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Influence and countermeasures of the Hong Kong Convention in China

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INFLUENCE AND COUNTERMEASURES OF THE HONGKONG CONVENTION IN CHINA

By

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DECLARATION

I certify that all the material in this research paper 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 research paper reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of the research paper: **Influence and Countermeasures of the Hong Kong Convention in China**

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The Ship-breaking industry can also be referred to as the ship-recycling industry, which is accompanied by the process of using of the ship, retired and scrapped. After the industrial revolution, with the application of a steam engine and a steel ship, scrapping also emerge as the times require. The ship-recycling is activities that reduce waste pollution to the environment and repeat use of resources and products. The international ship-breaking industry is known as the "ship recycling industry", which is the resource environmental protection industry.

The objective of this study is to analyze the basic situation of Chinese ship-breaking industry and other countries' ship-breaking industry in the world, which help China to find out the problems that existing in ship-breaking industry. Especially since the entry into force of the Hong Kong convention, China faces legal and technical problems and the performance problem of authorities. This convention will play a positive role for the sustainable development of ship recycling industry. However, the Convention had brought great influences on every relative aspect. This involves the shipyard, the competent authority, ship manufacturing, environmental protection departments and other related departments. The author puts forward countermeasures on the basis of comprehensive analysis and combined with the actual case. These countermeasures may effectively promote the ship recycling industry follow the international pace.

Key Words: Ship recycling, Ship-breaking, Environmental protection, HK Convention

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LIST OF ABBREVIATIONS

BIMCO	Baltic and International Maritime Council
CCS	Chinese Classification Society
CNSA	China National Ship Recycling Association
EU	Europe Union
GIO	Greenpeace International Organizations
GL	Germanischer Lloyd
EEDI	Energy Efficiency Design Index
HK	Hong Kong
IACS	International Association of Classification Societies
ICIHM	International Certificate of Inventory of Hazardous Materials
IHM	Inventory of Hazardous Materials
ILO	International Labour Organization
IMO	International Maritime Organization
ISO	International Standardization Organization
LDT	Light Deadweight
MD	Material Declaration
MEPC	Marine Environment Protection Committee
MSA	Maritime Safety Administration
PSC	Port State Control
PSCO	Port State Control Officer
R&D	Research and Development
SDOC	Supplier's Declaration of Conformity
VAT	Value Added Tax

Chapter1 Introduction

1.1 Background

The Ship-breaking industry can also be referred to as the ship-recycling industry, which is accompanied by the process of using of the ship, retired and scrapped. After the industrial revolution, with the application of a steam engine and a steel ship, scrapping also emerge as the times require. The ship-recycling is activities that reduce waste pollution to the environment and repeat use of resources and products. The international ship-breaking industry is known as the “ship recycling industry”, which is the resource environmental protection industry.

On the one hand, ship-recycling can provide services for the disposal of the owner, the ship owner can also scrap these vessels that reached or soon reached their service life according to their own situation. It is clearly that the ship owner can adjust their ownership flexibly. On the other hand, the hulk is internationally recognized as carrying tools because of its higher yield and simple using procedures. After the dismantling of the hulk, iron and steel can be used directly or further steelmaking. This activity omission of smelting, mining, transportation and other exploration program in the process of transforming the iron ore in steel. Ship-breaking industry got profits and make up for the shortage of resources by providing the reuse of scrap iron and steel. At the same time, it can provide a large number of employment opportunities of shipping. Therefore, the development of ship-breaking industry has positive significance for China at this stage. Because of the characteristics of ship

breaking industry, making it very attractive for the development countries. Since late twentieth century, Ship-breaking mainly concentrated in the Asian region. The main ship-breaking countries are India, China, Bangladesh, Pakistan and Turkey. (Yu, 2009, pp.104-109)

There is some regularity in the process of rise and down between the ship-recycling industry and shipping industry. Take the year 2012 as an example. The global ship-breaking market is unprecedented heat and total dismantling made a new record in 2012. There are total of 57,500,000 tons of old ships were dismantled, which had an increase of 34.9% over 2011. Furthermore, this figure is the average dismantling capacity of 19,500,000 deadweight tons 195% higher than that in 2005. Chinese has been one of the world's top three ship-breaking countries, whose scrapping volume is more than 1/5 of the global volume. Chinese demolitions were around 330 ships in 2012. CBIW released the "2013-2018 Chinese ship-breaking industry analysis and investment consulting report" pointed out that China had clearly put forward the construction of a resource-saving and environment-friendly society, which emphasis on developing circular economy and improve the recycling system of recycling resources. This is aiming on promoting industrial circulating combination and building links circulation industry system. Shipping is an important part of the development of circular economy in china. According to the requirements of the State Council, the next five-year-plan will become the realization of standardized development of ship-recycling industry, which is the key period of the implementation of fixed dismantling. At the same time, with the gradually development of ship-breaking industry in the world, China ship-breaking industry will show a steady development trend. (CBIW, 2012)

1.2 Objective of the study

The objective of this study is to analyze the basic situation of Chinese ship-breaking industry and other countries' ship-breaking industry in the world, which help China to

find out the problems that existing in ship-breaking industry. Especially since the entry into force of the Hong Kong convention, China faces legal and technical problems and the performance problem of authorities. This convention will play a positive role for the sustainable development of ship recycling industry. (Lv, 2010, p.67) However, the Convention had brought great influences on every relative aspect. This involves the shipyard, the competent authority, ship manufacturing, environmental protection departments and other related departments. The author puts forward countermeasures on the basis of comprehensive analysis and combined with the actual case. These countermeasures may effectively promote the ship recycling industry follow the international pace.

Chapter2 The Situation of Ship-breaking Industry

Global ship-breaking companies so far mainly concentrated in Bangladesh, India, China and Pakistan. The average annual gross tonnage of ship-breaking of these four Asian countries account for 85% (Wu, 2008, p.21) of that in the world. There are as well as some ship-breaking companies built in Turkey that located at the junction of the Mediterranean region and Eurasian.

Table 1: Top 10 ship-scraping nations in the world, 2010

Country	Scrapped amount, dwt	Accumulated market share, as a percentage	Number of ships scrapped	Rank	Scrapped ships, percentage of total volume				
					Bulk carriers	Dry cargo / passenger	Offshore	Tankers	Others
India	9 287 775	32.4	451	1	9.7	32.8	5.3	46.2	5.9
Bangladesh	6 839 207	56.3	110	2	15.1	5.5	5.7	71.1	2.5
China	5 769 227	76.5	189	3	46.6	36.3	2.5	12.2	2.4
Pakistan	5 100 606	94.3	111	4	8.1	2.9	6.2	80.6	2.2
Turkey	1 082 446	98.1	226	5	24.3	48.7	0.2	14.1	12.8
United States	217 980	98.8	15	6	0.0	19.9	0.0	80.1	0.0
Romania	16 064	98.9	4	7	0.0	100.0	0.0	0.0	0.0
Denmark	15 802	98.9	25	8	0.0	53.4	22.7	0.0	23.9
Japan	13 684	99.0	1	9	0.0	100.0	0.0	0.0	0.0
Belgium	8 807	99.0	12	10	0.0	100.0	0.0	0.0	0.0
World	28 637 092	100.0	1 324		18.6	22.7	4.7	50.0	4.1

(Source: YPSA, 2011)

2.1 Background of ship-breaking industry in China

China has organized scrapping activities since 1960s (Zhu, 2009, p.73). The State Council accelerated the construction of resource-saving society, in order to improve

the efficiency of resource utilization and the development of circular economy. These measures would promote sustainable economic and social development. The sustainable development of ship-recycling industry accords with China's basic national conditions. Because of China's relative shortage of resources, make full use of renewable resources and conservation of native resources are important strategic measures for the realization of sustainable development. China's long coastline, beaches, moderate climate, water conditions are very good are suitable for the development of ship-recycling industry. Since 1982(Zhu, 2009, p.73), China's ship-breaking industry developed rapidly due to the country's strict management guidance and support. At present, China is one of the major ship-breaking countries in the world and initially formed two dismantling bases in the Yangtze River Delta, Pearl River Delta. (Liu, 2011, p. 45)

2.2 The development of ship-breaking industry in China in recent years

In 2011, the total ship dismantling of member companies of China National Ship-recycling Association (CNSA), whether the number or tonnage of ships, are more than that in 2010. The annual total dismantling all kinds of domestic and foreign waste ship is more than 220 million light displacement tons, which increase nearly 20 percent than that in 2010. The ship-breaking industry in China has made a good start in stage of the 12^{th} five-year-plan. In 2012 the global shipbuilding orders is 45,500,000 deadweight tons, while the global aging ship dismantling scale is 57,500,000 tons (around 1226 vessels). The later exceeds 34.6% over the former. In 2012, China ship-breaking enterprises recycled and dismantled a lot of waste ships under the condition of downturn domestic steel market and negative economic benefits growth. The ship-recycling industry has made positive efforts accord with the country to speed up the old ship out, promote the adjustment and revitalization of shipping and recycling of resources. In 2012, an amount of waste ship purchase of main domestic ship-breaking enterprises growth 1.15 times. In 2013, member companies of CNSA dismantled waste ships reached a total of more than 2,500,000

light displacement tons, which growth than the last year. Among them, the import of scrap ship tonnage decline nearly 10% compared with 2012. In 2013, the domestic ship owner and shipping companies accelerated the pace of eliminating and updating old ships. Therefore, the number of domestic scrap ship dismantling and turnover increased significantly, which had an increase of nearly 2 times higher than that in 2012. According to the International Maritime Organization (IMO) statistics, from 2004 to 2013, the global ship-breaking activity of the country has nearly 80, a total of about 37,450,000 tons of the total dismantling. Among them, India, Bangladesh, Pakistan, Turkey and China account for over 95 percent of the total dismantling volume. According to incomplete statistics, in 2014, India, Bangladesh, Pakistan, Turkey and Chinese total demolition of 8,450,000 light displacement tons, decrease 16.9% than that in 2013. Among these countries, India is ranking first in the world with its dismantling close to 2,100,000 light displacement tons. Other countries in the orders are China, Bangladesh, Pakistan and Turkey. (CNSA, 2012-2014)

2.3 Brief introduction of main ship-recycling countries

2.3.1 India

The ship-breaking yard namely Alang is located in the Saurashtra region of Gujarat off the Gulf of Cambay, which was built in 1983 on a small scale along a 10km stretch of sandy beach. The tidal, geographical, and climatic features make Alang a suitable ship-recycling place. This yard has the best continental shelf available for ship-recycling in the whole range of Asia. At the same time, it is known for the highest tidal level (around 10 meters) in the country. The great expanse of intertidal zone exposed during ebb (low) tide that makes it convenient for ship-recycling operation. At the other hand, the high tide makes it possible to accommodate big size ships. According to the statistics of Gujarat Maritime Board, a total of 415 ships were dismantled at the Alang facility, averaging 38.6 million tones

of light displacement ton (LDT) against 28.2 million tones LDT in 2010-11. (YPSA, 2015)

2.3.2 Bangladesh

The ship-recycling industry started its activities in the 1960s (Liu, 2010, p.29) when a Greek ship "MD Alpine" was stranded on the shores of Sitakund, Chittagong after a severe cyclone. The ship stayed there for a long time before the Chittagong Steel House brought the ship and dismantle it. The ship-breaking industry flourished during the 1980s (Liu, 2010, p.29). Today it has become large and profitable industry for Bangladesh.

2.3.3 Pakistan

Pakistan is located in the northwest of the South Asian subcontinent, south of the sea of Arabia, east of India, northeast adjacent Chinese, northwest border with Afghanistan, west of Iran. Pakistan has 980 km long coastline which is a natural geographical advantage for scrapping. The cost of Pakistan GADANI ship factory is very low due to its simple mechanical equipment. It is the world's most dangerous work for ship-breaking. However, even for such dangerous work, the daily salary is only $4. There is a big difference compared with the wages of Chinese workers. In addition, ship-recycling industry now advocate green dismantling more and more, which dismantle ships in dry dock. However, Pakistan take foreshore style to dismantle ships and the national policy of environmental protection supervision is not very strict. The numbers of toxic vessels enter Pakistan are increasing. Some time ago Pakistan gave a higher price on tankers and cargo ships demolition than the India 5-10 dollars, which is about 455-485 dollars per long ton. This situation makes a lot of the ship in India have gone to Pakistan. (All4ship, 2014)

Chapter3 Hong Kong Convention and Related Domestic Legislation

3.1 Hong Kong Convention

Through the joint efforts of the International Maritime Organization and the shipping industry for three years, “Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships 2009” (HK Convention) has been passed in Hong Kong in May 15, 2009 IMO conference, which marked the formation of international standard of shipping industry.

3.1.1 Background of the Hong Kong Convention

With the rapid development of world economy, nearly half a century, the international shipping industry has been booming. The number of global ships increased dramatically. However, each vessel has certain service life. The total ship is certainly related to the amount of shipbuilding. Once a person said ship-breaking industry is the most dirty work in the world. It is also known as the ship-breaking industry is the most dangerous industry. But due to the dismantling of the hulk we can recover a large amount of steel and nonferrous metals and machinery and equipment. The ship-breaking industry is a sustainable development industry. , using a resource processing industry. It is also known as the “smokeless” metallurgical industry. Environmental scrapping can not only bring economic benefits to the enterprise, but also has great social benefits. But different from the rapid development of

ship-building industry and shipping industry, the ship-breaking industry develops slowly both in terms of scale and technological progress.

Furthermore, developed countries or regions accumulated technology and management experience in the ship-breaking industry and did not transfer it to developing countries and regions. In the early time of the development of ship-breaking industry, the places with transferred ship-breaking industry had generally backward technology, lack of staff in relevant environmental legislation and environmental protection equipment. On the other hand, these areas tend to have strong demand for old equipment, scrap steel, abundant labor and low price, the national environmental and safety management is weak, these regions showed a high competitiveness of ship breaking situation.(Zhu, 2009, p.70)

At the same time, safety, health and environmental problems in the operation of ship-breaking have aroused widespread concern in the international community. In recent years, the international maritime organization (IMO), the International Labor Organization (ILO), the Basel Convention and Greenpeace International Organizations (GIO) and countries around the world have attached great importance to the ship-breaking industry. (Zhu, 2009, p.70) They have developed guidelines for their ships to promote safety, health protection and environmental protection work in the ship. The basic situations are as follows:

(1) In December 13, 2002, the meeting of States parties of the Basel Convention on the sixth session of the General Assembly resolution VI/24 (Liu, 2011, p.32) adopted the “Technical Guidelines for the Environmentally Sound Management of the Whole Ship and Part of Dismantling”.

(2) In December 5, 2003, the IMO twenty-third conference in A.962 (23), the resolution of the General Assembly passed “IMO Guideline for Scrapping”.

(3) In 2004 March, the 289th session of the International Labor Organization signed the "Safety and Health in the Ship-breaking Industry: Asian countries and Turkey for Scrapping". (Zhu, 2009, p.70)

The International Maritime Organization (IMO) and the International Labor Organization (ILO) and the Basel Convention launched a long-term cooperation. IMO decided to develop a mandatory standard based on the above three sets of guidelines to solve the comprehensive safety and environmental protection problems in the operation of ship-breaking.

3.1.2 The formation of Hong Kong convention

Starting from MEPC47, IMO consider making a suggestive guideline in international range, which refer to the "rules of operation, the ship-breaking industry" of International Association of Classification Societies (IACS), the requirements of ILO and the Basel Convention on conditions of labor workers for scrapping.

MEPC49 completed the formulation of IMO guidelines for scrapping, which adopted by a resolution of the guidelines A.962 (23) in the 2003 December meeting. In 2005 July MEPC53, the committee agreed to take ship-breaking as a priority issue. A new mandatory Convention developed by IMO, which provides the legal and technical standards for the new international range of ship-breaking. In 2005 twenty-fourth congress passed the A.980 (24) resolution, which modify original scrapping guidelines and passed the A.981 (24) in order to develop a new convention with coercive force. (Liu, 2011, p.33)

Norway submits the first draft convention in 2006 February to MEPC54 meeting, which has become the blueprint. From then on, every modification and discussion is carried out on the basis of this draft. IMO submitted the discussed and completed draft to the diplomatic conference held in Hong Kong in May 11-15, 2009.

IMO defined this convention as the “Hong Kong Convention”. This is the first international convention that named by China Hong Kong Special Zone. According to the provisions of the convention, the convention would come into force in global range after reached in the following 3 preconditions within two years. The first one is that the 15 signatory countries ratify the convention. The second is that the gross tonnage of countries which ratified Hong Kong convention should reach 40% (Zhu, 2009, p.71) of the total number of ships of the world. The last one is the ships dismantling volume of ratified countries must be more than 3% (Zhu, 2009, p.71) of the total.

3.1.3 The characteristics and requirements of Hong Kong convention

(1) General responsibility

According to first provision “general obligation” of the Convention, the parties bear the full implementation of the provisions of this Convention obligations, which is in order to lower, reduce and eventually eliminate the adverse effects caused by the ship to the marine environment and human health and improve health and environmental protection of ships in the whole operation period between safety and people. The provisions of the convention allows states parties to take unilateral action and does not restrict alone or with other parties in accordance with international law to adopt more stringent safety and environmental protection measures in the process of ship-breaking.

(2) Definition

The second provision of the Convention proposed the definitions of competent authorities, hazardous materials, recycling facilities, ships and so on.

(3) Applicable scope

The Convention applies to any type of ships 500 tons and above, which engaging in or had engaged in international maritime navigation. However, warships and non-commercial governmental vessels are preclusive.

(4) Verification, certification and inspection

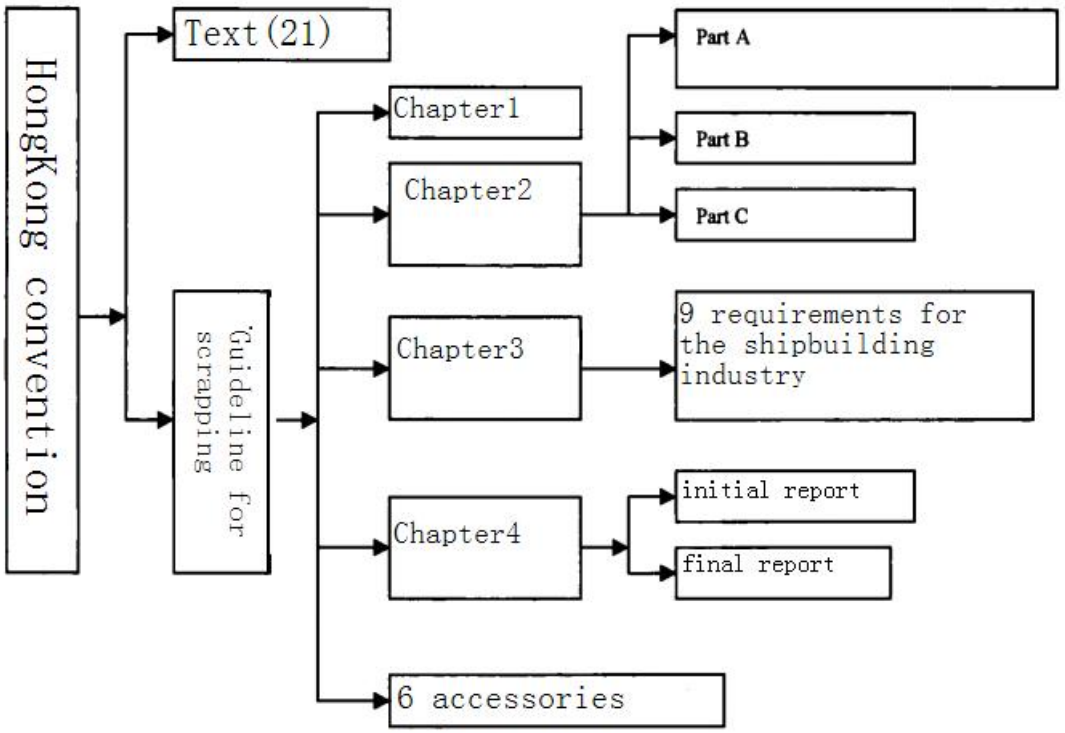
Each Contracting Party shall require its shipping and recycling facilities comply with the Convention and approve the recycling facilities in accordance with the provisions of the Convention. The ship should accept the inspection and certification and accept the inspection by PSC officers. Any events that violate of the requirements of this Convention should be banned. The contracting parties shall cooperate in the field of investigation in violation of the provisions and implementation of the acts of this Convention. The contracting parties should strengthen technical support and cooperation and strengthen information communication. In addition, they should also provide for endorsement, lunch and text of the Convention.

(5) The rules of safe and environmentally sound recycling of ships

“Safe and environmentally sound recycling of ships” is the core part of the Convention. The management method of the rules is “from cradle to grave”. This method consists of the system of inspection certification, PSC, the approval for ship-building company, the transfer of information and reporting requirements of execution mechanism. This enables to comply with convention and reach a very high level of control. Convention has given the corresponding constraints on ship design and construction, ship operation, ship dismantling process of ship’s life, which ensure that the ship was eventually dismantled with the lowest harm.

(6) The structure of the Hong Kong Convention

Table 2: Structure of the Hong Kong Convention



(Source: Author)

3.2 Related domestic legislation of China

With the enhanced awareness of environmental protection and sustainable development, China has enacted laws, administrative regulations, departmental rules and a series of industry standard in order to solve the problems of environmental pollution in the field of ship-breaking. These laws or regulations include: (1) Regulations on prevention of environment pollution by ship scraping (1988). (2) Regulations of safety production and environmental protection on ship-breaking (1990). (3) General specification for green ship-breaking (2005). (4) Several opinions on regulating the development of ship-breaking (2009). (5) Old transport ship management regulations (2014). (6) Ship pollution prevention and control of marine environment management regulations (2010). In addition, “Marine Environmental Protection Law (1999)” and “Water Pollution Prevention Law (2008)” also have the provisions of the law problem relates to prevent ship environmental pollution. Among

these regulations and laws, the highest level is the law according to the general principles of law level in China. If administrative regulations and departmental rules and regulations conflict with the law, they are invalid. The effectiveness of administrative regulations is higher than the Department regulations. The ship recycling legal provisions are too scattered and lack of a certain logic, it is difficult to form a unified system.

3.2.1 Marine Environmental Protection Law

In order to protect the marine environment and to promote the rational development of marine resources, the "Marine Environmental Protection Law" was amended in 1999. The law is a special one that formulated for the marine environment and resources. The forty-fifth, seventieth and eighty-eighth involved in the ship dismantling of marine environmental protection. First of all, article forty-fifth expressly prohibits the construction of industrial production projects which do not have effective environmental protection measures, including scrapping at beach. Secondly, the seventieth is related to the approval of marine production activities. Article 1 clause 6 stipulates that ship dismantling operations in clear water shall be submitted to the relevant departments. Finally, the article eighty-eighth stipulates that ship-breaking operations in the water or port which caused pollution damage to the marine environment, the responsible party should be punished by the relevant administrative authorities: 50,000 RMB warning or a fine of not less than 200,000 RMB.

3.2.2 Water Pollution Prevention Law

The revised "water pollution prevention law" (2008) is about the prevention and control of water pollution of China, which provides a comprehensive water pollution control management system and basic system. The fifty-fifth and the eightieth involve the regulation of environmental protection from the dismantling of ships. The

provisions of article fifty-fifth, water dismantling operations shall formulate the corresponding operation plan and take positive and effective measures for prevention and control of pollution. The operation plan should be reported to the maritime administrative agency and should be audited by the maritime agency. The provisions of article eighty-eighth stipulate that if ship dismantling operations carried out without the approval and audit according to the provisions of article fifty-fifth, corresponding administrative punishment measures could be taken by the maritime administrative agency or the competent department of fisheries division in accordance with the responsibilities. The thirty-first clause of "water pollution prevention law" stipulates the rules for the implementation of the supervision and management of ship pollution prevention and control.

3.2.3 Ship Pollution Prevention and Control of Marine Environment Management Regulations

The provisions stipulate the related issue according to the two basic principles (Prevention and Control), which achieve the transformation of marine pollution prevention and control work from the "prevention" to "prevention and control". In the general provisions of the second chapter stipulates the set up and qualification of the ship-breaking enterprises. The fourth chapter "pollution prevention of ship related operations" stipulate the dismantling, dismantling site and operation personnel. The eighth chapter stipulates the legal liability for pollution damage caused by ship scrapping.

3.2.4 Regulations on Prevention of Environment Pollution by Ship Scraping

"Regulations on prevention of environment pollution by ship scraping" is the earliest regulation which regulates ship-breaking industry in China. Although issued more than 20 years ago, it also has very important significance at present. The main contents include: the definition of scrapping on the land and above the water, on the

other side of scrapping and definition, location and setting of related environmental protection departments and ship-breaking industry, control of ship-breaking activities, pollution control and responsibility of pollution of ship scrapping.

3.2.5 Old Transport Ship Management Regulations

According to “Old transport ship management regulations”, the old ship should be managed in accordance with the provisions, and should retire on time. If not scrapped on time according to the regulation, the ship-owner will bear the corresponding legal responsibility. There is no mandatory provision to stipulate whether a ship should be scrapped when she does not reach the age of retirement. The ship owners can choose to continue to operate or to dismantle their ship in advance. There is no clear standard about the import and export of old ships in china. The related legal provisions scattered in various laws and regulations. “Old transport ship management regulations” only stipulate the import for foreign old ships.

Chapter 4 Influences of Hong Kong Convention in China

4.1 The requirements of ship management and ship-breaking facilities

4.1.1 The design, construction, operation and maintenance of the ship should meet the requirements of the Convention

According to the Convention and the annex and appendix, the hazardous materials listed in the appendix 1 should be banned and (or) restricted in the ship from the day that be built. In the follow-up operation and maintenance process should also comply with these regulations. The new ship should have a list of hazardous materials. The name, location and probably number of harmful material that defined in Annex 1 and Appendix 2 of ship's structure and equipment should be listed clearly at least. The ship should be no later than 5 years (before the year 2015) after the entry into force of the Convention or before going to the recycling facilities. As far as possible to meet the requirements of the new ship as above. The hazardous materials list should be maintained and updated by the ship in the whole process of operation. The list should reflect the changes of hazardous materials during a new equipment installation or the change of ship's structures. (Lv, 2009, p.117)

4.1.2 Accept the inspection and certification management

In order to standardize the management of the ships that suit for the Convention, the Convention uses inspection and issuing mechanism. The applicable ships should

receive the initial survey before put into operation, not more than 5 years interval of the renewal survey, additional survey of vessels related to great changes and final test end before the start of operation and dismantling. Inspection is carried out by the competent authorities of a Contracting State or its approved and authorized organizations and individuals. The "international certificate of hazardous materials list" should be issued after initial survey or renewal survey. Additional survey is the appropriate endorsement on the certificate. If the ship is not in the test port when the certificate expires, the authorities can effectively extend the duration of the certificate. This extension shall be allowed to be used only for the ship sailing to the port where complete its inspection. The extension shall not exceed 3 months in any case. The ship should not leave the port before getting a new certificate. (Lv, 2009, p.118)

4.1.3 Receive routine inspections, illegal investigation and punishment

In order supervise the situation of ship that meet the requirements of the Convention, the applicable ships should accept the port state inspection carried out by the authorized officer. The PSCO will check whether the ship carry a valid "international ship hazardous materials list certificate" or "international dismantling ready certificate". The ship does not carry a valid certificate should be investigated and dealt with according to port domestic legislation, including warning, detention, deportation, and even refused to come in. If taking the above action, the parties shall immediately notify the relevant authorities of the ship and the international maritime organization.

4.1.4 To prepare and report the dismantling of ships

The ship should prepare to meet the following requirements before dismantling. The first one is to ensure that the selection of facilities which meet the requirements of the Convention. Secondly, the amount of residual of cargo, sewage and fuel should be reduced to the minimum before entered in the ship-breaking facilities. Thirdly, the hold and pump room of liquid cargo ship should meet the requirements that

"personnel safe" or "hot work safe" before reaches the ship-breaking facilities according to the relevant laws of China. The fourth is to provide all available information about the ship to recycling facilities. Recycling facilities should make the ship's scrapping plans with the requirements of the Convention. The fifth is to ensure that the first part of the inventory of hazardous materials is the latest according to the annex of the Convention. The sixth is about the situation of operational waste of the second part and material of the third part.

4.1.5 The implementation of approval mechanism of recycling facilities

The Convention requires States parties should ensure that recycling facilities are designed, built and operated in accordance with the provisions of the Convention for the safe and environmentally sound way through domestic legislation. The approval that permits ships to engage in demolition work should be given through the establishment of approval mechanism, which based on the inspection of the documents and facilities of the Convention. The approval certificates of recycling facilities are issued to qualified recycling facilities in a unified format. The certificate of approval is issued, cancelled, suspended, modified and changed by the contracting party.

4.1.6 The formulation and implementation of recycling facilities plan

Approved recycling facilities should formulate "recycling facilities plan". This plan should list the management policy and management objectives of the safety for workers, health protection and environmental protection. Ship-breaking operation procedure and standard system should be established, which related to the implementation of the Convention and company policy. This plan should conclude the roles and responsibilities of employers and workers in the operation of the ship and provide information and training for the workers of the project. Emergency preparedness and response plan, ship-breaking operation monitoring and recording

system and accident reporting system also should be list clearly. The demolition operation process should receive examination, supervision and sampling. Implement the relevant content of “recycling facilities plan”. The safety of hazardous materials and environmentally sound management should be done well, which will help to prevent the harmful effect on human health and the environment of ship-breaking operation. Report the events about workers’ safety, health and environmental damage, accident, occupation disease or long-term effects of scrapping operations.

4.1.7 Formulate scrapping plans and report the completion of ship breaking operation

According to the ship operations, ship recycling facilities should formulate “scrapping plans” based on the provided information according to their own situation. This plan should include the establishment, maintain and monitor “personnel into safety” and “hot work safety” conditions and how to manage the information about all types of materials and the amount that listed in hazardous materials list. The “scrapping plans” should receive the approval of the competent authority. When waste ships get the “International dismantling ready certificate”, ship-breaking facilities should report the starting time of dismantling process according to Appendix 7 in the form of a written report. Ship-breaking operation should not be carried out before submitting a report.

4.2 Influence on shipyard

4.2.1 Providing “Inventory of Hazardous Materials”

The most important effect on shipyard of “Hong Kong Convention” is providing “Inventory of Hazardous Materials” (IHM). In the fifth clause of second chapter “list of hazardous substances” requires: each new ship should have a list of hazardous substances. The main purpose of the list is providing ships’ special information of hazardous materials, which would help to protect the shipyard workers' safety and

health and prevent the ship pollution to the environment in the demolition process. In the process of design and construction of the ship in the shipyard, she only needs to provide IHM.

4.2.2 The issuance on international certificate of IHM (ICIHM)

After the formal implementation of the new convention and before the ship put into operation, the competent authority or its authorized person or any organization needs to authenticate the IHM. If passed, “International Certificate on Inventory of Hazardous Materials” should be issued. If not through, the delivery and operation time of the ship may be affected.

4.2.3 The increase of cost

The Convention requires the use of safety, environment harmless materials. The use of hazardous materials should be restricted or even prohibited gradually. These materials may be widely used in shipbuilding. For example, Appendix 1 contains “asbestos”. At present, China began to prohibit the use of asbestos: Chinese Classification Society (CCS) issued “notice on the implementation of products without asbestos” in May 31, 2011, which prohibits the installation of materials containing asbestos. The CCS issued the supplementary provisions which require shipyard provides “statement of no asbestos” before the completion of the new ship. With the improvement of requirements of the Convention, there will be more material added to the hazardous materials in the annex. These materials are restricted and prohibited, therefore, the shipyard need to search for new materials and enable some alternative. No matter whether these equipment or accessories are developed by domestic manufacturers or monopoly again by developed countries, the shipyard is facing with the price increase (pressure on equipment R & D). The shipyard choice will be smaller and the purchase cost will be increased. (Jing, 2012, p.30)

4.2.4 Building of green ship

Nowadays, with the international environmental issues have become increasingly concerned, building the so-called “green ship” is gradually becoming a trend. The “green degree” will be an important competition index of the world shipbuilding market in the future. If China’s shipbuilding industry cannot reduce the use of hazardous substances as far as possible to a minimum, we may be in a disadvantageous position in the future competition.

4.3 Influence on ship-breaking industry

“Hong Kong Convention” stipulates specific detailed requirements for recycling facilities and set up information exchange mechanism about recycling facilities between the parties. Therefore, the Convention will help to create a fair competition environment for the ship-breaking industry in the international scope and promote the standardized management of recycling facilities in health and safety, environmental protection. However, there is a great distance between the requirements of the “Hong Kong Convention” and the overall level of the ship-breaking industry in the world. Ship-breaking company must increase investment, improve technology, scientific management for the sake of changing the current situation of industry to reach the requirements of the Convention. That will cause the ship-breaking industry pay higher safety and environmental protection cost, which will cause the parties under the jurisdiction of the recycling facilities business competitiveness is lower than that of non contracting states of recycling facilities.

4.4 Influence on shipping business

At present, the shipping market is still not optimistic. The ship owners are facing difficult business environment due to the high number of old ships, freight fell continuously, high fuel prices and other factors. At the same time, the situation that

shipping market had pile up in excess of requirement become more serious due to a large number of ships that booked before international financial crisis is put into service.

The relevant requirement of “Hong Kong Convention” is increasing the safety and pollution prevention responsibility of ship-owners and ships, which can promote the realization of the safe and environmentally sound scrapping intention from the source. However, the owner must make special arrangements for the implementation of responsibility. For example, the relevant management information should be added into company safety management system. The ship must accept a variety of inspection and obtain the certificate. The ship shall formulate and implement for maintaining the list of hazardous materials program. Operations must be carried out to ensure the inventory of hazardous materials to be maintained and updated. In addition, the Convention prohibits and (or) restricts in the limit of traditional hazardous materials. The owners have to pay higher fees to afford the use of environmentally friendly materials as alternatives to high standards. The ship owner is facing to higher time and economic costs and greater management pressure. (Lv, 2009, p.119)

The shipping industry downturn and affected by the Hong Kong Convention, international environmental protection rules, the bill of scrapping and the EEDI, the old ship was gradually replaced by the green ship. Many policy measures that encourage single hull tankers and old ships scrapped in advance are introduced in China, which impel the ship owner promptly sent old ships and high energy consumption and high emissions ships to be demolished.

4.5 Influence on competent authority

4.5.1 Briefing on competent authority

“Competent Authority” means a governmental authority or authorities designated by a

party as responsible, within specified geographical area or area of expertise, for duties related to ship-recycling facilities operating within the jurisdiction of that party as specified in the Hong Kong Convention. China maritime safety administration (MSA) is one of the important competent authorities defined in the convention.

4.5.2 Specific effects

In order to ensure the effective implementation of "Hong Kong Convention", the Convention gives the competent authorities some jurisdiction of Contracting State inspection, certification, inspection and supervision. At the same time, the competent authority also is required to refine the requirements of the Convention through domestic legislative, which would help to ensure the effective formation of safety and environmentally sound management mechanism. The inspection, investigation and punishment measures should be specified and strengthened according to the requirements of the Convention. The Hong Kong Convention put higher requirements and more management responsibility to the competent authorities. Because different countries have difference management system, the competent authority may involve the maritime sector, safety supervision, environmental protection and other departments. Specifically, the maritime sector will undertake the inspection, certification and supervision responsibilities of their applicable ships and recycling facilities according to the Convention. The implementation of port state control (PSC) to ships, supervision about a valid certificate should be carried out by the competent authority.

Chapter 5 Countermeasures to the Influences

5.1 Countermeasures of the shipyard

"Hong Kong Convention" stipulates that the IHM certificate should be provided when the delivery of the new ship. So, the IHM should be included in the construction contract. Because the shipyard required a longer period to get the information and needs to communicate with suppliers, manufacturers, the shipyard should prepare the IHM at the early stage of the ship design.

5.1.1 Select the supplier and evaluate the products

For the shipyard, the first issue is to reduce the utilization of hazardous materials and find safe, environmentally friendly materials. This requires the shipyard to re-identify the suitable suppliers and assess their products carefully. Check for possible hazardous materials from upstream suppliers in their products.

5.1.2 Preparation of IHM

The shipyard must consider IHM in ship design stage. The main part of IHM is "Material Declaration (MD)" and "Supplier's Declaration of Conformity (SDOC)". At the same time the shipyard should ask suppliers to provide their information about MD and SDOC. "Hong Kong Convention" stipulate that the hazardous substances must be written to the list of hazardous substances, which include cadmium and

cadmium compounds, hexavalent chromium and hexavalent chromium compounds, lead and lead compounds, mercury and mercury compounds, polybrominated biphenyls, polybrominated biphenyl ether, two polychlorinated biphenyls, radioactive substances, some short chain chlorinated paraffin etc. Therefore, the shipyard must carefully check whether these substances exist and truthfully write the list of hazardous substances. (Jing, 2012, p.31)

5.1.3 Points for attention in the process of preparation of IHM

The shipyard should also pay attention to the following questions in preparation for the IHM. Each kind of homogeneous material should include harmful material declaration. If the selected classification is GL, supply chain vendors are proposed to provide SDOC and MD. SDOC clarified all statement of responsibility, which has the legal significance. SDOC should contain MD. SDOC and MD of shipyard's self-made parts also need to ask for the manufacturer to supply. The shipyard should be responsible for collecting all the SDOC and MD and submitted to the owner and classification society finally.

5.1.4 Reduce the cost pressure

After the entry into force of the Convention, it is clearly that the shipyards has increased the cost and compress the profit. From the aspect of cost reduction, the shipyard measures may different with each other. There are some suggestions for them.

(1) The shipyard can be considered a strategic joint with suitable suppliers, which can enhance the strength and can also pass the pressure.

(2) Looking for external financing.

(3) To optimize the management, improve the production efficiency; improve production technology, shorten the production cycle.

(4) To solve technical problems, improve recycling technology; improve the added value of the products and so on.

5.2 Countermeasures of the shipping business

5.2.1 Enhance the ability

Ship-breaking enterprises shall face the situation and the current difficulties combined with the actual situation. Every ship-breaking company should research their own development strategy, business strategy, corporate positioning and vigorously promote the reform, adopt comprehensive measures and enhance ability of the enterprise.

5.2.2 Accelerate the pace of structural adjustment, transformation and upgrading of enterprise

In the development stage of the socialist economy market, enterprises are in a crucial period. Therefore, ship-breaking enterprises should see clear about the situation and seize the opportunity, which would help them to do a good job in the main business and to seek new economic growth point. In addition, adjust business strategy to meet the market test is also very important.

5.2.3 The removal of unreasonable demands

Due to the current implementation of the replacement of the new policy, the domestic shipping companies receive government subsidies. However, some shipping

companies blindly pursue the value of the hulk and some unreasonable demands is proposed (such as insurance, delivery conditions, etc.). The reality is that higher tax and environmental costs of enterprises are not taken into account. The risk management and other problems are not estimated by ship breaking business. Under the current shipping market, these companies should help each other to overcome the difficulties.

5.2.4 Solve the problem of high tax burden of shipping companies

At present, ship-breaking enterprises should pay the tariff and the value-added tax about total 20.51% (including 3% tariff). Iron ore, scrap imports is zero tariff, however, scrap ship should pay 3% import tariff. The legitimacy is questionable. In addition, it is very difficult for the domestic shipping firms to get value added tax (VAT) invoice when they buy domestic hulk. It is difficult to bear a high tax burden. In the current implementation of the replacement policy, the value-added tax policy of renewable resources of the Ministry of Finance in 2008 on the formulation of ship-breaking enterprises should be continued, which give the output VAT refunds of 50%. (CNSA, 2014)

5.3 Countermeasures of the competent authority

5.3.1 Carry out large-scale investigation, research on influence of the entry into force of the HK Convention

The competent authority should carry out large-scale investigation which aiming at the domestic ship-breaking and ship-building industry and related industries. We should get a comprehensive understanding of enterprise management status, technical level, the quality of personnel, work environment, management system of ship-breaking industries. After that, we should study on the influence of the convention for these enterprises, for scrapping cost and the cost of new materials for

building ships. It will provide the basis statistics for the competent authority. (Ma, 2014, p.28)

5.3.2 Carry out in-depth study on technical guidelines for the protection of vital interests

In the process of making HK convention, some countries or organizations have submitted a proposal to the IMO guidelines. However, since the convention focuses on terms and there is no further discussion on the guidelines. After the adoption of the convention, the important work of the ship breaking issues of IMO is to establish technical guidelines. In this work, we can refer to a lot of existing results, such as BIMCO organization guidelines and ISO30000 series standard and so on. In-depth study on the technical problems involved in the guidelines is the important work of competent authority and it should be carried out immediately. This is conducive to the effective protection of the interests of the relevant domestic industry. (Liu, 2011, p.42)

5.3.3 The introduction of related policies for the development of the ship-breaking industry

The development of the industry cannot be done without the guidance and support of policy. The formulation of the Hong Kong convention is a very good chance. The competent authority should formulate incentive policy. We should guide the direction of development of the ship-breaking industry through economic and policy levers. The ship-breaking industry should continue to invest in the security, the environmental protection facilities and occupation health, achieve the development to resource and environmental protection industries. We should use the cleaner production technology, research on clean alternative materials, improve process and limit the practical of hazardous materials of shipbuilding industry. The competent authority should guide shipping business strengthen the concept of environmental

protection; strengthen the consciousness of responsibility of security and environmental protection. (Yu, 2009, p.108)

5.3.4 Improve and perfect legal laws and regulations for best performance

Laws and regulations of ship-breaking in China are not perfect. It lacks of related technical standards and the implementation mechanism of our laws and regulations of ship-breaking. The competent authorities should improve the relevant laws and regulations in accordance with the requirements of the HK convention. It is necessary to refer to the relevant international guidelines for this work, contact the ship-breaking practical requirements. (Liu, 2011, p.34)

5.3.5 Actively participate in international cooperation and exchange

Cooperative communication is an important purpose of the HK convention. At present, there is a big gap between Chinese ship-recycling industry in safety, environment and occupation health and other aspects of the management level and the developed countries. The level of shipbuilding industry and supporting industry in the development and application of new materials is not high. We should participate in international cooperation and exchanges related to the HK convention actively. We should make full use of international exchange platform for the IMO dismantling work group and Shanghai International Maritime Forum, through organizing or participating in the IMO International Symposium on safety and environmental scrapping, learn from other countries or international organizations of the advanced technology and experience. (Liu, 2010, p.30)

5.4 Countermeasures of the ship-breaking industry

In view of the above problems listed in the chapter 4, a large number ship would be dismantled. The related parties should pay more attention to the problem of

environmental pollution. In order to effectively reduce the pollution caused by the ship-breaking, the ship-breaking industry can be considered in the following aspects.

5.4.1 Establish and improve the related laws and regulations

At present, the law and regulations involving ship-breaking in China is not perfect, which lacks of relevant technical standards and compliance with the execution mechanism of the requirements of the Convention. It cannot meet the requirements of the convention. The relevant departments should research on the construction of the related laws and regulations of ship-recycling activities according to the requirements of the Convention, referring to the related international guidelines and combined with the actual situation of Chinese ship-breaking industry, shipping industry and shipbuilding industry. (Jiang, 2014, p.4) The related departments also should actively explore the design, construction and operation of the ship standard and improve the management level of shipping.

5.4.2 Strict control the standard of waste import ship

The dismantling of ships inevitably produces harmful substances. However, we can reduce the number of harmful substances from the “source”, such as the reduction of cargo residues, fuel residues and other harmful substances. The authorities can stipulate the “clean degree” of import ship strictly. We can ask the ships to clean the harmful substances before entering Chinese water area for dismantling. Especially, the liquid cargo and pump cabin should be cleaned before entering China for dismantling.

5.4.3 Actively participate in international advanced technology

The earliest modern ship-breaking industry is in Europe. At present, the Europe Union (EU) countries also have a small amount of ship-breaking business, which mainly

engaged in dismantling the warship and government vessels. Some of Europe's ship-breaking enterprises have to focus on recycling equipment and technology development of safety and environmental protection, especially in the incineration and degradation of harmful substances. In order to alleviate the pressure of ship dismantling of the EU countries, the EU has provided technical assistance to South Asia countries. The advanced technology and best practices have been transferred. Domestic shipping firms should learn the experience of other countries and enterprises and share international advanced technology and experience of dismantling, which would help us to minimize the pollution caused by ship in a short time.

5.4.4 Encourage enterprises to meet the requirements of the Convention

The domestic ship enterprise itself has inherent power to meet the requirements of the convention. If the ship-recycling companies meet the requirements of the Convention, some international big ship owner would glad sale their ships to them. The state should establish the corresponding incentive measures. The ship-breaking industry center transfer from Japan, Hong Kong region to South Korea and Taiwan, which ultimately transfer to the mainland of China and South Asia since the 1960s (Jiang, 2014, p.4) of last century. It is not difficult to find that the ship-breaking industry center transfer is connecting closely with economic development level. Actually, it is related with regional labor costs and environmental costs. From the analysis of the price of scrap ship, the cost of domestic ship-breaking enterprises is far higher than that of the South Asian countries. This situation requires the state give financial subsidies to enterprises to meet the requirements of the Convention. China should give appropriate preferential tax to ship-recycling companies or establish domestic ship-breaking funds to support them living in a good condition.

5.4.5 Strengthen the supervision to the final disposal of harmful substances

The Convention does not give the standards and styles about the ultimate disposal of harmful substances after disassembled, such as separation, incineration, decomposition and landfill. However, the Convention only requires these behaviors to meet the requirements of their own country. China's "marine environmental pollution prevention and control of the ship management regulations" also stipulates that the scrapping facilities should deal with ship dismantling pollutants in accordance with state regulations. There is also a corresponding standard treatment of these harmful substances in our country, such as "hazardous waste landfill pollution control standard", "hazardous waste incineration pollution control standards", "marine pollutant emission standards" etc. It is very important to ensure that harmful substances are disassembled according to the requirements of the process. Ship-breaking facilities should establish traceability records of hazardous substances in accordance with MEPC.210 (63). (Shi, 2013, p.72) The species, quantity, processing methods and evidence shall be recorded in order to ensure that the competent authorities can supervise the traceability of harmful substances. The competent authorities should strengthen supervision on record and the actual operation.

Chapter 6 Conclusion

The introduction of "Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships 2009" is the inevitable requirement for the development of shipping industry. The parties involved in the production process have experienced different stages of design, construction, survey, operation and dismantling.

The author introduces the status of ship-breaking industry in China and other countries, expounds the gap between China and the world advanced level of ship-recycling. The background, key problems and requirements of Hong Kong Convention also are discussed in detail. Through the discussion, the author analyzes the important influence of Hong Kong Convention on China's shipbuilding industry, the shipping industry, ship-recycling industry and competent authority. In the fifth chapter, the author puts forward relevant countermeasures. These countermeasures may provide some reference and help to the development of ship-breaking industry in China.

Although there are many difficulties in the development ship-breaking industry, however, Chinese ship-breaking industry is beneficial from the development of Hong Kong Convention. China has opportunity to be one of the biggest countries of ship-breaking industry by virtue of their own advantages and to achieve sustainable development of ship-recycling industry.

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