carrying out the management system audit of ship recycling facility are stipulated (ISO, 2008, July 1, pp. 8-10). Therefore, the competent authority of a recycling State may use all these criteria for deciding the competency of recycling State inspectors who carry out document verification and a site inspection.

Furthermore, Table 4.2 below could be referred to when recycling States need to decide their inspectors’ level of education, work experience, training and inspection experience. A similar example which the recycling States can refer to is also seen in Table 1 of ISO 19011:2002 which shows the levels of the education, work experience, training and audit experience for quality and/or environmental management systems auditors (ISO, 2002, October 1, p. 27).

⁵⁹ Section 7.2.3 of ISO/PAS 30003:2008 specifically refers to sections 7.2, 7.3.1, 7.3.2 and 7.4 of ISO 19011:2002 as a minimum personal attributes, knowledge, skills and education for personnel assigned to carry out the management system audit of ship recycling facility.

Table 4.2 Example of level of education, work experience, auditor training and audit experience for auditors conducting certification or similar audits

Parameter	Auditor	Auditor with previous experience in other management system disciplines	Audit team leader
Education	Tertiary education	Same as for auditor	Same as for auditor
Total work experience	Five years (see Note 1)	Same as for auditor	Same as for auditor
Relevant work experience in ship recycling ^a	At least two years of the total five years, or training that satisfies the requirements of Annex D	Same as for auditor	Same as for auditor
Audit experience	Four complete audits for a total of at least 20 days of audit experience as an auditor-in-training under the direction and guidance of an auditor competent as an audit team leader (see Note 3). The audits should be completed within the last three consecutive years.	At least 1 complete audit covering all clauses of the audit specification/standard resulting in satisfactory demonstration (see Note 3).	Three complete audits for a total of at least 15 days of audit experience, acting in the role of an audit team leader under the direction and guidance of an auditor competent as an audit team leader (see Note 3). The audits should be completed within the last two consecutive years ^c .
Auditor training	40 h training, including: 16 h auditor training 8 h management system (MS) specific training	24 h training, including: 8 h MS specific training ^b	Same as for auditor
The number of years of work experience may be reduced by one year if the person has completed appropriate post-tertiary education.			
Ship-recycling-specific work experience may be concurrent with the general work experience.			
NOTE 1 Post-tertiary education, also known as third-stage, third-level education, or higher education, is the non-compulsory educational level following the completion of a school providing a secondary education, such as a high school, secondary school, or gymnasium.			
NOTE 2 The purpose of training in the ship recycling discipline is to acquire knowledge of the relevant standards, laws, regulations, principles, methods and techniques.			
NOTE 3 A complete audit is an audit covering all the steps of conducting document review, preparing for the on-site audit activities, conducting on-site audit activities, and conducting the opening meeting. The overall audit experience should cover this specification procedure.			
^a Ship recycling management system and/or shipbuilding and ship operation business management system experience shall include formal knowledge and skills in processes and operations identification, analysis, control, and management.			
^b Auditors qualified to audit other disciplines need not repeat the 16 h generic auditor training module.			
^c Lead auditors qualified to lead audit teams of other disciplines need only demonstrate their competence to lead an audit team when applying the requirements of the ship recycling management system standard or specification, e.g. ISO 30000.			

(Source: ISO/PAS 30003:2008(E), p.39)

More specific knowledge regarding all the procedures related to documentation verification and a site inspection as identified in sections 4.3.2 and 4.3.3 may also be required for recycling States' inspectors to carry out the authorization of the ship recycling facilities.

In summary, in order to comply with recycling States' obligations under the Convention regarding their inspectors, they may need to devise and implement a documented system for the qualification of personnel and continuous updating of their knowledge relevant to their authorization tasks, taking into account the concept of competency for inspectors and, more specifically, inspectors' level of education, work experience, training, inspection experience, all the relevant knowledge for procedures related to documentation verification and a site inspection.

4.4.4 Investigations of any accident, etc. occurring in the ship recycling facilities

As identified in Chapter 2, it is not recycling States but the ship recycling facilities that investigate any accident, incident, occupational diseases or chronic effects causing risks to workers' safety, human health and the environment and identify their causes. After investigation, the ship recycling facilities shall report to the competent authority of a recycling State regarding any accident etc. together with the description, identified causes, the action taken, and the corrective actions taken in accordance with Reg.24. Although it is true that the investigation is not the obligation of recycling States, in the author's opinion, the recycling States need at least to analyze the reports submitted by the ship recycling facilities and, if necessary, the recycling States may carry out the investigations again for the purpose of preventing the recurrence of similar types of accidents etc. in a national context.

Knowledge regarding the various accident investigation methods would be helpful to recycling States in analyzing the reports and re-investigations. According to Reason (1990, p. 201), human factors dominate the risks in a complex system, meaning that

human factors may also be one of root causes for the risks of accidents in such a complex system as a ship recycling facility. In addition, according to Reason's organizational accident model, organizational factors such as strategic decisions and generic organizational processes could cause factors which are likely to promote unsafe acts of individual workers (1997, pp. 16-17). Considering the fact that the work of the ship recycling facilities consists of various procedures under the organizational management system, the approach to investigations from an organizational perspective may be helpful in identifying the causes. Other than these methods, Assembly Resolution A.884(21) "Amendments to the Code for the Investigation of Marine Casualties and Incidents (Resolution A.849(20))" provides a ILO/IMO process for investigating human factors where the process providing a step-by-step systematic approach for use in the investigation of human factors is introduced (IMO, 1999, Appendix 1); this process can be applied to the investigation of accidents occurring in the ship recycling facilities even though this resolution is designed for accident investigation on ships.

In order to carry out the analyses of the accident investigation reports submitted by the ship recycling facilities and the consequently required re-investigation, recycling States may need to have relevant knowledge regarding the accident investigations mentioned above and enough resources to carry out the comprehensive analyses and re-investigations when needed.

CHAPTER 5
RELATIONSHIP BETWEEN FLAG STATES, RECYCLING
STATES AND PORT STATES: FOR THE EFFECTIVE
IMPLEMENTATION OF THE SHIP RECYCLING
CONVENTION

If flag States, recycling States and port States discharge their own obligations taking into account the implications for them, they might be able to ensure the effective implementation of the Convention. However, in the author's opinion, carrying out their own obligations would not be enough since the cooperation among them could also be required to ensure the effective implementation of the Convention. A similar approach to this cooperation can also be found in the IMO Guidelines on Ship Recycling stating that the cooperation among flag, port and recycling States is required for facilitating the implementation of the Guidelines (IMO, 2004, p. 18). In addition, for their effective cooperation, it would also be important to know the relationship between flag, port and recycling States⁶⁰. Before the examination of the relationship, the implications for port States are introduced in order to explain the relationship since they have not been examined in the previous chapters.

5.1 Implications for port States

With regard to the implications for port States under the Convention, they appear to be similar to those under other IMO instruments. The requirement regarding port States under the Convention is that, as provided in Art.8.1, a ship may be subject to inspection in any port or offshore terminal of another Party; such inspection being limited to verifying an International Certificate on Inventory of Hazardous Materials,

⁶⁰ The relationship between flag and port States and between flag and recycling States are examined here. In the case of the relationship between port and recycling States, this is not examined since the roles of port States are more relevant to the ship during its operational life and accordingly to flag States.

or an International Ready for Recycling Certificate except when there are clear grounds as stipulated in Art.8.2. This requirement is the same as that of other IMO conventions such as MARPOL 73/78 as identified in Table 2.6 of Chapter 2 except that the contents of the port State inspection are about controls of ships' hazardous materials for the safe and environmentally sound recycling of ships. Therefore, the implications for port States could be that, as identified in Part 4 of the Annex to the Code, they need to establish processes⁶¹ to regulate the port State control program (IMO, 2005a, p. 14) which should incorporate the procedure relevant to the controls of a ship's hazardous materials. Then, taking into account the processes established for controls of ships' hazardous materials, port States may carry out their obligations for the effective implementation of the Convention.

5.2 Relationship between flag States and port States under the Convention

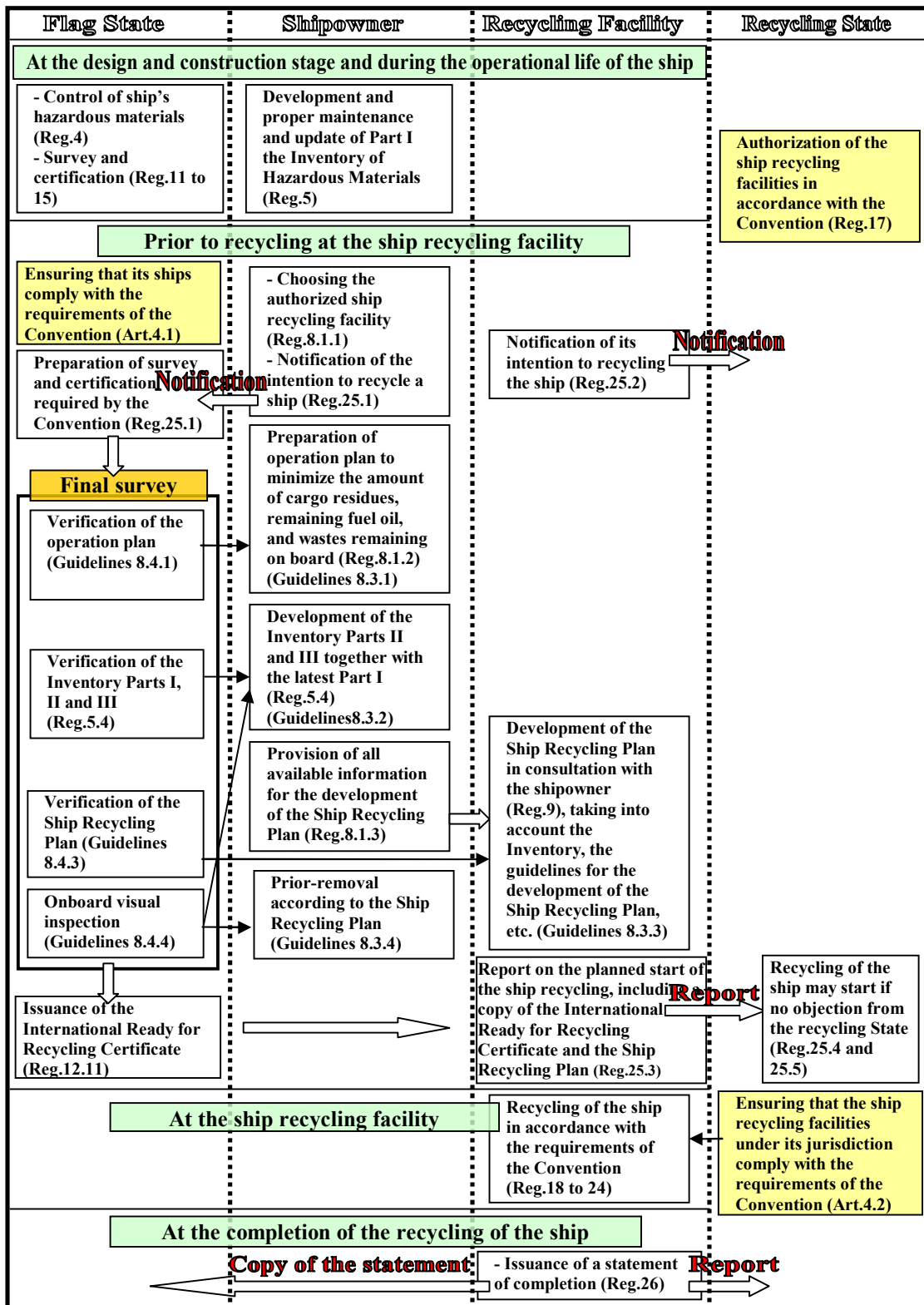
With regard to the relationship between flag and port States, it can be said that port States act as the safety device and as the complement to ensure the flag States implement the requirements of the Convention just like in other IMO conventions. Port State control emerged due to the fact that many flag States failed to implement the requirements of IMO and ILO conventions by themselves. In addition, it is argued that the provisions on port State enforcement were originally seen as the major addition to the main responsibility of the flag State (Özçayır, 2004, p. 76); port State control is a complement, not a substitute, to the effective implementation of IMO conventions by the flag State (Cariou, Mejia, and Wolff, 2008, p. 492). With regard to this relationship, it will remain the same under the Convention since the roles of port States as the complement to flag States' implementation under the Convention remains the same as those under other IMO conventions. In other words, through controls of hazardous materials on board the ships which are in ports or offshore terminals under their jurisdiction, the port States will play their roles as the

⁶¹ As introduced in Chapter 3, the Guidelines for Inspection of Ships is currently under development which will incorporate the specific procedures required by the Convention (IMO, 2007, April 13,

complement to the flag State's effective implementation of the Convention, thus contributing to the safe and environmentally sound recycling of ships.

5.3 Relationship between flag States and recycling States under the Convention

The concept of the recycling State has been newly emerged together with the issue of ship recycling. In the IMO Guidelines on Ship Recycling, it is required that flag States should co-operate with recycling States to facilitate the implementation of the Guidelines (IMO, 2004, p. 18). In the case of the Convention, the cooperation between flag and recycling States is implicitly required in carrying out their own obligations since their roles are interrelated to each other for the implementation of the requirements of the Convention as shown in Figure 5.1 below. Here, the flag State' role before the final survey is to ensure that a ship develops, maintains, and updates Part I of the Inventory of Hazardous Materials properly through the survey and certification process which is designed to facilitate the safe and environmentally sound recycling of ships at the ship recycling facility.



(Source: Author)

Figure 5.1 Relationship between the flag and recycling State

It can also be noticed from Figure 5.1 above that, during the final survey, the flag State's role is to ensure that the ship is ready for recycling at the ship recycling facility. Firstly, the flag State shall ensure that the ship is to be recycled at the authorized ship recycling facilities. The information related to the authorized facilities can be collected from recycling States through IMO since Art.12 of the Convention requires recycling States to provide IMO with a list of ship recycling facilities under their jurisdiction authorized in accordance with the Convention. Then, the flag State will verify various documents such as the operation plan, the Inventory of Hazardous Materials and the Ship Recycling Plan. Through the verification of these documents, the flag State checks whether the Inventory is properly developed, maintained and updated and whether the operation plan is appropriately developed. Furthermore, the flag State checks whether the ship conducts the prior-removal appropriately in accordance with the Ship Recycling Plan. All the processes related to the final survey which should be ensured by the flag State are also to facilitate safe and environmentally sound recycling at the ship recycling facility.

Once the final survey is completed, the International Ready for Recycling Certificate is issued by the flag State and this Certificate, in turn, is reported by the ship recycling facility to the recycling State when reporting the planned start of recycling of the specific ship. It could be said that this Certificate shows the recycling State that the flag State completes its duties in order to facilitate the safe and environmentally sound recycling at the recycling facilities. Then, the recycling of the ship may start if there is no objection from the recycling State. The recycling will be conducted in accordance with the Ship Recycling Plan and the recycling State will ensure that the ship recycling facility conducts the recycling of the ship safely and environmentally soundly in accordance with the requirements of the Convention.

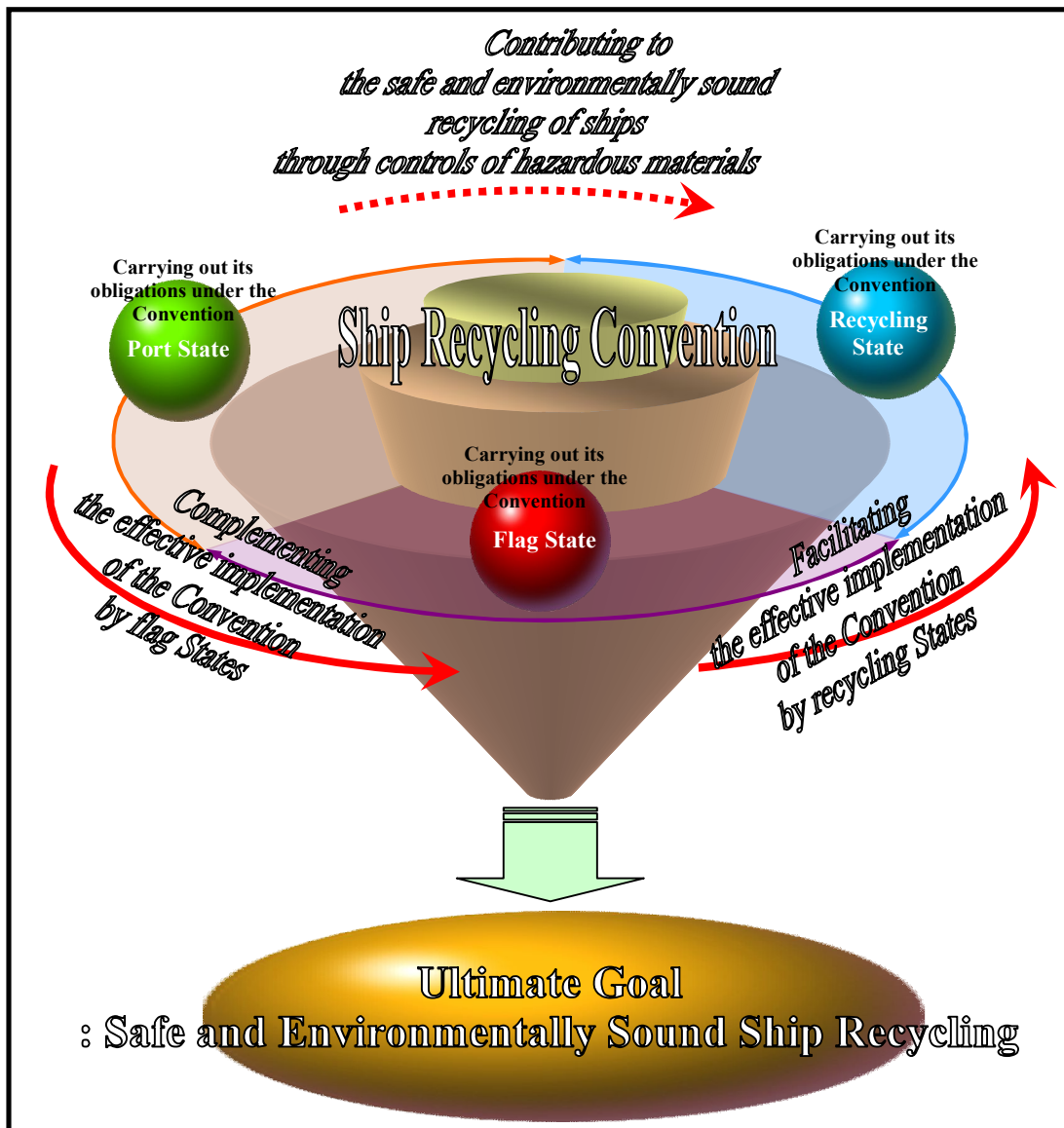
As observed above, all the relevant procedures that are surveyed and certified by the flag State are to facilitate the recycling of the ship at the ship recycling facility. In

other words, all the processes before the ship enters the ship recycling facility are related to safe and environmentally sound ship recycling and the flag State's role is to ensure these processes take place. Therefore, the flag State's role in the recycling of the ship can be defined as the facilitator of the safe and environmentally sound recycling of ships at the ship recycling facility.

CHAPTER 6

THE EFFECTIVENESS OF THE SHIP RECYCLING CONVENTION

Flag States, recycling States and port States have their own obligations under the Convention and these obligations pose their own implications on them as identified in Chapters 2, 3, 4 and 5. Although each carries out its respective obligations taking into account the implications posed, this is not enough as the cooperation is also essential as identified in Chapter 5. The port State's role in connection with the flag State is important just like in other IMO conventions since port State control, as a complement, will provide the safety device for what the flag State misses in carrying out its obligation concerning the implementation of the Convention. In addition, this role of the port State will consequently contribute to the safe and environmentally sound recycling of ships in recycling States. Furthermore, the flag State will facilitate the safe and environmentally sound recycling of ships at the ship recycling facility through the survey and certification of its ships and this will, in turn, facilitate the recycling State to ensure that its authorized ship recycling facilities comply with the requirements of the Convention. All these obligations and relationship are ultimately for the safe and environmentally sound recycling of ships which is the main purpose of the Convention. If the mechanism shown in Figure 6.1 below works well through the effective implementation by the flag State, the port State and the recycling State, the ultimate goal of the Convention may be accomplished.



(Source: Author)

Figure 6.1 Mechanism for the effective implementation of the Ship Recycling Convention

However, there exists one major assumption in order for this mechanism to come true; that is to secure the effectiveness of the Convention itself. In addition, there are potential factors which may influence its effectiveness as seen in the following sections.

6.1. Application of the Basel Convention principles to ships destined for recycling

The United Nation's Basel Convention was adopted in 1989 to control the transboundary movement of hazardous waste and, in addition, amendments to the Basel Convention, hereinafter referred to as "the Basel Ban", were adopted in 1995 banning the export of hazardous waste from Organization for Economic Co-operation and Development (OECD) countries to non-OECE countries (Commission of the European Communities, 2007b, p. 4). In the control of the transboundary movement and the ban of the export, a "State of export", which is defined as "a Party from which a transboundary movement of hazardous waste or other waste is planned to be initiated or is initiated" in Art.2(10) of the Basel Convention, is considered the main responsible body.

With regard to the application of the Basel Convention and Basel Ban to a ship destined for recycling, there has been controversy concerning whether the ship falls under the scope of its application. If the ship destined for recycling is deemed as hazardous waste, then the Basel Convention would apply to the ship, requiring prior notification and consent before the import or export of the ship considered as hazardous waste. In addition, in the case of the application of the Basel Ban, the ships of a Party which ratifies it would be prohibited to send it for recycling to non-OECD countries in the South Asian region such as India, Bangladesh, Pakistan, etc. where most recycling work for merchant ships is currently taking place.

With regard to this application to ships destined for recycling, the position of the European Union appears to be firm. The European Community as a whole and all the Member States are Parties to the Basel Convention (Commission of the European Communities, 2007b, pp. 4-5) which was incorporated into the Waste Shipment

Regulation⁶². In addition, although the Basel Ban has not come into force yet⁶³, it has been implemented by the EU through Council Decision 97/640/EC prohibiting the exports of hazardous waste from OECD or EU member States to non-OECD countries (DG ENV, 2007, p. 27). Ships flying the flags of an EU Member State seem to be subject to these regulations, meaning recycling of the ships in the South Asian region would be prohibited unless they are considered as non-hazardous after pre-cleaning of hazardous materials or they change their flag to non-EU. As for each EU Member State, the U.K. also stipulates its intention to adhere to the Basel Convention principles⁶⁴, including the Basel Ban, when exporting its ships for recycling (Department for Environment Food and Rural Affairs (DEFRA), 2007, pp. 5-6). In the case of France, although it has a different opinion from DG ENV and DEFRA which consider the ship recycling operation not as waste disposal but as a recovery operation allowing the shipment to OECD countries outside EU/EFTA (European Union/European Free Trade Area), it also shares the idea that the Waste Shipment Regulation applies to a ship destined for recycling prohibiting the ship from being sent to the South Asian region (Interdepartmental Committee on the Dismantling of Civilian and Military End-of-Life Ships (MIDN), 2007, p. 18). Recent cases where the Waste Shipment Regulation applies to ships for recycling include the Clemenceau case where it was ruled that a decision to send the ship to India for dismantling was illegal and the Otapan case where it was ruled that the export of a ship for dismantling constitutes an export of disposal (DG ENV, 2007, p. 29-30).

The tendency to prohibit from exporting toxic substances such as PCBs, including those on board ships destined for recycling, can also be found in a case where the US Environmental Protection Agency (EPA) claimed that a US-based cash buyer, Global

⁶² Its exact title is Regulation (EEC) No.259/93 on the supervision and control of shipments of waste within, into and out of the European Community and a new Regulation (EC) No.1013/2006 on shipment of waste replaced it as of 12 July 2007 (<http://europa.eu/scadplus/leg/en/lvb/l11022.htm>).

⁶³ A total of 63 countries have ratified it as of 22 May 2006 (<http://www.basel.int/ratif/ban-alpha.htm>).

Marketing Systems, and its sister company, Global Shipping, breached the Toxic Substance Control Act by exporting PCBs onboard a passenger ship, consequently facing investigation by the US EPA (Reyes, 2008, March 25).

Concerning the application of the Basel Convention principles in the context of the Ship Recycling Convention, the 8th meeting of the Conference of the Parties to the Basel Convention invited IMO to ensure that the Ship Recycling Convention establishes an equivalent level of control as that established under the Basel Convention and the 9th meeting will assess whether the Ship Recycling Convention provides the equivalent levels of control (IMO, 2008, January 25a, pp. 1-3). In addition, the inclusion of the reference to the Basel Convention in the Ship Recycling Convention was discussed at the 3rd ISRWG; the draft text of the Ship Recycling Convention currently contains a reference to the Basel Convention in square brackets in Art.15.2, meaning that it has not yet been decided whether to include the reference to the Basel Convention in Art.15.2.

If the reference to the Basel Convention is included in the Ship Recycling Convention and the principles of the Basel Convention were to apply to ships destined for recycling, then control of the transboundary movement of hazardous waste and the ban of export of hazardous waste from OECD countries to non-OECE countries could not be ignored in implementing the Ship Recycling Convention. In the context of the Basel Convention, the flag State can be considered as the “State of Export”, the port State as “State of Transit”, and the recycling State as “State of Import” (Moen, 2008, p. 4). Therefore, if the reference to the Basel Convention is included and the Basel Convention principles apply to ships destined for recycling, the flag State⁶⁵ would have to regulate its ships accordingly. In addition, the owner of the ship

⁶⁴ The Basel Convention principles hereinafter mean the principles under the Basel Convention and Basel Ban even if the Basel Ban has not come into force yet.

⁶⁵ Major flag States such as Panama and Liberia are a Party to the Basel Convention (<http://www.basel.int/ratif/convention.htm>) and have also ratified its 1995 amendment (Basel Ban) (<http://www.basel.int/ratif/ban-alpha.htm>).

destined for recycling would not be allowed to send the ship for recycling to a non-OECD country unless it is pre-cleaned and considered as non-hazardous.

Furthermore, if the Basel Convention principles apply under the Ship Recycling Convention, there is a possibility that, due to economic reasons, shipowners choose to reflag their ships to another flag State which would not ratify the Ship Recycling Convention since, if changing the flag, they can send the ship for recycling to non-OECD countries which could be more profitable for them. Table 6.1 below shows the net revenue from recycling between different scenarios. If the Basel Convention principles apply to ships destined for recycling, ships cannot be sent to Bangladesh, which could be the most profitable scenario as shown in this Table. The shipowners may have to choose one among three other scenarios in order to comply with the Basel Convention principles. From the shipowner's economic point of view, some may want to reflag their ships to other flags in order to send their ships to Bangladesh for recycling.

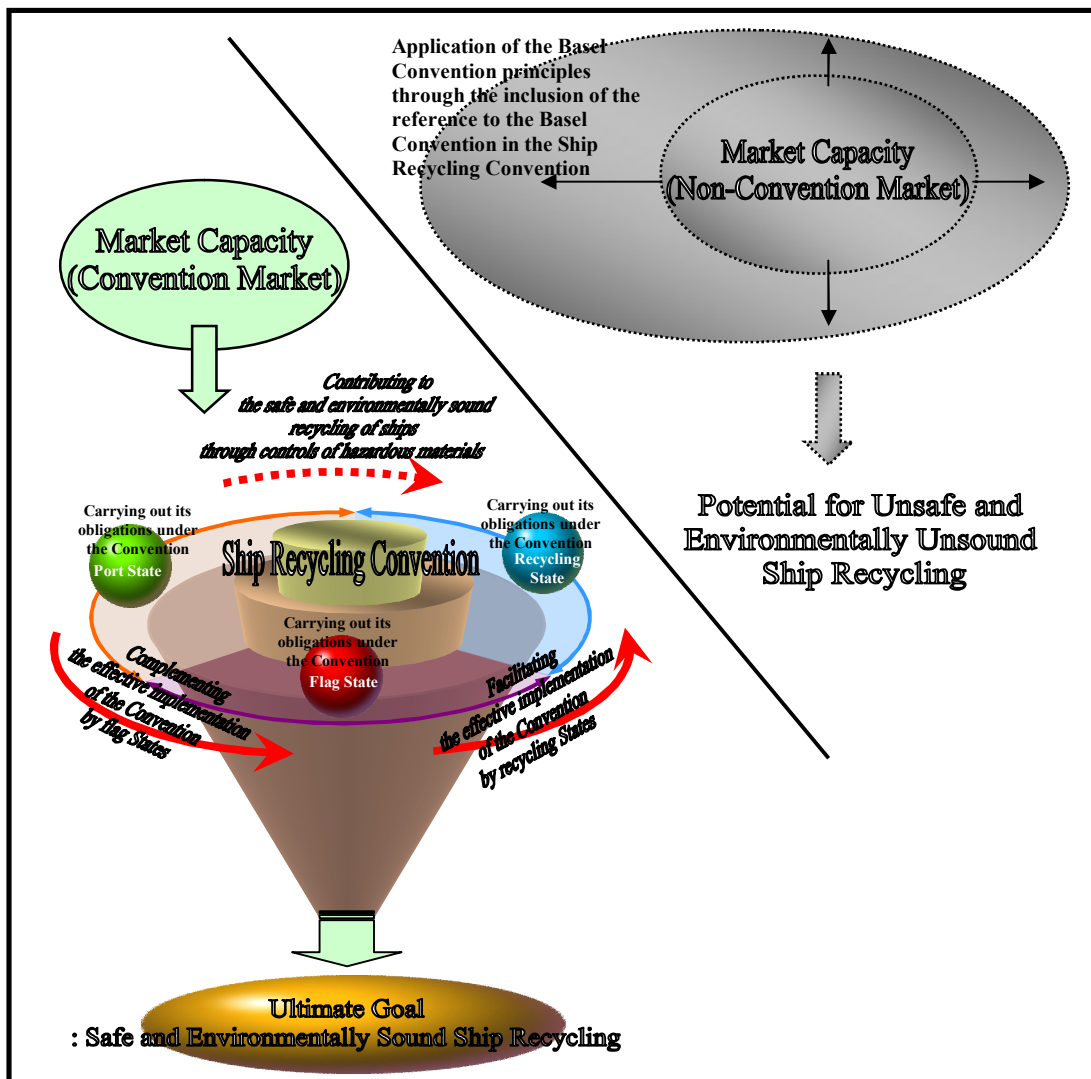
Table 6.1 Estimated costs of effects of ship dismantling in the four scenarios

USD per LDT	Reference scenario, Bangladesh	Pre-cleaning scenario	Full green dismantling, EU	Full green dismantling, Turkey
Pre-cleaning costs	0	-200 - -100	0	0
Towing costs from pre-cleaning to dismantling site	0	-65	0	0
Risk of accident by towing	0	-15	0	0
Ship end-of-life value	380	380	-20 - 130	225
Net revenue from recycling	380	100 - 200	-20 - 130	225
Difference to reference scenario	-	180 - 280	250 - 400	155

(Source: DG ENV, 2007, p.11)

According to Dr. Mikelis, after the entry into force of the Ship Recycling Convention, two distinct recycling markets will be created, one for ships which comply with the Ship Recycling Convention, referred to as "Convention market", and another for ships which do not comply with the Ship Recycling Convention, referred to as "non-

Convention market” (2007, September, conclusion section). If the Basel Convention principles apply to ships under the Ship Recycling Convention through the inclusion of the reference to the Basel Convention, there would be the possibility that some flag States will not want to ratify the Ship Recycling Convention since the strict controls under the Ship Recycling Convention may put more burden on their shipowners and result in the shipowners leaving their flag. As illustrated in Figure 6.2 below, the smaller number of ratifications of the Ship Recycling Convention there are, the bigger the portion of the non-Convention market will be, adding more potential for unsafe and environmentally unsound ship recycling and affecting the effectiveness of the Ship Recycling Convention in achieving its intention of safe and environmentally sound ship recycling.

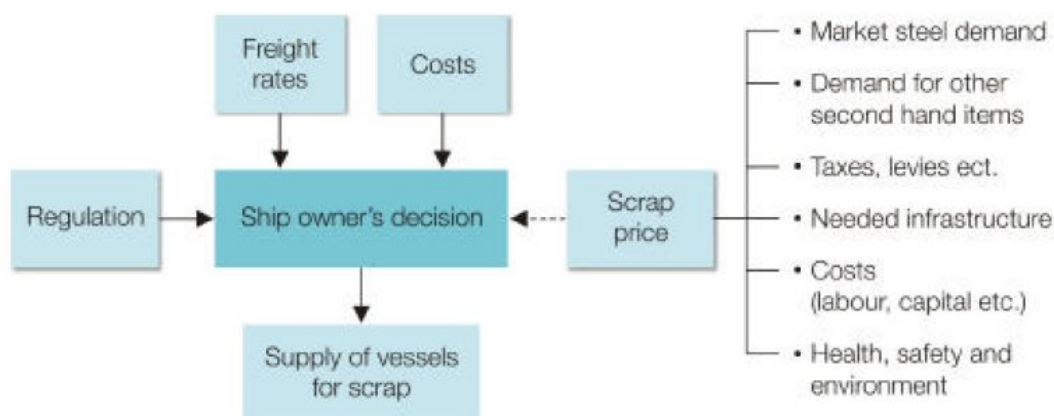


(Source: Author)

Figure 6.2 Convention market and non-Convention market and the effect of the Basel Convention principles

6.2 The shortage of ship recycling capacity

The shipowner's decision to recycle his/her ship consists of key drivers as shown in Figure 6.3 below (European Commission Directorate-General Energy and Transport (DG TREN), 2004, p. 69) which demonstrates how forecasting the recycling volume in the future is a complicated mechanism due to the fact that it depends on so many varying factors.



(Source: DG TREN, 2004, p.69)

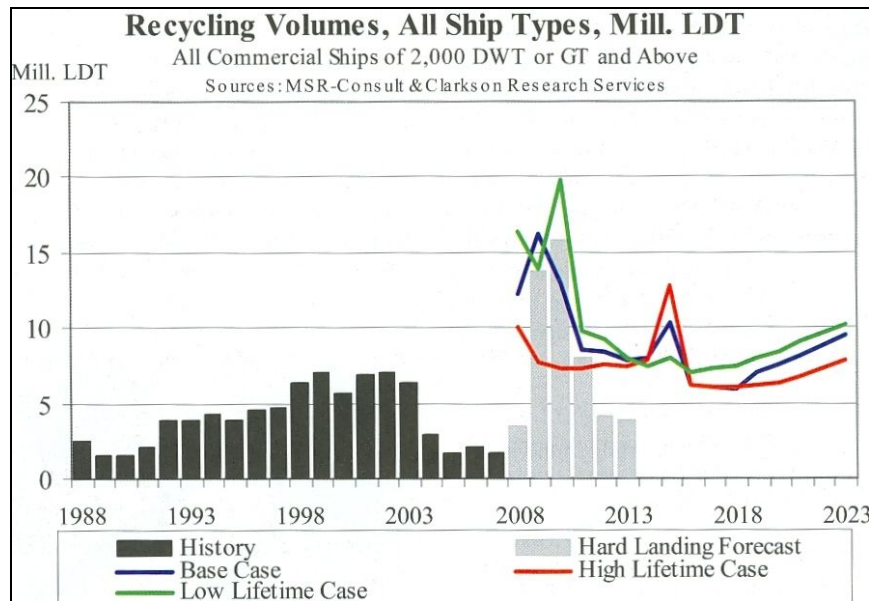
Figure 6.3 Key drivers for the supply of vessels to the ship scrapping industry

With regard to the future recycling volume, Bastiansen provides the expected volumes as seen in Figure 6.4 below using the three cases of trend forecasts of Low Lifetime Case, Base Case and High Lifetime Case⁶⁶. He shows, whatever the case, that there will be a very strong recycling requirement in the order of 15 million Light

⁶⁶ The Base Case is calculated from the life expectancy functions to the age profiles of the current fleet segments using average lifetimes of between 25 and 35 years. In the case of a low lifetime case and a high lifetime case, each have been investigated using, in general, average lifetimes of ± 2.5 years from the base case values.

(http://www.bimco.org/Members%20Area/News/Issues/2007/01/Recycling/Recycling_of_ships_2006-2021.aspx)

Displacement Ton (LDT) per year which considerably surpasses the recycling capacity of 11 million LDT⁶⁷ (2008, p. 81).

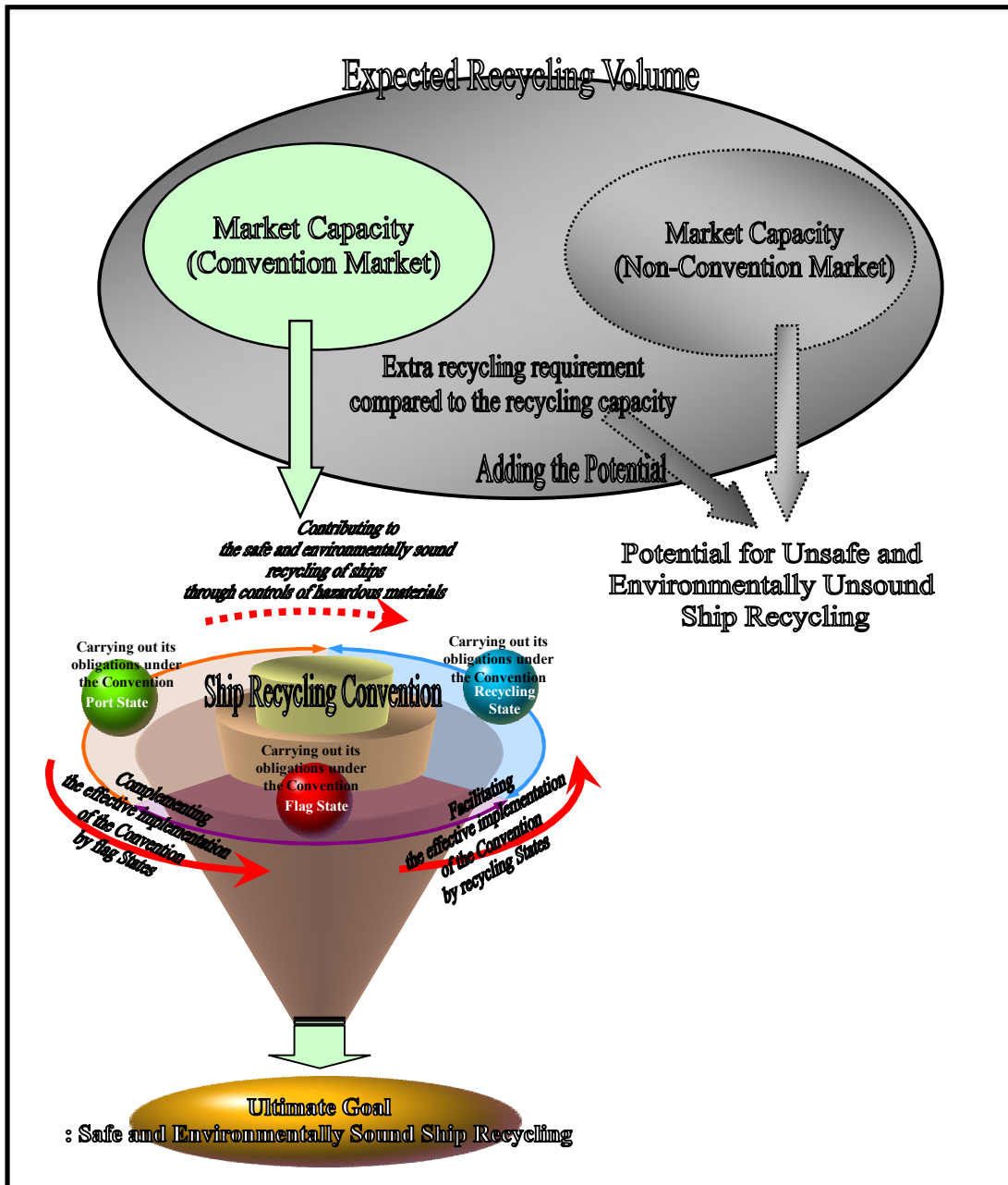


(Source: as cited in Bastiansen, 2008, p.81)

Figure 6.4 Recycling volumes, all ship types, million LDT

In the case of the shortage of recycling capacity as forecast by Bastiansen, even if all the existing recycling capacity operates in a safe and environmentally sound way, nobody would be sure concerning whether the extra 4 million LDT per year will be handled in a safe and environmentally sound way or not. However, one thing which is sure regarding this extra recycling requirement is that it will add more potential to unsafe and environmentally unsound ship recycling in the already split market, as seen in Figure 6.5 below.

⁶⁷ This figure was estimated in a study commissioned by BIMCO (Bastiansen, 2008, p.81).

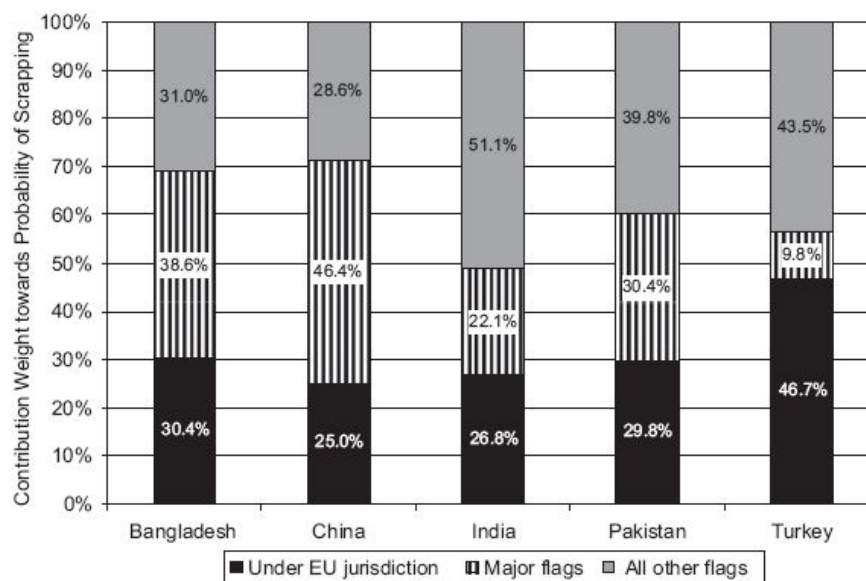


(Source: Author)

Figure 6.5 The shortage of the recycling capacity and its effect on safe and environmentally sound ship recycling

6.3 Non-ratification of major recycling States

The following Figure 6.6 shows the possible impact on major ship recycling States in accordance with the registry⁶⁸ of ships to be recycled (Knapp, Kumar, and Remijn, 2008, p. 12). For example, in the case of Bangladesh, if all ships under EU jurisdiction are not allowed to be sent to Bangladesh for recycling due to the application of the Basel Convention principles, then 30.4 % of the total recycling volume in Bangladesh would be affected.



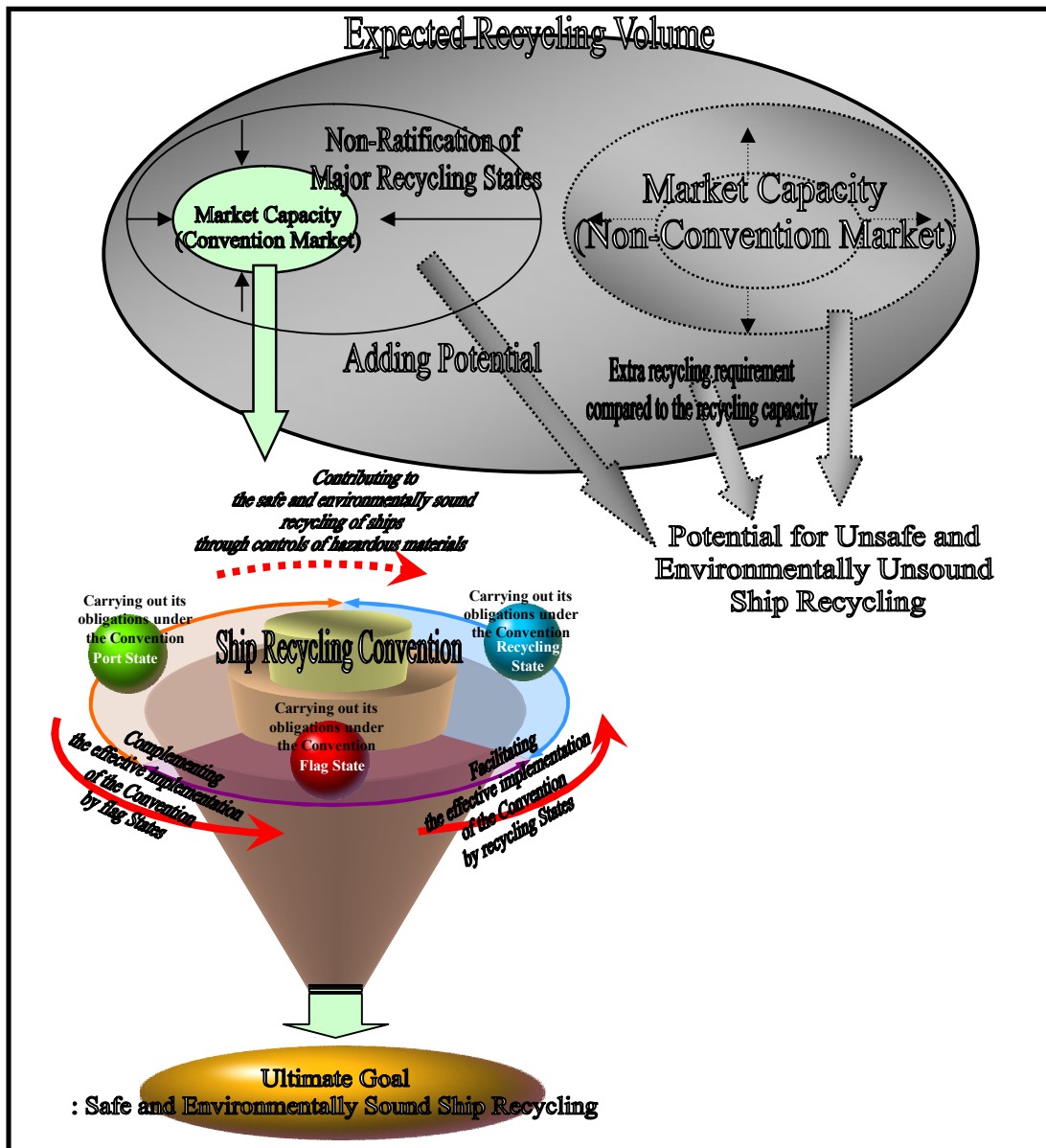
(Source: Knapp et al., 2008, p.12)

Figure 6.6 Probability of scrapping per implied Convention ratification.

From the perspective of recycling States, if Bangladesh does not ratify the Ship Recycling Convention, all the recycling volume of Parties which used to be recycled in Bangladesh would have to be shifted to other recycling States which would ratify the Ship Recycling Convention, reducing the portion of Convention market, since the ships of a Party to the Convention are only allowed to be recycled at Ship Recycling Facilities authorized by the recycling State which is a Party to the Convention. In an

⁶⁸ A category for the EU registries includes Cyprus, Malta, Greece, Germany, the United Kingdom, the Netherlands, Italy, Denmark, Spain, Sweden, France, Romania, Portugal and Madeira, Belgium, Finland, Luxembourg, Poland, Ireland, Bulgaria, Estonia, Latvia, Slovakia, Austria, Czech Republic, Hungary, Slovenia and Norway. The major flag group includes the Bahamas, Panama, Liberia, Singapore and Japan (Knapp et al., 2008, p.12).

extreme case, if all the major recycling States above do not ratify the Ship Recycling Convention, the portion of non-Convention market will be bigger, adding more potential for unsafe and environmentally unsound ship recycling as shown in Figure 6.7 below and affecting the effectiveness of the Ship Recycling Convention in achieving its aim to ensure safe and environmentally sound ship recycling



(Source: Author)

Figure 6.7 Non-ratification of major recycling States and its effect on safe and environmentally sound ship recycling

CHAPTER 7

CONCLUSION

The best way to achieve the safe and environmentally sound recycling of ships could be through the effective implementation of the Convention by flag States, port States and recycling States.

With regard to the role of flag States in ensuring the effective implementation of the Convention, they need to carry out their obligations concerning the survey and certification under the Convention. Taking into account these obligations, they may prepare what has to be done under the Convention. Especially, implications related to policies, resources, processes, delegation of authority, their surveyors in conducting their obligations under the Convention can provide them with insight regarding what is to be prepared. Policies regarding such requirements as survey and certification and control of hazardous materials may need to be implemented and responsibilities to update and revise these policies also to be assigned. In addition, the establishment of processes and resources related to survey and certification and control of hazardous materials may be required together with the issuance of relevant administrative instructions, and these processes and resources needs to be ensured through audit program. Furthermore, while authorizing ROs to act on behalf of the flag States, the adherence to IMO Assembly Resolutions A.739(18) and A.789(19) may be necessary since these resolutions provide the uniform guidelines for the delegation of authority. Lastly, a documented system for the qualification of personnel and the continuous updating of their knowledge relevant to the tasks regarding survey and certification and control of hazardous materials may also be necessary for the flag States' effective implementation.

As for the role of recycling States, they need to carry out their obligations relevant to the authorization of ship recycling facilities. Through discharging the obligations

taking into account the implications for them, the recycling States may ensure the effective implementation of the Convention. Just like the case of the flag States above, the implications regarding policies, resources, processes, delegation of authority and recycling State inspectors may enable the recycling States to prepare what has to be done in implementing the Convention. Policies related to the authorization of ship recycling facilities, including the issue relevant to MARPOL 73/78, may need to be implemented and the relevant processes and resources to be established. In addition, with regard to the delegation of authority to ROs, the recycling States may also need to follow the uniform guidelines for the authorization and specifications on the authorized functions for the delegation of authority, just like Res.A.739(18) and Res.A.789(19) in the case of flag States. However, since those guidelines and specifications do not exist, the new guidelines and specifications for the recycling States are suggested by the author as shown in Appendix 1 and 2 of this dissertation. Furthermore, regarding the qualification of personnel and the continuous updating of their knowledge relevant to the tasks of the authorization of ship recycling facilities, the recycling States may refer to ISO 19011 and 30003 standards since these tasks are more relevant to management system auditing. With regard to recycling State investigations, although the recycling States are not required to carry out the investigations under the Convention, they need to analyze the reports from ship recycling facilities and, if necessary, re-investigate concerned accidents in order to prevent the recurrence of similar accidents in a national context, which may contribute to the safe and environmentally sound recycling of ships.

Concerning the roles of port States, they need to carry out their obligations regarding controls of ships' hazardous materials in their ports or offshore terminals. In addition, they need to establish processes for port State control which incorporate the procedures related to the controls of ships' hazardous materials.

Through flag States, recycling States and port States' carrying out their respective obligations taking into account the implications for them, the effective implementation would be ensured. However, this would not be enough since the cooperation between them is also essential. As shown in Figure 6.1, port States need to complement the implementation of the Convention by flag States through port state control, consequently contributing to the safe and environmentally sound recycling of ships in recycling States. Furthermore, the flag States need to facilitate the implementation of the Convention by the recycling States through survey and certification on their ships.

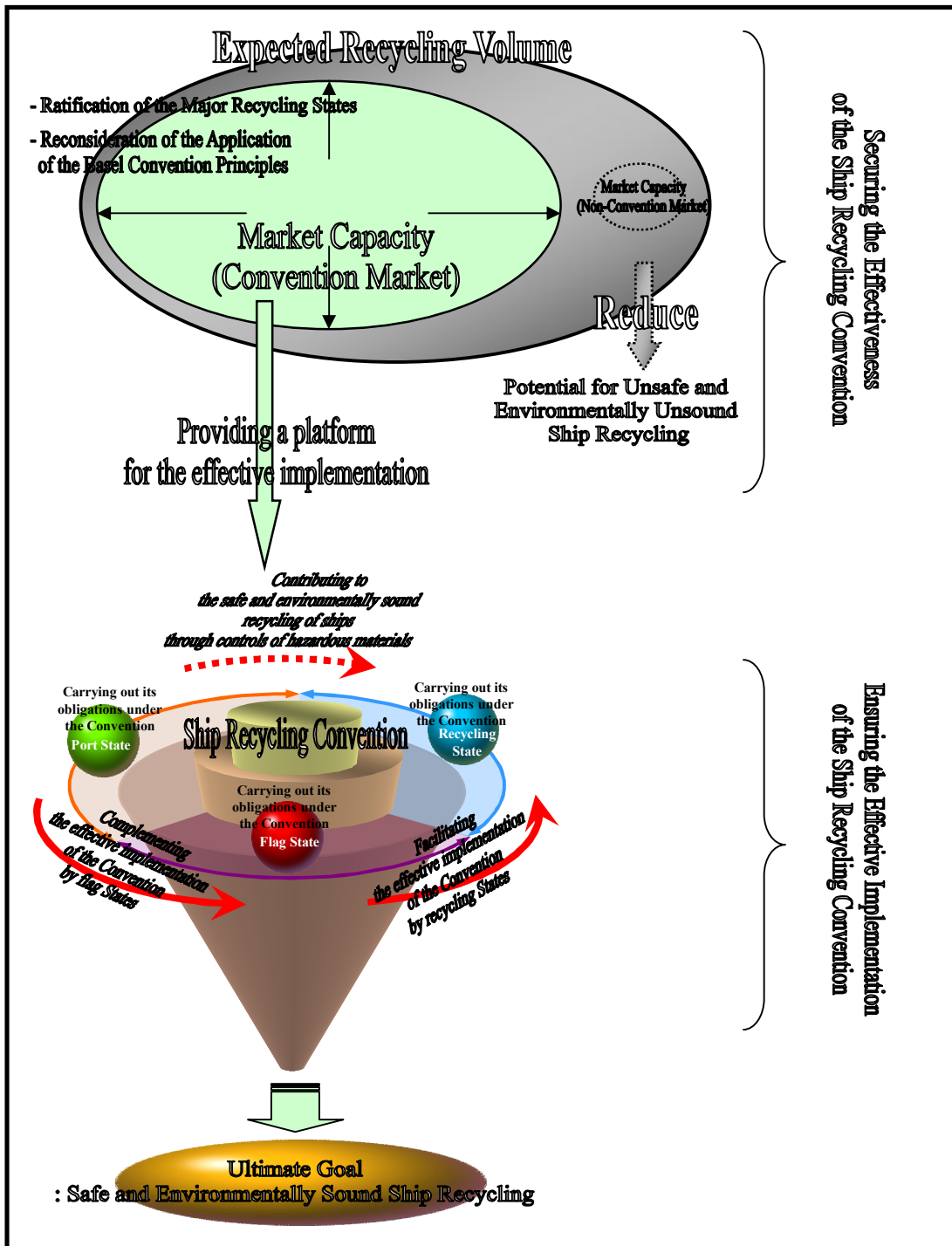
However, in order to accomplish the ultimate goal of the Convention through flag, recycling and port States' playing their roles while cooperating each other, there needs one more important measure which is to secure the effectiveness of the Convention itself. There are factors affecting the effectiveness. The application of the Basel Convention principles to ships destined for recycling under the Ship Recycling Convention would affect, in some way, the flag State's ratification of the Convention, resulting in a bigger portion of the non-Convention market and adding more potential to the unsafe and environmentally unsound recycling of ships as illustrated in Figure 6.2. In addition, the expected shortage of recycling capacity in the coming years would also add to the potential unsafe and environmentally unsound recycling of ships as shown in Figure 6.5. Furthermore, the non-ratification of the major recycling States would increase the portion of the non-Convention market, adding much more potential to the unsafe and environmentally unsound recycling of ships as seen in Figure 6.7 and affecting the effectiveness of the Convention.

In the situation where there is a shortage of recycling capacity compared to the expected recycling volume in coming years, the urgent issue could be to secure the safe and environmentally sound ship recycling capacity, the so-called green recycling capacity, as much as possible. However, due to the fact that major recycling States such as India, Bangladesh, Pakistan and China account for approximately 90% of ship

recycling (Commission of the European Communities, 2007a, p. 8), there does not seem to be enough green recycling capacity around the world now, although some of the recycling facilities in these major recycling States may operate in a safe and environmentally sound way. Therefore, the roles of these existing major recycling States are very important in securing enough green recycling capacity and in achieving the ultimate goal of the Ship Recycling Convention. Recognizing the significance of the major recycling States, it has also been proposed at IMO that priority should be given to the ratification of the Ship Recycling Convention by the existing recycling States in addition to the countries with maritime interests (IMO, 2007, April 6a, p. 2). Once they ratify and implement the Ship Recycling Convention, then they will have to improve the recycling facilities under their jurisdiction in accordance with the requirements of the Convention.

With regard to the application of the Basel Convention principles to ships destined for recycling, the idea is reasonable and will, for sure, improve the safety of workers in recycling yards as well as the protection of the environment. However, from a long-term perspective, the safety and environment regulations could be desirable only once an economically viable solution is in place. If not provided with an economically viable solution, the regulation might cause more serious environmental and economic problems (Finn, 2005, April, conclusion section). As shown in Table 6.1, economic considerations may lead shipowners to change a ship's flag to another flag State which applies less strict requirements. Such behaviour may lead to some flag States hesitating to ratify the Ship Recycling Convention, resulting in a larger portion of the non-Convention market and consequently affecting the effectiveness of the Ship Recycling Convention. Therefore, the application of the Basel Convention principles to ships destined for recycling under the Ship Recycling Convention needs to be reconsidered taking into account the economically viable solution.

In conclusion, as illustrated in Figure 7.1 below, the ratification of the Convention by the major recycling States and reconsideration of the application of the Basel Convention principles may increase the portion of the Convention market, reducing the potential for the unsafe and environmentally unsound recycling of ships. However, these two measures identified by the author may not be enough to secure the effectiveness of the Convention and further researches would be required to identify more necessary measures. Once the effectiveness of the Convention is secured through the necessary measures and provides a platform for its effective implementation by flag States, recycling States and port States, then the ultimate goal of the Convention, the safe and environmentally sound recycling of ships, may be achieved.



(Source: Author)

Figure 7.1 Achievement of ultimate goal through securing the effectiveness and ensuring the effective implementation of the Ship Recycling Convention

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APPENDICES

APPENDIX 1

Guidelines for the authorization of ROs acting on behalf of recycling States⁶⁹

GENERAL

1. Under the provisions of regulation 17.2 of the International Convention for the Safe and Environmentally Sound Recycling of Ships, hereinafter referred to as “the Convention”, recycling States authorize organizations to act on their behalf in the authorization of the ship recycling facilities as required by the Convention.

2. Control in the assignment of such authority is needed in order to promote uniformity of inspections and maintain established standards. Therefore, any assignment of authority to recognized organizations, hereinafter referred to as “ROs”, should;

- .1 determine that the organization has adequate resources in terms of technical, managerial and research capabilities to accomplish the tasks being assigned, in accordance with the “Minimum standards for recognized organizations acting on behalf of the competent authority” set out in appendix I;
- .2 have a formal written agreement between the competent authority and the organization being authorized which should as a minimum include the elements as set out in appendix II or equivalent legal arrangements;
- .3 specify instructions detailing actions to be followed in the event that a ship recycling facility is found not fit to operate in a safe and environmentally sound way, or presenting unreasonable threat of harm to the occupational

⁶⁹ This Guideline is drawn up by the author mainly based on IMO Assembly Resolution A.739(18) “Guidelines for the authorization of organizations acting on behalf of the Administration”. In addition, the relevant contents of Reg.16 to 24 of the Convention and the draft Guidelines for authorization of ship recycling facilities contained in Annex 6 of MEPC-ISRWG 2/2 are also referred to in drawing up this Guideline.

safety, human health or the environment;

- .4 provide the organization with all appropriate instruments of national law giving effect to the provisions of the Convention or specify whether the competent authority's standards go beyond the requirements of the Convention in any respect; and
- .5 specify that the organization maintains records which can provide the competent authority with data to assist in interpretation of the regulations of the Convention.

VERIFICATION AND MONITORING

3. The competent authority should establish a system to ensure the adequacy of work performed by the organizations authorized to act on its behalf. Such a system should, inter alia, include the following items:

- .1 Procedures for communication with the organization
- .2 Procedures for reporting from the organization and processing of reports by the competent authority
- .3 Additional ship recycling facility inspections by the competent authority
- .4 The competent authority's evaluation/acceptance of the certification of the organization's quality system by an independent body of auditors recognized by the competent authority

Appendix I – Minimum standards for recognized organizations acting on behalf of the competent authority

An organization may be recognized by the competent authority to perform statutory work on its behalf subject to compliance with the following minimum condition for which the organization should submit complete information and substantiation.

General

1. The relative size, structure, experience and capability of the organization commensurate with the type and degree of authority intended to be delegated thereto should be demonstrated.
2. The organization should be able to document extensive experience in assessing the safety and environment management systems.

Specific provisions

3. For the purpose of delegating authority to perform the ship-recycling-facility-authorization services of a statutory nature in accordance with the Convention which requires the ability to assess documentations relevant to recycling facility management plan, prevention of adverse effects to human health and the environment, safe and environmentally sound management of hazardous materials, emergency preparedness and response and worker safety and training and to conduct site inspections to validate the consistency between documentation and the actual arrangement, the following should apply:

- .1 The organization should provide for and apply proper procedures to assess the degree of compliance of the safety management system, health management system, waste management system, emergency preparedness and response management system and environment management system of the ship recycling facility, hereinafter referred to as “the ship recycling facility’s management systems”, for the purpose of the authorization of the ship recycling facility;

- .2 The organization should provide for the publication and systematic maintenance of the procedures of the above subparagraph .1, hereinafter referred to as “the procedures”, in the language accepted by the competent authority, and if the language used is neither English, French nor Spanish, the text should include a translation into one of these languages. In addition, it should provide for adequate research capability to ensure appropriate updating of the published criteria;
- .3 The organization should allow participation in the development of the procedures by representatives of the competent authority and other parties concerned;
- .4 The organization should be established with a significant technical, managerial and support staff, catering also for capability of developing and maintaining the procedures;
- .5 The organization should be governed by the principles of ethical behavior, which should be contained in a Code of Ethics and as such recognize the inherent responsibility associated with a delegation of authority to include assurance as to the adequate performance of services as well as the confidentiality or related information as appropriate;
- .6 The organization should demonstrate the technical, administrative and managerial competence and capacity to ensure the provision of quality services in a timely fashion;
- .7 The organization should be prepared to provide relevant information for the competent authority;
- .8 The organization's management should define and document its policy and objectives for, and commitment to, quality and ensure that this policy is understood, implemented and maintained at all levels in the organization;
- .9 The organization should develop, implement and maintain an effective internal quality system based on appropriate parts of internationally recognized quality standards no less effective than ISO 9000 series, and which, inter alia, ensures

that:

- .9.1 the organization's procedures are established and maintained in a systematic manner;
 - .9.2 the organization's procedures are complied with;
 - .9.3 the requirements of the statutory work for which the organization is authorized, are satisfied;
 - .9.4 the responsibilities, authorities and interrelation of personnel whose work affects the quality of the organization's services are defined and documented;
 - .9.5 all work is carried out under controlled conditions;
 - .9.6 a supervisory system is in place which monitors the actions and work carried out by the organization;
 - .9.7 a system for qualification of inspectors and continuous updating of their knowledge is implemented. In particular, a systematic training and qualification regime for its professional personnel engaged in the process of the authorization of the ship recycling facility should be maintained to ensure proficiency in the ship recycling facility management systems' criteria as well as adequate knowledge of the technical and operational aspects of the systems;
 - .9.8 records are maintained, demonstrating achievement of the required standards in the items covered by the services performed as well as the effective operation of the quality system; and
 - .9.9 a comprehensive system of planned and documented internal audits of the quality-related activities in all locations is implemented.
- .10 The organization should be subject to certification of its quality system by an independent body of auditors recognized by the competent authority.

Appendix II - Elements to be included in an agreement

A formal written agreement or equivalent between the competent authority and the recognized organization should, as minimum, cover the following items:

- 1 Application
- 2 Purpose
- 3 General conditions
- 4 The execution of functions under authorization
 - .1 Functions in accordance with the general authorization
 - .2 Functions in accordance with special (additional) authorization
 - .3 Relationship between the organization's statutory and other related activities
- 5 Legal basis of the functions under authorization
 - .1 Acts, regulations and supplementary provisions
 - .2 Interpretations
 - .3 Deviations and equivalent solutions
- 6 Reporting to the competent authority
 - .1 Procedures for reporting in the case of general authorization
 - .2 Procedures for reporting in the case of special authorization
 - .3 Reporting on authorization of the ship recycling facility (the issuance, withdrawal, suspension, amendment and renewal of the Document of Authorization to conduct Ship Recycling (DASR)), as applicable
 - .4 Reporting of cases where a ship recycling facility is found not fit to operate in a safe and environmentally sound way, or presenting unreasonable threat of harm to the occupational safety, human health or the environment;
 - .5 Other reporting
- 7 Development of rules and/or regulations - Information
 - .1 Co-operation in connection with development of the procedures for the ship recycling facility authorization– liaison meetings
 - .2 Exchange of the procedures and information

- .3 Language and form
- 8 Other conditions
 - .1 Remuneration
 - .2 Rules for administrative proceedings
 - .3 Confidentiality
 - .4 Liability
 - .5 Financial responsibility
 - .6 Entry into force
 - .7 Termination
 - .8 Breach of agreement
 - .9 Settlement of disputes
 - .10 Use of sub-contractors
 - .11 Issue of the agreement
 - .12 Amendments
- 9 Specification of the authorization from the competent authority to the organization
 - .1 Ship recycling facility capacities
 - .2 The Convention and other instruments, including relevant national legislation
 - .3 Verification of documentation
 - .4 Site inspection
 - .5 Issuance of DASR
 - .7 Corrective actions
 - .8 Withdrawal of DASR
 - .9 Reporting
- 10 The competent authority's supervision of duties delegated to the organization
 - .1 Documentation of quality assurance system
 - .2 Access to internal instructions, circulars and guidelines
 - .3 Access by the competent authority to the organization's documentation relevant to the ship recycling facilities under its jurisdiction
 - .4 Co-operation with the competent authority's inspection and verification work

.5 Provision of information and statistics on, e.g. any accident, incident, occupational diseases, or chronic effects causing, or with the potential of causing, risks to workers' safety, human health and the environment relevant to the ship recycling facilities under its jurisdiction

APPENDIX 2

Specifications on the ship-recycling-facility-authorization functions of ROs acting on behalf of recycling States⁷⁰

This document contains minimum specifications for organizations recognized as capable of performing statutory work on behalf of the competent authority of a recycling State in terms of the ship-recycling-facility-authorization functions connected with the issuance of the Document of Authorization to conduct Ship Recycling (DASR).

AREAS OF INTEREST COVERED BY ELEMENTARY MODULES

- 1 Management
- 2 Documentation verification
- 3 Site inspection
- 4 Qualifications and training

1 MANAGEMENT

Module 1A: Management functions

The management of the Recognized Organization (RO) should have the competence, capability and capacity to organize, manage and control the performance of the ship-recycling-facility-authorization functions in order to verify compliance with requirements relevant to the tasks delegated and should, inter alia:

- possess an adequate number of competent supervisory, documentation verification and inspection personnel;

⁷⁰ This Specification is devised by the author mainly based on IMO Assembly Resolution A.789(19) “Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration”. In addition, the relevant contents of Reg.16 to 24 of the Convention, the draft Guidelines for authorization of ship recycling facilities contained in Annex 6 of MEPC-ISRWG 2/2, the draft Guidelines for Safe and Environmentally Sound Ship Recycling in MEPC 56/3/4 and 56/3/5, and ISO/PAS 30003:2008 are also referred to in devising this Specification.

- provide for the development and maintenance of appropriate procedures and instructions;
- provide for the maintenance of up-to-date documentation on interpretation of the relevant instruments;
- give technical and administrative support to field staff;
- provide for the review of inspection reports and provision of experience feedback.

2 DOCUMENTATION VERIFICATION

Module 2A: Recycling Facility Management Plan

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentations pertaining to:

- recycling facility management plan including the detailed drawings of the facility and associated areas of which it disposes;
- Environmentally Sound Management (ESM)

Module 2B: Procedures for prevention of adverse effects to human health and the environment

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentations pertaining to:

- the procedure for “gas-free-for-hot-work”;
- the procedure for prevention against hazardous materials to human;
- the procedure for prevention of slip and fall accidents;
- the procedure for prevention against dropping of objects, and
- the procedures for prevention of human health and/or the environment against spillage of hazardous materials

Module 2C: Procedures for safe and environmentally sound management of hazardous materials

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentations pertaining to:

- the procedure for identification, labeling, package, and removal of hazardous materials; and
- the management plan for all hazardous materials and waste

Module 2D: Emergency preparedness and response plan

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentation pertaining to:

- emergency response equipment and procedures for its usage, the chain of command in the emergency, and the response to human injuries and environmental accidents.

Module 2E: Measures for worker safety and training

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentation pertaining to:

- measures for worker safety and training including training program

Module 2F: Procedure for reporting on incidents, accidents, occupational disease and chronic effects

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentation pertaining to:

- the procedure for reporting on incidents, accidents, occupational disease and chronic effects

Module 2G: Information regarding capacity of the ship recycling facility

The RO should have the appropriate competence, capability and capacity to perform the verification of the following documentations pertaining to:

- specification of capacity and capability reflecting ships' size (tonnage, length, beam and draft) as well as type;
- specification of capacity and capability of waste stream management including potentially hazardous materials; and
- facilities for lifting, cutting, pumping, transportation and storage;

3 SITE INSPECTION

Module 3A: Inspection functions

The RO should have the appropriate competence, capability and capacity to perform the required site inspection under controlled conditions as per the RO's internal quality system to validate the consistency between the documentation and the actual arrangements in place at the ship recycling facility.

4 QUALIFICATIONS AND TRAINING

Module 4A: General qualifications

RO personnel performing, and responsible for, statutory work should have as a minimum the following formal education and work experience:

- education: qualifications from a tertiary institution recognized by the RO;
- total work experience: 5 years;
- relevant work experience in ship recycling: at least 2 years of the total 5 years, or training that satisfies the requirements set by the RO;

Other personnel assisting in the performance of statutory work should have education, training and supervision commensurate with the tasks they are authorized to perform.

The RO should have implemented a documented system for qualification of personnel and continuous updating of their knowledge as appropriate to the tasks they are authorized to undertake. This system should comprise appropriate training courses, including, inter alia, international instruments and appropriate procedures related to the certification process, as well as practical tutored training. It should provide documented evidence of satisfactory completion of the training.

**SPECIFICATIONS PERTAINING TO DOCUMENT OF AUTHORIZATION
TO CONDUCT SHIP RECYCLING (DASR)**

1 Module Nos. 1A, 2A, 2B, 2C, 2D, 2E, 2F, 2G, 3A and 4A apply.

2 For this certification the system should cover practical tutored training on the following issues as appropriate for documentation verification staffs and site inspector respectively:

- Documentation verification staffs: the Ship Recycling Convention, Chapter 3, as amended
- Site inspectors: the Ship Recycling Convention, Chapter 3, as amended.