Review of the transition period from scrapping to ship recycling and analysis of contemporary issues

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WORLD MARITIME UNIVERSITY
Malmö, Sweden

REVIEW OF THE TRANSITION PERIOD FROM SCRAPPING TO SHIP RECYCLING AND ANALYSIS OF CONTEMPORARY ISSUES

By

BURAK KEMERCI
Turkey

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

MASTER OF SCIENCE
In
MARITIME AFFAIRS
(MARITIME SAFETY AND ENVIRONMENTAL ADMINISTRATION)

2011

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DECLARATION

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

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

Signature: ........................
Date: 23 October 2011

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............
ACKNOWLEDGEMENT

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I wish also to record my appreciation to Turkish Maritime Administration for sponsoring my study at the World Maritime University and my sincere thanks to all dear friends who helped me to enjoy my stay in Malmö.

Last but not least, my deepest and heartfelt gratitude and appreciation goes to my beloved parents, whose love and encouragement are always precious and will remain cherished throughout my entire life and professional career.
ABSTRACT

Title of Dissertation: Review of the Transition Period from Scrapping to Ship Recycling and Analysis of Contemporary Issues

Degree: MSc

The ship recycling industry rightfully has been received too much attention in the last decades due to fatal accidents, unavoidable assumed dangerous working conditions, environmental disasters and the unbounded transboundary movements of hundreds of enormous structures and many other reasons. Additionally, the national enforcement mechanism deficiencies and the lack of an international regulatory framework have been considered as the excuse and the ground for the infamy in the eye of the public.

This dissertation presents the general understanding of ship recycling practices, dynamics of the ship recycling market, prior to the solution proposals, in order to build up a deep comparative analysis. Working principles of the ship recycling facilities, importance of the international organizations and the institutions concerned, and the necessity of Hong Kong Convention are examined to illustrate the change of the ship recycling concept and the standards of judgement in recycling industry.

The transition period from “scrapping” to the “green ship recycling” is demonstrated by examining the drastic steps taken despite the resistance of the stakeholders. Further, the shortcomings of the international legislation is critiqued and the existing national level enforcement mechanisms are challenged via a selection of
contemporary examples of different states/stakeholders in shipping business around the world.

The motives and dimensions of the transforming process in which the sector is passing through, pursuant to the adoption of the Hong Kong Convention, are analytically evaluated through cross-country assessments. It is examined if the expression “ship recycling” is only a superficial cover for the transboundary waste movements with the existing symptomatic safety, security, health, welfare, human rights and environmental problems. Moreover, a number of theories for the voluntary implementation and the early entry into force of the Hong Kong Convention are evaluated, and the duration of the transition period is discussed.

Finally, the critics and proposals of the author related to transition period in the light of evaluations are stated. The short term predictions on the economics of the market and the prospects on relocation of the recycling capacity are assessed by taking into account the historical experiences.

**KEYWORDS:** ship recycling, scrapping, the Basel Convention, the Hong Kong Convention, safe and environmentally sound recycling of ships.
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<th>Description</th>
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<tr>
<td>BAN</td>
<td>Basel Action Network</td>
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<tr>
<td>BELA</td>
<td>Bangladesh Environmental Lawyers Association</td>
</tr>
<tr>
<td>BIMCO</td>
<td>Baltic and International Maritime Company</td>
</tr>
<tr>
<td>DWT</td>
<td>Dead Weight Tonnes</td>
</tr>
<tr>
<td>DG ENV</td>
<td>European Commission Directorate General Environment</td>
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<tr>
<td>ELAC</td>
<td>Environmental Legal Action Center</td>
</tr>
<tr>
<td>EMB</td>
<td>Environmental Management Bureau</td>
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<tr>
<td>EMS</td>
<td>environmental management systems</td>
</tr>
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<td>ENDS</td>
<td>Environmental Data Services</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>EWSR</td>
<td>European Waste Shipment Regulations</td>
</tr>
<tr>
<td>FIDH</td>
<td>International Federation for Human Rights</td>
</tr>
<tr>
<td>GT</td>
<td>Gross tonnage as defined in Article 2, Hong Kong Convention</td>
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<td>Hong Kong Convention</td>
<td>Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009</td>
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<td>IACS</td>
<td>International Association of Classification Societies</td>
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<tr>
<td>ICS</td>
<td>International Chamber of Shipping</td>
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<tr>
<td>IHM</td>
<td>inventory of hazardous materials</td>
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<td>ILO</td>
<td>International Labor Organization</td>
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<td>IMO</td>
<td>International Maritime Organization</td>
</tr>
<tr>
<td>Intercargo</td>
<td>International Association of Dry Cargo Shipowners</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>Intertanko</td>
<td>International Association of Independent Tanker Owner</td>
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<td>IPTA</td>
<td>International Parcel Tankers Association</td>
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<tr>
<td>IRRC</td>
<td>International Ready for Recycling Certificate</td>
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<tr>
<td>ISF</td>
<td>International Shipping Federation</td>
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<td>ISM</td>
<td>International Safety Management</td>
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<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
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<tr>
<td>ISRA</td>
<td>International Ship Recycling Association</td>
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<tr>
<td>ITF</td>
<td>International Transport Workers' Federation</td>
</tr>
<tr>
<td>ITOPF</td>
<td>International Tanker Owners Pollution Federation Limited</td>
</tr>
<tr>
<td>LDT</td>
<td>Light Displacement Tonnage</td>
</tr>
<tr>
<td>LR</td>
<td>Lloyd’s Register Group</td>
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<tr>
<td>MARAD</td>
<td>Maritime Administration, U.S. Department of Transportation</td>
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<tr>
<td>MEPC</td>
<td>Marine Environment Protection Committee</td>
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<tr>
<td>OCIMF</td>
<td>Oil Companies International Marine Forum</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration, U.S. Department of Labor</td>
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<tr>
<td>PIC</td>
<td>prior informed consent</td>
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<tr>
<td>SRP</td>
<td>ship recycling plan</td>
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<tr>
<td>VLCC</td>
<td>Very Large Crude Carrier</td>
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I. INTRODUCTION

1.1 SCOPE OF THE DISSERTATION

It is possible to encounter the term ship recycling, which is regarded as the last chain of the maritime sector, sometimes in a business magazine with its contributions to the national economy; sometimes in a newspaper article due to loss of lives or while glancing a touching story of a child worker photographed working with bare hands and feet; sometimes in an analysis focusing on how extensive the damage is to the environment; or on the contrary in a comment emphasising the environmentalist approaches of the sector and in another article underlying the importance of recycling in preventing extraction of tons of metal from natural sources.

It should be accepted that like any other commercial activity, ship recycling is also an activity which is to be criticized when necessary and even is to be ceased in the case of not complying with legislation. As well as presenting two sides of the coin in the ship recycling sector, this study will ensure that the problems of the sector be examined through considering the opposite views.

A more environmentalist and sensitive shipping industry can only be built by acknowledging the fact that recycling facility owner is not the only responsible stakeholder for the risks of safety, security, environment and workers’ health during recycling; thus, with this perception, the transforming process in which the sector is passing through pursuant to the adoption of the Hong Kong Convention, the evolution steps of each stakeholder and analysis of market variants will be the core of the research work.
1.2 STRUCTURE OF THE DISSERTATION

In this study, rather than having the concern of providing basic information, the causes, motives and dimensions of the change in reviews of the public, ship owners and recycling countries will be analytically evaluated and presented while discussing the current subjects in the global community’s agenda due to the upheaval realized recently and discerned problems of the sector and its process mechanism.

The importance of the industry outputs and market principles will be emphasised through current statistical information, which will be basis for the analysis and evaluations. Determined borders and restrictions for the meaning of ship recycling will be presented through examining different meanings imposed by different agencies and institutes on ship recycling. Economic contribution of the sector and the importance of the sector for national economic parameters will be mentioned and it will be ensured to have basic points of view for further comparative analytic evaluations. The economic meaning of the last voyage of the ship for the owner of the ship, owner of the facility and sub-industry will be underlined. Additionally, it will be displayed how decisive this economic approach has been in the historical development of the sector.

In the following chapter, the importance of international institutions directing the international legislation concerned, institutions applying these regulations and NGOs will be stressed through examining the purpose, content, effects and results of their current studies and other means of promoting green ship recycling. Considering that it is impossible to observe the harmony of market mechanisms of the sector as independent from the concurrent and parallel studies among international authorities, their relations will be exposed.

In the fourth chapter, some of the reasons for the necessity of the Hong Kong Convention will be defined, which is the breaking point for many motives of the sector, and trigger for many changes. The experiences of the principal recycling
countries on the will of changing and the effects of moves for changing the recycling market and domestic balances of the countries will be described. Furthermore, domestic dynamics which forces the industry to become “more green” will be presented, which is occurring despite the reduction in profit margin of the companies. Afterwards, a number of theories for the process of the Hong Kong Convention’s coming into force will be evaluated and how long transition period would last will be discussed.

In the last part of the study, cause and effect relations, outputs of analyses, attention grabbing instances from comparisons, critics of the author related to transition period in the light of evaluations, and short term predictions about the market will be summed up.

1.3 PURPOSE AND METHOD OF THE DISSERTATION

The first main objective of the study is to review the transition period from “scrapping” to the “green ship recycling”; the drastic steps, taken despite the extra cost imposed on ship owners and facility owners and also despite the resistance of the industry with the concern of negative response of the market dynamics to the new legislation; and the administration’s efforts for a more environmentally sound recycling legislation will be presented through a selection of contemporary statistics and facts from different states/stakeholders in the shipping business around the world. The chosen information will be useful as the input for the interpretation of the concept evolution and judgement of recycling industry standards.

All attempts performed by the parties concerned to make the sector more experienced and mature will be evaluated by considering concrete outputs. Moreover comparative analysis will be presented to make the internal conflicts of the sector more understandable for the readers. Confronting attitude patterns of a particular flag state and the ship owner of a ship, which is entitled to fly that particular state’s flag, will be examined. The decisions of a particular recycling state, which have been
forcing the facility owners to invest in the Hong Kong Convention regulations, despite already having the small proportion from the market share, will be discussed.

Cross-country assessments and critiquing of national legislations and implementation levels of the principal recycling states and of challenging matters in the current existing recycling process mechanisms on the national level will be beneficial for illuminating the borders of legislation and defining the needs for a better implementing and process mechanism.

The other fundamental theme of this research work is the analysis of contemporary issues, which have been carried out through the combined and extensive up to date information, obtained via the comprehensive literature review of a vast number of reviews, reports, updates, econometric and financial studies. Statistical information related to recycled ships and tonnage or the incident occurrence statistics in the facilities and the market trends merged with the information on national regulatory structures and institutional capabilities of principal recycling countries. Exclusively the latest presentations and speeches of professionals are evaluated and utilised for a better understanding of the contradictions in enforcement and regulatory matters and compliance gaps vis-à-vis the Hong Kong Convention to assess the feasibility and practicability of an early ratification of the Hong Kong Convention. Additionally, long term aims and projections are proposed, considering obtained outputs related to current analysis and previous reactions of the sector.
II. BACKGROUND AND GENERAL INFORMATION

2.1 DESCRIPTION OF SHIP RECYCLING

Various governmental organizations, international establishments and NGOs developed several definitions for the terminology of “ship recycling” or used different terms to define the same activity such as decommission, scrapping, ship breaking, demolition and dismantling (DG ENV, 2007) in the last decades depending on their area of activities, missions, objectives of their studies or how as they visualise the industry whether a green and beneficiary industry or a devastating industry.

Following 25 or 30 years of service period, due to several reasons, ships have been recycled to recover valuable steel and other constituents of their bodies (NGO Platform on Shipbreaking, Annual report 2010). Prior to the steel ship era, wood used as the fabric of ships also had considerable value. At present, with the wisdom of the historical background, the shipping industry has a higher ratio of recovery more than the automotive and aviation sectors by 95% of a ship by weight (LR, 2011).

The time of heading to a recycling yard means the end of ship’s proud servicing period and the end of the operational life which permits the large volume of non-economical and sub-standard vessels to be discarded out of the world merchant fleet (Chowdhury, 2010).

Ship recycling is the forth market among shipping markets (Stopford, 2009) and it has other stakeholders in addition to the asset’s owner, the ship owner. The flag state, the state of the recycling facility and the recycling facility owner, who is responsible for the land based establishment and who further invests in the infrastructure,
machinery, labour and the utilities may be count as some the stakeholders (World Bank, 2010).

In recent years, the latest definition for the term “ship recycling” was developed by IMO, taking into account all these related parties. The broad definition of ship recycling is decided as not only “the activity of complete or partial dismantling of a ship at a ship recycling facility in order to recover components and materials for reprocessing and re-use, taking care of hazardous and other materials”. It was further decided that the recycling process “includes associated operations such as storage and treatment of components and materials on site, but not their further processing or disposal in separate facilities.” (MEPC 56/3, Annex 2)

One of the main actors at the international legislation level, ILO describes ship recycling as “the process of dismantling a vessel’s structure for scrapping or disposal whether conducted at a beach, pier, dry dock or dismantling slip” (ILO, 2004; p. 3). ILO also remarks that the ship recycling industry, which “is one of the most hazardous occupations”, “contributes to sustainable development” and “is hazardous waste management” (ILO, 2004)

According to the author, the underlying purpose of ship recycling is to dismantle the structures of ships and restitution of the remaining reusable and recyclable parts back to the economy. Accordingly, ship recycling means the activities undertaken within the ship recycling facility borders, which are specified and appointed by the Authority, whether physically excluding some treatment activities or not.

1256 ships corresponding to more than 31 million DWT were recycled in 2010 (Figure 2.1) globally. The total world fleet was around 56,000 ships (over 500 GT) in 2010 and 1,800 ships (over 500 GT) will be recycled annually assuming the average life cycle of a vessel as 30 years (Mikelis, 2010a).
Figure 2.1: Recycled ships’ statistics for 2010
Source: Compiled by Author, on the basis of data supplied by NGO Platform on Shipbreaking, Annual report 2010; N. Cotzias Shipping Group, S&P Monthly report, December 2010

2.2 REUSE OF SCRAP

Although the ship owner has the ultimate right to decide whether to sell the vessel to a recycling yard or to keep in service, technological improvements, new international regulations and indubitably the shipping industry’s economic dynamics will have a great influence on the decision. The short and long term fluctuations in recycled volume statistics can only be explained with a more detailed insight look on reasons and interactions of all these decision variables of recycling.

Recycling is not the only way to get rid of obsolete vessels, however it is the only safe, environmental friendly and sustainable option if the procedures and regulations are followed properly. Fascinating grave yards like the one located at the Bay of Nouadhibou, seven miles south from the Mauritanian city can be established, where faithful but economically inefficient ships are left to decay and disintegrate naturally by the time passing in exchange of some cash to the local officers under neither any obligation and responsibility nor paper work. Another option is to form artificial
reefs by sinking the vessels like Mercedes 1, 1951 built, 198-foot freighter, which was sunk in 1985 and which is the most famous wreck of the east coast of Florida among divers. However, when the size of the world fleet and the volume of ships sent to recycling, reaching 144 units per month (see Figure 2.2), is considered, this option may only be an exceptional solution but not a sustainable choice. Another bright (!) solution of irresponsible ship owners to get rid of their assets is to sink the vessel in the middle of nowhere and have a ghost or phantom ship with no cost or paper work or concern of environmental causes.

Figure 2.2: DWT, LDT and number of recycled ships, January 2005 - January 2011
Source: N. Cotzias Shipping Group, S&P Monthly report, January 2011

Both the rehabilitation of the merchant fleet by recycling old vessels and the world fleet’s sharp expansion can be analysed from Figure 2.3. Further it can be interpreted that the percentage of vessels built between 1976 and 1980 which were recycled in 2009 have the highest percentage compared to other age ranges.
After more than 25 years of service, when the owner decides to recycle the vessel, almost every machinery, equipment, fittings, and furnitures in addition to hull’s steel can be re-used or recycled (Mikelis, 2006). According to some scholars around 95% of ships can be recycled (Hossain & Islam, 2006), and further Turkish recyclers claim 98% recycling percentage for even wastes of recycling operations (Figure 2.4).

A few well known instances on ship recycling may help to gain a different viewpoint. The department store, Liberty, in Regent Street, Central London was constructed from the timbers of two warships, namely HMS Impregnable and HMS Hindustan (Liberty, 2011). Similar to high quality steel of today’s ships the high quality timber of ships was precious for such constructions.
Another remarkable example of ship recycling is the story of Fighting Temeraire, which had a distinguished role in the Battle of Trafalgar. The famous painting illustrating its last voyage towards the recycling yard by J.M.W. Turner, hangs in the National Gallery, London. However the important point with this distinguished ship is that it was sold for £5,500 to the Beatson’s yard and the copper alone was sold back to the Admiralty for £3,000 (LR, 2011). Another example is the fact that 90% of Bangladesh’s coastal ship fleet is built and repaired by consuming the steel plates, materials, machinery and equipment of recycled ships (Chowdhury, 2010).

As of today, recycled materials, especially are important for recycling states’ domestic steel market and so for the economic balance. As it may be acknowledged, scrap steel of up to 1.5 million tonnes is a significant volume compared to the total steel production in Bangladesh or 15% contribution for Pakistan’s production (see Table 2.1).
Table 2.1: Contribution of ship recycling to Bangladesh and Pakistan, based on 2005-2008 data

<table>
<thead>
<tr>
<th></th>
<th>Bangladesh</th>
<th>Pakistan</th>
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<tr>
<td>Steel Consumption</td>
<td>5 m tons</td>
<td>4-5 m tons</td>
</tr>
<tr>
<td>Steel Production</td>
<td>2.2 to 2.5 m tons</td>
<td>3 m tons (target 2015: 10 m tons)</td>
</tr>
<tr>
<td>Scrap Steel from Ship Breaking</td>
<td>Up to 1.5 m tons</td>
<td>Up to 0.8 tons (2009)</td>
</tr>
<tr>
<td>Ship-breaking-steel Contribution to Production</td>
<td>50%</td>
<td>15%</td>
</tr>
<tr>
<td>Ship-breaking-steel Contribution to Consumption</td>
<td>20-25%</td>
<td>10%</td>
</tr>
<tr>
<td>Re-rolling mills</td>
<td>250-350</td>
<td>330</td>
</tr>
</tbody>
</table>

$m = million$

Source: World Bank, 2010

Scrap steel follows one of the preferred recycling processes as shown in Figure 2.5 afterwards the scrapped steel is sold for a corresponding price depending on its quality. Other reusable items such as machinery, furniture and fixtures, ropes, cabling, motors, panels, generators, boilers, cables, hydraulic equipment, pumps and radio room equipment are sold to bulk buyers like local and national retailers at a small premium over the normal steel price (World Bank, 2010). In short, every nut and bolt is being recycled or reused and become the backbone for many indirect industries.

Besides the high degree of recyclable and reusable content, there are certain and high volume of materials which cannot be recycled and should be handled in a safe and environmentally sound manner in order to consider the ship recycling a “green industry” (World Bank, 2010). Moreover, although ship recycling has been efficient in providing a ready supply of steel and other metals for re-use, there has been a cost in terms of lives lost and local environmental impact. Unfortunately, recycling of ships is widely associated with dangerous practices and pollution (LR, 2011).
Environmental and social consequences of the process of recycling the ships which are the “greatest assets ever moved in bulk” (LR, 2011), have been the center of interest leaving the overall economics, market operations, internal balance variables and competitiveness on the side for scientists. As researchers assessed the industry’s economics in a superficial way, there has been limited research on downstream demand for recycling activity productions and their contribution to the profitability (World Bank, 2010). Profitability of the sector explained as reliant on supply side factors, second or third row recycling dependent sub-sectors and high direct employment (World Bank, 2010) which is also recognized by NGOs as an important reason not to compel the industry to return to developed countries (Greenpeace & FIDH, 2005).

Ships to be recycled also symbolize an investment that an entire new banking system designed and legislation developed for financing (LR, 2011) and similar to the operations of the ships, recycling activities are also performed under profit
considerations. The cost structure and potential revenues vary among recycling countries depending on labour costs, tariffs, duties, level of implementation of environment and safety related legislation where the value of the ship is dominated by prevailing freight and sale and purchase market.

Figures 2.6 and 2.7 present the economic context of ship recycling in particular and inter-reactions of all other markets of the shipping industry at any precise time period. On the supply side, freight rates, along with the costs of keeping a vessel in operation, emerge as the most important determinants of a ship owner’s decision on when to send the vessel to a ship recycler. On the demand side, the market demand for scrap metal has a direct correlation with the steel price and the costs associated with the recycling itself, including costs associated with the dismantling process which determines the predicted revenue (World Bank, 2010).

Figure 2.6: Supply and demand in ship recycling market
Source: World Bank, 2010
History presents that dramatic falls of freight rates following unprecedented global economical booms, such as the one started in 2001 and peaked in 2007, force ship owners to return ships on time charter or sell their vessels to the recycling market. In addition, ship owners were desperate regarding finding cargo for new delivered ships and therefore cancelled new ship orders with the hit of crisis by 2008. Payoff for the excess capacity can be easily seen as a steep peak of the number of tonnage on recycled vessels (see Figure 2.8) and further as the downward attitude on the scrap price opposite to number of ships scrapped. There was a sharp decline in 2008, followed by a partial recovery in 2009 which may be considered as a summary of recycling market attitudes (World Bank, 2010). Scrap prices fell drastically to just $200 from $650 between mid-2008 and early 2009 and by March 2010 the price per LDT recovered and reached around $400. Besides all the different variables in the last years, the shipbuilding industry was also involved in the equations; %42 growth was observed on new deliveries in 2009 over 2008 which had been ordered prior to the downturn in demand, and which helped to the surprising increase in ship recycling (UNCTAD, 2010). Both for new building and recycling markets entrepreneurs invest to their expectations, and in the recycling case recyclers cannot
operate the fluctuations during the time lag between the moment the payment is made to the ship owner and the scrap steel is sold and income is generated. Recyclers should sense the fluctuations at least a few months in advance instead of following the day to day price changes, which is the duration needed to dismantle the ship, in order to survive in the business (World Bank, 2010).

![Average Scrap Price & No of Ships Scrapped 2005-2011](image)

Figure 2.8: Average scrap price and units of ships recycled, 2005 - 2011
Source: N. Cotzias Shipping Group, S&P Monthly report, January 2011

Besides the global level inter-relations, a number of variables like the costs of handling and disposal of hazardous wastes (where some recyclers have almost no such expenses) on the national level may cause a significant scrap price difference as well; In January, 2011 while Turkish recyclers was offering an average scrap price of $274, Indian competitors could offer $780; noting that this price has fluctuated between $120/LDT and $700/LDT in the last 15 years (World Bank, 2010). A VLCC owner, who has paid $90 million for his vessel 25 years ago, can make more than $10 million with a fair deal for recycling in addition to 25 years’ profit (Commission of the European Communities, 2007).
Table 2.2: Scrap prices for January 2011

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<th>Scrap Prices for</th>
<th>JANUARY 2011</th>
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<tbody>
<tr>
<td>CHINA</td>
<td>HIGH $495</td>
</tr>
<tr>
<td>INDIA</td>
<td>HIGH $780</td>
</tr>
<tr>
<td>BANGLADESH</td>
<td>HIGH $502</td>
</tr>
<tr>
<td>PAKISTAN</td>
<td>HIGH $500</td>
</tr>
<tr>
<td>TURKEY</td>
<td>HIGH $280</td>
</tr>
</tbody>
</table>

Source: N. Cotzias Shipping Group, S&P Monthly report, January 2011

Table 2.3: Disposal costs of hazardous and metarials

**SHIPRECYCLERS’S ASSOCIATION OF TURKEY**

**DISPOSAL COSTS OF HAZMAT AND WASTE MATERIALS FOR THE YEARS 2010 AND 2011 (5 MONTHS)**

**ASBESTOS**
Price charged by the Asbestos Disposal Facility: USD 2. per ton
Asbestos removed from ships in 2010: 300 tons x 2. = $600. in 2011 (five months): 300 tons x 2. = $600.
Transportation by licensed trucks ( $1000. per truck)
40 trucks = $40 000.

**LIQUID WASTES**
Price charged by the disposal facility: $200. per ton
Liquid waste removed from ships in 2010: 9000 tons x 200. = $18 000. in 2011 (5 months): 60000 tons x 200. = $12 000.
Transportation by licensed tankers ( $1000. per tanker)
600 tankers = $600 000

**HAZARDOUS MATERIALS**
Price charged by disposal facility: $200. per ton
Hazmats removed from ships in 2010/2011: 50 tons x 200. = $10 000
Transportation $100. per ton: 50 tons x 100. = $5 000

**NON LIQUID SOLID WASTES**
Price charged by disposal facility $50. per ton
Wastes removed from ships in 2010/2011: 2000 tons x 50. = $100 000.

Source: Sunata, 2011
Beside the aforementioned economical issues, one other issue should be taken into consideration is the strict regulations for a safer, more environmentally sound, secure and labour friendly shipping like the one developed by the IMO, known as the phase-out of single-hull tankers. In addition to the excess capacity joined to the world fleet in the last boom years, a gradual phasing out of single hull tankers has been assisted the upward move on recycling statistics (OECD, 2010).

For a golden era of a specific ship recycling facility, investors would choose a location where national or regional downstream industries’ demand for steel and other recycled materials may arise or even stay stable during the global economic contraction and recession periods. The importance of downstream industries appreciated in the latest studies although it was being underplayed or ignored in demonstrating the reallocation, performance and competitiveness of the industry (World Bank, 2010).

2.3.1 DECISION FOR RECYCLING

During the times of downturns, delaying and cancelling ship deliveries and orders can be a possible solution for the new building industry. Renegotiating contracts, laying-up and idling ships for the operating ones and the decision of recycling can be taken at a short notice as a response to market conditions when owners are much more inclined to sell their assets. That is why in 2008, the tonnage being recycled increased and the average age of the fleet decreased accordingly (noting the fact that ships are being built to last longer in recent years and the average age of broken-up ships has tended to increase) (UNCTAD, 2010).

While freight rates are the primary decisive on decision for recycling, a number of other factors such as age of the ship and expectations also have direct influence on assigning the price (Stopford, 2009).
Figure 2.9: The effect of age, market cycles and inflation on a bulk carrier (35,000 DWT)
Source: Stopford, 2009

During calculations and negotiations, it can be assumed that 5% or 6% of the ship’s value declines for each year in service and if the second hand value of the ship meets or falls below the recycling value at a particular time (see Figure 2.9, Point A), the recycling decision can be a wise choice as the intersection point “reflects the loss of performance due to age, higher maintenance costs, a degree of technical obsolescence and expectations about the economic life of the vessel” (Stopford, 2009).
Figure 2.10: Average age of recycled ships, by type, 1998 to 2009 (Ships of 300 GT and over)
Source: UNCTAD, Review of maritime transport 2010

2.3.2 TRANSACTION OF SHIPS FOR RECYCLING

The market has a variety of permutations when it is time for the last journey, which pushes governments, whether the flag state or the recycling state, and the international legislation to be flexible and broad depending on the situation. Ships may change hand under “as is, where is” condition to a traditional broker or the ship owner may sell the vessel directly to the recycling facility owner. “Cash buyer” and specialised brokers on the recycling market can be in between the recycling facility and ship owner (ENDS Report 409, 2009).

But since it is relatively easy to change the registration of a vessel, there is a risk that shipowners may choose to re-flag their obsolete vessels before selling them for scrap or simply sell them to a new owner, who may then decide to operate or scrap the vessels under a new flag. This happens to
some extent already today; the 25 leading flag states at the time of de-registration of a vessel (that is, after scrapping or loss at sea) include: Tuvalu, St. Kitts-Nevis, St. Vincent & Grenadines, Mongolia, Comoros, Cambodia and Dominica. These states are not among the top 25 flags where tonnage is registered for ships in service. Yet these seven countries accounted for almost 20 percent of the recycled (or deregistered) tonnage in 2008 and for less than 2 percent of the world's fleet in service that year (World Bank, 2010, p. 52).

However, the recycling facilities located in the same region may offer approximate scrap prices, the profit difference between two recycling facility may lead the ship owner to sail his ship to the other side of the world. On the other hand the safety and environmental concerns on the recycling facility close by also can be the reason of a last voyage with unloaded cargo holds to a remote but green recycling facility. Both reasons may be sufficient for a ship owner even if the situation requires to sail his ship with the help of tugs in case of no propulsion system and crew on his ship.

When the broker or recycling facility negotiates and signs the contract, he assumes all the risks and profit related to the ship or transaction. These risks may be the ground for the IMO to emphasize in the Hong Kong Convention that the definition of ship owner: “…also includes those who have ownership of the ship for a limited period pending its sale or handing over to a Ship Recycling Facility.” The term clearly counts the cash buyer as the owner and assumes the buyer as the responsible body.

The situation of the ship to be recycled is more confusing than the owner and has different aspects. However, arguments on this issue will be probed in the following sections, it is clear that if the ship owner is brave enough to handle extra procedures and paper work and feels responsible enough to pay more for handling hazardous wastes and declares the intention of recycling, then the vessel is a waste under the Basel Convention. On the other hand, with or without a declaration, the ship is not assumed as a waste according to the Hong Kong Convention and there are instances
on how the Basel Convention applies without a declaration or statement of the ship owner but relying on clear evidence.

If it is decided who the owner is and if it is a ship or waste, then it is time for insurance procedures and flag and classing the vessel. According to LR (2011) “often the ship completes the required operations so quickly that the questions become irrelevant, but now, under the Hong Kong Convention, the details are under far greater scrutiny.” LR also states that these issues should be mentioned in the contracts of related parties. Further, owners, brokers, financing institutes, insurers, classification societies, administrations and lawyers will need to reconsider their traditional interpretations and develop new solution strategies accordingly (LR, 2011).

2.4 Relocation History

However, until well into the 20th century American and English port owners were undertaking ship recycling activities in modernised facilities (World Bank, 2010) Taiwan’s escalation in the recycling industry can be assumed as the first moves from industrialized ports to underdeveloped facilities and coasts. Redundant warships and cargo ships damaged during the Second World War had become the supply for this new recycling spot with low labour costs and by 1965, after the adjustment of import controls, industry expanded in Taiwan.

Taiwanese recyclers take benefit of domestic scrap demand, purpose built yards, vast amounts of damaged ships plus cheap labour and became the world’s leading shipbreaker. Like Taiwan, Britain, Italy and Japan recycled a worthwhile amount of scrap steel; however, recycling industry followed the ship building industry and shifted eastward by the 1970s (LR, 2011).

“… on August 11, 1986, an explosion and fire on board the tanker *Canari* killed 14 people and injured 47 more. Due to a huge public outcry, what had been an unregulated industry in Taiwan suddenly became subject to a major crackdown.” (LR, 2011). As it is typical within the waste sector, the ship scrapping industry
moved, overnight. LR evaluation and indications on the end of the recycling sector on the national level is critical and maybe a rehearsal of a potential similar move which would occur in 2010s. Does not this “crackdown approach” recall the court decisions given for the yards in South Asia in recent years? The economical growth and increased labour costs also helped in the replacement of recycling yards with a container terminal (LR, 2011).

South Korea became the third biggest recycler in the 1980s, and with the rise in wages and shipbuilding expansion, Hyundai owned recycling facilities were closed. In the early 1980s, China and India entered the market; the first ship scrapped at Alang in 1983 and by the time the number of employees reached 40,000 in India and it was not hard for China to become the world’s second biggest scrap buyer in those times owing to substantial domestic demand.

Table 2.4 unveils that following mid-1980s, in ten years time Taiwan, China and South Korea looses their dominating position and Taiwan and South Korea almost leave the scene.

Table 2.4: Ship recycling tonnage by country (1985 - 95)

<table>
<thead>
<tr>
<th></th>
<th>1986</th>
<th>1991</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GT</td>
<td>%</td>
<td>GT</td>
</tr>
<tr>
<td>Taiwan</td>
<td>7,773</td>
<td>38</td>
<td>48</td>
</tr>
<tr>
<td>China</td>
<td>4,567</td>
<td>23</td>
<td>172</td>
</tr>
<tr>
<td>S.Korea</td>
<td>2,658</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Pakistan</td>
<td>861</td>
<td>4</td>
<td>445</td>
</tr>
<tr>
<td>Japan</td>
<td>770</td>
<td>4</td>
<td>81</td>
</tr>
<tr>
<td>India</td>
<td>636</td>
<td>3</td>
<td>695</td>
</tr>
<tr>
<td>Spain</td>
<td>581</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Turkey</td>
<td>418</td>
<td>2</td>
<td>77</td>
</tr>
<tr>
<td>Italy</td>
<td>311</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>268</td>
<td>1</td>
<td>512</td>
</tr>
<tr>
<td>Others</td>
<td>1,444</td>
<td>7</td>
<td>306</td>
</tr>
<tr>
<td>Total</td>
<td>20,287</td>
<td>100</td>
<td>2,365</td>
</tr>
</tbody>
</table>

Source: Stopford, 2009, p.485
In the 1990s, the industry was restricted by national legislation in China and market share of China fell to 9% in 1995 but India, Bangladesh and Pakistan were ascending (Stopford, 2009). The share of these three countries enlarged during the past three decades and their share have accounted for around and even more than 70% in recent years. Adding China and Turkey’s shares leaves out only around 5% of the global scrapped volume in the last decade while India and Bangladesh switching the biggest buyer position (World Bank, 2010). Besides these five, in Europe, in addition to the facilities located in Turkey, a number of small sized facilities around the UK and continental Europe are currently recycling vessels (Stopford, 2009).

The World Bank (2010, p.14) claims that “ship recycling has been a mobile industry which is subject to wholesale withdrawal from countries and to radical shifts in location”. Further, the recycling industry’s profound move from East Asia towards South Asia can be observed in Table 2.5.

Table 2.5: Ship recycling statistics by location, 1977 - 2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Taiwan</td>
<td>3,391</td>
<td>4,409</td>
<td>7,822</td>
<td>2</td>
<td>-</td>
<td>14</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spain</td>
<td>873</td>
<td>279</td>
<td>603</td>
<td>13</td>
<td>40</td>
<td>26</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>S. Korea</td>
<td>221</td>
<td>168</td>
<td>2,551</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Italy</td>
<td>229</td>
<td>101</td>
<td>198</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Croatia</td>
<td>151</td>
<td>62</td>
<td>130</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Japan</td>
<td>193</td>
<td>129</td>
<td>973</td>
<td>81</td>
<td>146</td>
<td>22</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>China</td>
<td>17</td>
<td>7</td>
<td>5,019</td>
<td>81</td>
<td>754</td>
<td>2,637</td>
<td>151</td>
<td>928</td>
</tr>
<tr>
<td>India</td>
<td>66</td>
<td>136</td>
<td>1,303</td>
<td>1,092</td>
<td>2,810</td>
<td>5,987</td>
<td>1,123</td>
<td>2,458</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>-</td>
<td>-</td>
<td>818</td>
<td>217</td>
<td>2,539</td>
<td>2,407</td>
<td>2,114</td>
<td>4,176</td>
</tr>
<tr>
<td>Pakistan</td>
<td>299</td>
<td>300</td>
<td>1,143</td>
<td>2</td>
<td>1,670</td>
<td>789</td>
<td>48</td>
<td>274</td>
</tr>
<tr>
<td>South Asia</td>
<td>-</td>
<td>436</td>
<td>3,264</td>
<td>1,311</td>
<td>7,019</td>
<td>9,183</td>
<td>3,285</td>
<td>6,908</td>
</tr>
<tr>
<td>Others</td>
<td>653</td>
<td>431</td>
<td>1,669</td>
<td>315</td>
<td>560</td>
<td>1,271</td>
<td>330</td>
<td>437</td>
</tr>
<tr>
<td>World</td>
<td>6,093</td>
<td>6,022</td>
<td>22,229</td>
<td>1,645</td>
<td>9,435</td>
<td>13,552</td>
<td>4,021</td>
<td>8,280</td>
</tr>
</tbody>
</table>

Source: World Bank, 2010

Researchers associate the reallocations of the recycling facility spots over time to domestic and regional scrap demand, labour supply, labour costs, occupational health, environment and safety regulations and enforcement levels of these
regulations. In addition to all these factors, changes in the tax regimes, land hiring dues and custom duties can be noteworthy for competitiveness (UNCTAD, 2010).

The relocation of the industry to South Asia, particularly to the top three leading recyclers, India, Bangladesh and Pakistan in the 1980s was a real life application of all the aforesaid factors. China experienced leaving and entering the recycling market several times, as a consequence of readjustments of one or some of the aforesaid factors in the “more green” way and so always offered slightly less competitive prices. Similarly, a 45% customs duty for import of vessels resulted in almost halting the recycling activities in Pakistan in the early 2000s and the authorities could not resist reducing duties and taxes in the recent years (World Bank, 2010).
III. PROMINENCE AND EFFORTS OF INTERGOVERNMENTAL ORGANIZATIONS DURING THE TRANSITION PERIOD

Due to fatal accidents and unavoidable assumed dangerous working conditions, environmental disasters and transboundary movements of hundreds of enormous structures and other several reasons, rightfully the ship recycling industry received a lot of attention in the last decades. Besides national enforcement mechanism deficiencies, the lack of an international regulatory framework considered as the excuse and the ground for the infamy in the eye of the public (OECD, 2010).

The shipping industry as a whole body was reluctant to notice the need for a green recycling industry as it was clear that the new regulations would make every stakeholder in the shipping business lose money and nobody could guess how big the ‘out of sight and out of mind’ waste problem is (LR, 2011).

This study will not summarize the development of legislation from scratch but will elaborate the contemporary discussions and efforts for a green industry by several international institutions. Further, the understanding of current steps that have been put forward by international stakeholders will also help to analyze the ship recycling concept evolution.

3.1 BASEL CONVENTION SECRETARIAT

Formerly the discussions of the Hong Kong Convention, the shipping industry thought that the Basel Convention was what the industry needed. It was an off-the-shelf convention and to interpret its regulations for shipping would be an accomplishment (Mikelis, 2010c).
The efforts of the UNEP on the transboundary movements of wastes in the early 1980s was the first signs of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal which was completed in the late 1980s and came into force in 1992. “The overall goal of the convention is to protect human health and the environment against the adverse effects which may result from the generation, transboundary movement and management of hazardous wastes.” further the two main pillars of the Convention are: “to establish a control system for the transboundary movement of wastes and the environmentally sound management of wastes” (Greenpeace & FIDH, 2005, p.43). In addition to Basel Convention, a follow up legislation ‘Ban Amendment’ has prohibited all transboundary movements of hazardous wastes from OECD, EC and Lichtenstein to other countries (European Community, 2010). Europe, which is one of the major customers for the recycling facilities, also preserved the salient features of Basel Convention in the European Waste Shipment Regulations (EWSR) (LR, 2011). However the Ban Amendment has not yet entered into force, it has had an effect within the EU (European Community, 2010). While the Basel Convention has been ratified by 177 state parties, including all five principal recycling states and has entered into force, the Ban Amendment has been ratified by 70 states including only China and Turkey among the major recyclers and has not come into force yet.

Following the preparation of “Technical guidelines for the environmentally sound management of the full and partial dismantling of ships” in 2002, an important decision was taken during COP 7 in 2004 as “a ship may become waste as defined in Article 2 of the Basel Convention and at the same time may be defined as a ship under other international rules”. This clearly means that the redundant vessels are subject to the provisions and principles of the Basel Convention (Wingfield, 2010).

One of the features which is at the center of discussions regarding Basel Convention and the Ban Amendment is the Prior Informed Consent mechanism, which includes the obligation for the ship owner to inform the flag state his intention to sell the ship to a recycling facility. The practicability of this obligation and the real life practices
may be the main reason for scholars to raise their voices claiming the implementation of the Convention in a volatile and cruel international industry, such as the maritime industry, is not feasible and inconsistent (Mikelis, 2010c). A long list of benefits of a ship owner can be noted in case of not informing the flag state about recycling intention and it should not be anticipated that ship owners will deliberately announce their intention to contravene the regulations of Basel Convention. In shipping a small difference like the change of the flag can free the ship owner from a wide range of responsibilities and especially thanks to the option of registering under flags of convenience, it is really fast and easy to do. Besides these examples as a result of several other reasons, the Convention can only be applied after violation by a ship owner. The response of the parties to the Basel Convention can be interpreting the “as is where is” sale as a declaration of recycling intention (LR, 2011).

According to the Basel Convention there is no exception of ship types and facilities. Ship recycling facilities should be authorized, and under the Basel Convention's technical guidelines on ship dismantling, beaching is not accepted as impermeable floors are prescribed for full ship containment at any stage of the dismantling process. However the Hong Kong Convention does not hinder beaching and NGOs counts the Hong Kong Convention as a step backwards regarding beaching (Bhattacharjee, 2009). On the other hand, some Indian recyclers believe that IMO will also ban beaching through guidelines which are being developed following the adoption of the Hong Kong Convention in 2009 (Aggarwal, 2010).

Another issue which can be continued to be discussed till the settlement of the international framework is the equivalent level of control of the Basel Convention and the Hong Kong Convention. To evaluate the levels of control of both conventions independently can have crucial consequences. However, there may be arguments on the practice, at least it is implied by IMO that the Hong Kong Convention aims at providing an equivalent level of control. This has been clarified by the European Commission’s Head of Waste Management, in June 2011 that the Hong Kong Convention is at least equivalent to the Basel Convention (LR, 2011).
An interesting real life case, the story of Tor Anglia, the ro-ro vessel, demonstrates both highlighted issues aforesaid and further leads to thoroughly thinking about the need of the Hong Kong Convention. It was decided to be recycled following 22 years of service in 2010. The excerpt from Lloyd List (2010, p.24) presents the story of the owner and operator of the ship, DFDS Tor Line who decided to recycle the vessel in China:

The owners … informed the Danish authorities accordingly. The Danish authorities applied the letter of European law and treated the entire vessel as a waste and not a ship. The owner was thus forced to ship all wastes from the final voyage back to Europe, even including bilge water despite the fact that under normal MARPOL conditions this should easily be sent to a discharge facility in port. Other ‘remotely toxic’ substances will have to be shipped back to Scandinavia. Despite its decision to have the vessel recycled in China rather than run up a beach, DFDS still found itself facing strong criticism in Denmark and LR (2011, p.24) comes up with the question marks and outcries accordingly: A couple of things about this case are confusing. Firstly, if the ship was a waste, why, under European Waste Shipment Regulations, was it allowed to go to a non-OECD country at all? Secondly, how did the Danish authorities intend to enforce the regulations since the ship was in Fujairah, and could simply, and legally, have changed flag to any other country? In this example, an impartial observer might conclude that the owner appeared to have acted responsibly and proactively, and was repaid for his good intentions with some highly impractical and inconsistent bureaucracy. If he had simply ignored his responsibilities and sold his ship to a beach, he would probably have received more money and less hassle. The case shows what a minefield even the most conscientious owner enters. Hopefully, it will not deter others from following a responsible ship recycling route. To be fair to those applying the regulations, it also offers an insight look into the very difficult legislative positions such ships create. It is not the fault of the enforcers – it is the fault of the difficult legislation. (LR, 2011, p.24).
The Basel Convention Secretariat, besides collaborating with the IMO for a more consistent international framework, also assists recycling states’ administrations and stakeholders of the industry in order to evaluate and strengthen the regulatory, institutional, procedural and infrastructural mechanisms. One of the latest organizations that the Basel Convention Secretariat organized is the Ship Recycling Technology and Knowledge Transfer Workshop in July, 2010. During the meeting, held in Turkey, technical matters on technical capacity building were discussed thoroughly by both industry and government representatives of Turkey and Pakistan.

It is obvious that the Basel Convention Secretariat is aware of the importance of implementing the regulations is equally important to develop them and the Secretariat is not blind to the problems of the industry.

3.2 INTERNATIONAL LABOUR ORGANIZATION

A considerable number of newspaper articles, NGOs’ reports and briefings have harsh but valid criticisms on ILO matters in the recycling industry. Besides the Guidelines developed by ILO in 2003, there are several conventions of ILO relevant to a host of fields like reducing risks of workplace hazards, work related injuries, accidents, rate of child labor, strengthening the workers’ rights and work place conditions (Greenpeace & FIDH, 2005). However ILO Conventions are not too popular among major recycling states, the compilation of some principal ILO instruments and ratification statues of recycling states may present the big picture through Table 3.1.

The workers employed in the recycling facilities are generally unqualified with very little education or illiterate, which eases the exploitation of their rights. Generally ship recycling facilities are the best-paying option for workers and maybe the only possible profession for the considerable number of people migrating to work in the recycling facilities in South Asia. While ILO considers the ship recycling industry as one of the most hazardous occupations, workers are neither provided personal protection equipment nor the basic trainings (Greenpeace & FIDH, 2005).
Table 3.1: ILO Conventions and status of principal recycling States

<table>
<thead>
<tr>
<th>Convention number and title</th>
<th>Year of adoption</th>
<th>Number of Ratified State</th>
<th>Ratification Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>C87, Freedom of Association and Protection of the Right to Organise Convention</td>
<td>1948</td>
<td>150</td>
<td>B, P, T</td>
</tr>
<tr>
<td>C98, Right to Organise and Collective Bargaining Convention</td>
<td>1949</td>
<td>160</td>
<td>B, P, T</td>
</tr>
<tr>
<td>C1, Hours of Work (Industry)</td>
<td>1919</td>
<td>47</td>
<td>B, I, P</td>
</tr>
<tr>
<td>C155, Occupational Safety and Health Convention</td>
<td>1982</td>
<td>57</td>
<td>C, T</td>
</tr>
<tr>
<td>C138 Minimum Age Convention</td>
<td>1973</td>
<td>161</td>
<td>C, P, T</td>
</tr>
<tr>
<td>C81 Labour Inspection Convention</td>
<td>1947</td>
<td>142</td>
<td>B, I, P, T</td>
</tr>
<tr>
<td>C95 Protection of Wages Convention</td>
<td>1949</td>
<td>96</td>
<td>T</td>
</tr>
<tr>
<td>C148 Working Environment (Air Pollution, Noise and Vibration) Convention</td>
<td>1977</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

B: Bangladesh, C: China, I: India, P: Pakistan, T: Turkey

Source: Compiled by Author, on the basis of information supplied by http://www.ilo.org/

For quite a large percentage of global ship recycling workers employment contracts, joining the trade unions and protection in case of sickness or accidents are out of question. Generally, the sooner facility owners and subcontractors finalize the recycling, the more they earn and long working hours and child labour do not bother anyone. In case of non-recognition of the industry in the national legislation system, it is not possible to inspect and take action accordingly. Considering all these problems, it may seem extreme to discuss women labourers’ situation and percentage (Christensen, 2010).
3.3 European Union

European Union decisions on developing regional legislation, early implementation of the Hong Kong Convention and EU’s positive attitude towards following an effective regime will be significant due to the size of her shipping sector. It should be recalled that all the Member States have maritime interests and they are all IMO members. The registered tonnage of EU Member States is around 25% of the world tonnage and 40% of the global tonnage is controlled by EU interests (Van, 2010). The portion of European flagged, owned or originated ships being recycled is around 35% (LR, 2011) and according to projections, EU flagged ships will contribute around 21% and EU owned ships will approximately contribute 38% to the recycled tonnage by 2020 (Van, 2010).

Some of the current studies at EU level are: preparation of impact assessment on possible legislative measures, early transposition of the Hong Kong Convention in EU law and some feasibility studies such as the list of “green and safe” dismantling facilities, list of ships likely to go for recycling and a fund for ship recycling (http://ec.europa.eu/environment/waste/ships/).

Table 3.2: EU developments

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 2006</td>
<td>Commissioner Dimas announces action on EU strategy on ship recycling</td>
</tr>
<tr>
<td>November 2006</td>
<td>Council Conclusions acknowledging that environmentally sound ship dismantling is a priority</td>
</tr>
<tr>
<td>May 2007</td>
<td>Green Paper on better ship dismantling</td>
</tr>
<tr>
<td>December 2007</td>
<td>opinion of the European Economic and Social Committee</td>
</tr>
<tr>
<td>May 2008</td>
<td>Resolution of the European Parliament</td>
</tr>
<tr>
<td>November 2008</td>
<td>EC Communication proposing an EU strategy for better ship recycling</td>
</tr>
<tr>
<td>May 2009</td>
<td>EU Member States sign Hong Kong Convention</td>
</tr>
<tr>
<td>October 2009</td>
<td>Council Conclusions on EU strategy</td>
</tr>
<tr>
<td>March 2010</td>
<td>EC Communication on assessment of the link between Hong Kong Convention, Basel Convention and EU-WSR</td>
</tr>
</tbody>
</table>

Source: Van, 2010
Without losing time following the adoption of the Hong Kong Convention, individual Member States are strongly encouraged to ratify the Convention as a matter of priority with the purpose to “facilitate its entry into force as early as possible and to generate a real and effective change on the ground” (European Community, 2010, p.9). During the interval till the entry into force of the Hong Kong Convention, stakeholders are asked for voluntary applications of the Hong Kong Convention regulations like the establishment of Inventory of Hazardous Materials. Ship owners and public attention have been canalized to the importance of green recycling through awareness campaigns and guidelines. The new EU-award for exemplary ship recycling is one of the unique examples of EU level efforts (Van, 2010).

The Green Paper on better ship dismantling was prepared in 2007 and ‘A Strategy for better ship dismantling’ was adopted in 2009. The strategy gives hints about EU ways of looking at the industry, some of which can be strategically important for the future of the ship recycling industry. For instance, while the EU has no intention to have a large recycling capacity within the borders of EU, it calls for prohibition of beaching (LR, 2011). Considering EU’s capabilities, there are no constraints other than profitability and competitiveness. As the scenario is far from economically self-supporting, there is no real incentive. (Ship dismantling and pre-cleaning of ships, Final report, 2007)

The Strategy further declares that ships for recycling should be regarded as wastes and fall within the scope of the Basel Convention. The other idea on a funding mechanism which will rely on mandatory contributions from the shipping industry is important for both recyclers and ship owners. The current practice for handling and treating wastes is far from the “polluter pays principle”. Further, it is clear that the option of funding through new adjustments on tax or port due regimes is on the table (LR, 2011).

In 2009, the European Commission was invited to assess the link between three main legal foundations of ship recycling, between the Hong Kong Convention, the Basel
Convention and EU waste shipment regulations. The Council concurrently was following the ongoing discussions on the level of control and enforcement mechanisms of the Basel Convention and the Hong Kong Convention. EU would consider to develop legislative measures or implement the Hong Kong Convention depending on the results of environmental, economic and social impact assessments (European Community, 2010).

Following the review of a number of EU origin documents, it might well lead to appreciate on the efforts on the diplomatic level. It is obvious that EU has been following up on international developments and given support. Moreover, EU has been occupied with assessing and constantly putting a step forward in recent years (Table 3.2).

If the development of the Hong Kong Convention and guidelines are examined it would easily be observed that EU member states are the main players who are shaping the texts. In the first place Norway is the owner of the first draft of the Hong Kong Convention and Indian recyclers even believes that EU has been acting jointly in IMO during the development of the texts (Aggarwal, 2010).

![Figure 3.1: Top 10 European countries that have sent end-of-life vessels to be broken on the beaches of South Asia in 2010](image)

Source: Compiled by Author, on the basis of information supplied by NGO Platform on Shipbreaking, Annual report 2010
NGOs strongly call the European owners not to sell their vessels to beaching facilities in Bangladesh, India and Pakistan. Additionally, they request administrations to prevent European-flagged ships being recycled in these mentioned locations. The statistics present the high number of EU owned vessels sent to South Asia beaches for recycling (see Figure 3.1) and justify the NGOs’ attitude and campaigns.

Lastly, the author believes that ratifying the Hong Kong Convention is a significant step for a safer and more environment friendly ship recycling and it would assumed as an indication of EU members’ motivation for green recycling and notes that the Hong Kong Convention has not been ratified by any States as of August 31, 2011.

3.4 Industry Associations’ Steps

The fact that a vessel can change owner at a moment’s notice even a few days in advance of recycling and the builder of the vessel will be really inaccessible and loosely connected to the ship during its servicing years, brings the importance of the cradle to grave notion of the Hong Kong Convention into attention.

Shipyard owners, ship owners and recycling yard owners are all undertaking several projects promoting the early implementation of the Hong Kong Convention and taking concrete steps to improve safety, environmental and health conditions in recycling yards.

One of the most active industry gatherings is the Industry Working Group on Ship Recycling, which is co-ordinated by the International Chamber of Shipping (ICS). Its current members also include BIMCO (Baltic and International Maritime Company); IACS (International Association of Classification Societies); IPTA (International Parcel Tankers Association); ITOPF (International Tanker Owners Pollution Federation Limited); Intertanko; Intercargo; and OCIMF (Oil Companies International Marine Forum) and ITF (International Transport Workers' Federation) (Guidelines on transitional measures for shipowners, Selling ships for recycling, 2009).
A number of guidelines including the first practical guidance on ship recycling – the Industry Code of Practice on Ship Recycling was developed by The Working Group since the establishment in 1999; the concept of the ‘Green Passport’ was also introduced by the Working Group (ENDS Report 409, 2009). Lastly, Guidelines on Transitional Measures for Shipowners Selling Ships for Recycling were prepared, and thousands of copies were distributed in 2010 and presented in several meetings and occasions. The Guidelines were developed following the adoption of the text of the Hong Kong Convention and the Working Group wished to reflect the new obligations of ship owners with the cradle to grave approach. The Guidelines gives a great importance to the Inventory of Hazardous Materials and the Working Group encourages the ship owners to prefer green recycling facilities when it is time to sell their obsolete vessels. ICS and ISF (2011) hope that “…adherence by ship owners to the ‘Transitional Measures’ will be taken as a sign of good faith on the part of the shipping industry.” (ICS & ISF, Annual Review 2011).

Besides the Industry Working Group on Ship Recycling, several other industry associations developed a vast number of instruments on a wide range of specific matters such as best practice guidance by OCIMF (Hallett, 2010) on tank entry and hot work or the Demolishcon Contract by BIMCO, which was developed for the last transaction of a ship for recycling.

The industry made instruments like Demolishcon would provide a consistent and commercially flexible international ground for stakeholders in the business while enshrining the principles of the international legislation, in particular the Hong Kong Convention (Industry Working Group on Ship Recycling, 2009).

On the recyclers’ side, the International Ship Recycling Association (ISRA) is a respectable assembly of the practioners who have the broadest knowledge and capability. ISRA stands out with high standards and approaches for a green recycling industry. Thus, it looks like the ship owners are considering the ISRA membership as a reliable way of selecting green yards during the transition period (LR, 2011).
3.4.1 Classification Societies

The Hong Kong Convention regulations make developing new approaches for ship building inevitable as well and this is where particularly classification societies are involved. Almost all societies have a master plan for the new challenges of the Hong Kong Convention and its transition period. Actually they have already been performing some of their plans either to take place in the front line of the market and to get the big slice or to encourage ship owners and shipyards for a green recycling or both.

Societies’ research and development departments are working on futuristic technologies and designs for a safer and cleaner recycling process, which means in the near future shipping will meet with ‘recycling-friendly’ ship designs and concepts (LR, 2011).

The IHM experts trained and certified by classification societies are already in the market and societies are preparing themselves for a possible IHM related overload in case of early entry into force. Besides trained IHM experts, softwares and electronic databases for keeping IHM records or for collecting all the Material Declaration (MD) data electronically are being developed and supplied to ship owners, shipyards and designers to reduce the workload and associate costs (ClassNK, 2010).

Responsible ship owners have further started to request the IHM from shipyards for new deliveries or prepared to classification societies for the ones in service. A new business is blinking to the classification societies as the maritime administrations would authorise classification societies for the preparation of the IHMs and classification societies are well aware of this opportunity.

Taking into account the size of the market following the entry into force of the Hong Kong Convention, the cost associated with the regulations of the Convention will discourage ship owners and so the flag states that have the large tonnages; however, the high costs will motivate IACS member societies towards the early entry into force.
3.4.2 International Organization for Standardization

ISO is a significant body for recycling facilities as its certifications are assumed a sign of being green and reliable by ship owners. ISO got the move on following the adoption of the Hong Kong Convention and published the ISO 30000 series of standards for ship recycling in 2009 which “specifies requirements for a management system to enable a ship recycling facility to develop and implement procedures, policies and objectives in order to be able to undertake safe and environmentally sound ship recycling” (http://www.iso.org/)

In addition to ensuring the confidence of full compliance with the national and international legislation, ISO 30000 series is considered as transparent due to the right of the customer to view the significant parts of the facilities’ management system and further, ISO 30000 series provides the basis for third party site visits and inspections which were discussed during the preparation of the Hong Kong Convention (LR, 2011).

ISO 30000:2009 applies to the entire process: accepting a ship for recycling by the facility; assessing the hazards onboard the ship; identifying and complying with any applicable notification and import requirements for ships to be recycled; carrying out the recycling process in a safe and environmentally sound manner; conducting required training; ensuring the availability of social amenities (e.g. first aid, health checks, food and beverages); storage and processing of materials and wastes from the ship; waste stream and recycling stream management, including contractual agreements; and documentation controls for the process, including any applicable notification of the final disposal of the vessel. (http://www.iso.org/)

As of today ship recycling facilities are being consulted by the accredited certification institutes for the ISO 30000:2009 certification for a better reputation in addition to ISO 9001, ISO 14001, OHSAS 18001 and others.
3.5 NGOs

The main objective of the ship recycling oriented NGOs is to promote safe and environmentally sound ship recycling and the main gathering is the NGO Platform on Shipbreaking, which has been in service since 2005. The Platform aims to promote green ship recycling through raising the public awareness against the violation of safety and environmental regulations and the abuse of labour rights (NGO Platform on Shipbreaking, Annual report 2010).

The NGO Platform is a conglomeration of environmental, human and labour rights organizations involving some unique bodies to ship recycling like the Prevention of Hazardous Shipbreaking Initiative and several other international forceful and globally well organized organizations such as Greenpeace and the Basel Action Network.

In a short time after the establishment of the Platform, due to the large scale and far reaching consequences of the abuses and irresponsible shipbreaking practices, it was not unexpected to reach a broad global support base to challenge the facility owners, ship owners, flag states or one of the principal recycling states for their actions.

The Platform managed to become a global player by the involvement of NGOs based in South Asia and “recognised by the United Nations and the European Union as the preeminent international NGO advocacy organisation on shipbreaking” (NGO Platform on Shipbreaking, Annual report 2010).

The Platform has really strong argument grounds, owing to South Asian recyclers and irresponsible ship owners, and has been influencing the IMO studies in the last years as well. It was possible to hear NGOs’ oppositions in the Plenary Sessions during MEPCs, and following the adoption of the Hong Kong Convention it is possible to come across a report or to participate in a demonstration; as NGOs believe that the Hong Kong Convention caused a step backwards regarding the beaching method, which is a significant threshold for green recycling.
At present the Platform concentrates on the practises in South Asia due to dismantling ships on sandy beaches and lack of safety, environment and labour health precautions. Although the advocates of green ship recycling can have political momentum and public support due to the dramatic and emotional consequences of irresponsible practices, it seems like it has not reached a certain level to stop or reduce the number of ships being sent to South Asia to the desired level.

Even though two of their actual campaigns will be mentioned in this study, the Platform and other NGOs have been carrying out numerous campaigns through a variety of communication means. The Off the Beach! campaign presents an inside look into irresponsible practices and their social and environmental consequences. Specifically the beaching practices are on the spot, and the Platform does not only exhibit the dark side but also recommends some possible solution theories to improve the standards in South Asia.

Another campaign project that may be visited today is a photo exhibition, named Broken, which is a travelling photo exhibition, hosted by Brussels initially. The campaign has a dedicated website and the concept of the photos presents the devastating pollution and working conditions in the main recycling states’ yards which are dismantling huge hulls on the sandy beaches of South Asia (NGO Platform on Shipbreaking, Annual report 2010).

The notion underneath the campaigns is to raise the awareness and expand the support which is sometimes enough for ship owners to reconsider their decisions or for administrations to develop stricter implementation mechanisms.

In the last few years, there are a number of instances that the Platform impeded the ships to be beached. Sometimes they directly benefited from public support; sometimes they were one step ahead of administrations and exposed the intention of the ship owner to recycle his vessel or by any other means.

The NGOs are taking advantage of every means of information and every possible way to prevent ships to be sent for beaching. The information and statistics available
regarding recycled or beached ships and all other pieces of information about the stakeholders involved in the transaction of a beach ended operation are being used to follow up violations. Thanks to improvements on facility standards and technology, NGOs can currently keep and announce all the details of irresponsible owners and irresponsible administrations or inform an administration before the ship’s arrival to the recycling destination, a South Asian recycling yard.

Table 3.3: List of some European company owned ships recycled on beaches

<table>
<thead>
<tr>
<th>Name of vessel</th>
<th>IMO No.</th>
<th>Last flag</th>
<th>Destination Yard</th>
<th>Beneficial owner</th>
<th>SO’s Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribbean Express</td>
<td>7400776</td>
<td>St Kitts-Nevis</td>
<td>Alang, India</td>
<td>Access Ferries S.A.</td>
<td>Greece</td>
</tr>
<tr>
<td>Pride</td>
<td>867196</td>
<td>Comoros</td>
<td>Gadani, Pakistan</td>
<td>Athos Marine Petroleum S.A.</td>
<td>Greece</td>
</tr>
<tr>
<td>Segai</td>
<td>863351</td>
<td>Liberia</td>
<td>Chattogram, Bangladesh</td>
<td>Argo Management S.A.</td>
<td>Greece</td>
</tr>
<tr>
<td>Roussia</td>
<td>861196</td>
<td>Kiribati</td>
<td>Gadani, Pakistan</td>
<td>AK Shipping &amp; Trading</td>
<td>Greece</td>
</tr>
<tr>
<td>Nikita</td>
<td>8607842</td>
<td>Comoros</td>
<td>Gadani, Pakistan</td>
<td>AK Shipping &amp; Trading</td>
<td>Greece</td>
</tr>
<tr>
<td>Stella</td>
<td>8600490</td>
<td>Liberia</td>
<td>Gadani, Pakistan</td>
<td>AK Shipping &amp; Trading</td>
<td>Greece</td>
</tr>
<tr>
<td>Pioneer Win</td>
<td>764401</td>
<td>Montenegro</td>
<td>Alang, India</td>
<td>Alexander Saleh</td>
<td>Romania</td>
</tr>
<tr>
<td>SNAV Compania</td>
<td>7399710</td>
<td>Italy</td>
<td>Alang, India</td>
<td>Allecati SNAV S.p.A.</td>
<td>Italy</td>
</tr>
<tr>
<td>SNAV Sicilia</td>
<td>7333822</td>
<td>Italy</td>
<td>Alang, India</td>
<td>Allecati SNAV S.p.A.</td>
<td>Italy</td>
</tr>
<tr>
<td>Selec</td>
<td>6219716</td>
<td>Malta</td>
<td>Chattogram, Bangladesh</td>
<td>Akinited Maritime Private Limited</td>
<td>Singapore</td>
</tr>
<tr>
<td>Pioneer Bay</td>
<td>8129652</td>
<td>Liberia</td>
<td>Sachesia, India</td>
<td>Amer Shipping Limited</td>
<td>Cyprus</td>
</tr>
<tr>
<td>Sagittarius</td>
<td>860349</td>
<td>St Kitts-Nevis</td>
<td>Alang, India</td>
<td>Amorebi Armatomi Group</td>
<td>Italy</td>
</tr>
<tr>
<td>Taurus</td>
<td>860395</td>
<td>St Kitts-Nevis</td>
<td>Alang, India</td>
<td>Amorebi Armatomi Group</td>
<td>Italy</td>
</tr>
<tr>
<td>Luna H.</td>
<td>589161</td>
<td>Panama</td>
<td>Alang, India</td>
<td>Astar Shipping Company</td>
<td>Italy</td>
</tr>
<tr>
<td>Sirte IV</td>
<td>734259</td>
<td>St Kitts-Nevis</td>
<td>Alang, India</td>
<td>Atlantic Shipping Ltd</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Hercules</td>
<td>7941360</td>
<td>Tanzania</td>
<td>Gardani, Pakistan</td>
<td>Atlantic Oil Maritime S.A.</td>
<td>Greece</td>
</tr>
<tr>
<td>New Beagle</td>
<td>8253307</td>
<td>Malta</td>
<td>Alang, India</td>
<td>Baltic Navigation SIA</td>
<td>Latvia</td>
</tr>
<tr>
<td>Kukar</td>
<td>8313845</td>
<td>Malta</td>
<td>Alang, India</td>
<td>Baltic Reefers Limited</td>
<td>Russia</td>
</tr>
<tr>
<td>Samaara</td>
<td>841961</td>
<td>Liberia</td>
<td>Alang, India</td>
<td>Baltic Reefers Limited</td>
<td>Russia</td>
</tr>
<tr>
<td>Smolensk</td>
<td>841932</td>
<td>Liberia</td>
<td>Alang, India</td>
<td>Baltic Reefers Limited</td>
<td>Russia</td>
</tr>
<tr>
<td>Aqua Fleet</td>
<td>6205307</td>
<td>St Kitts-Nevis</td>
<td>Sachesia, India</td>
<td>Baltic Shipmanagement SIA</td>
<td>Latvia</td>
</tr>
<tr>
<td>Cas I</td>
<td>7601047</td>
<td>Panama</td>
<td>Alang, India</td>
<td>Benelex Overseas Incorporated</td>
<td>Greece</td>
</tr>
<tr>
<td>Egypt Gas</td>
<td>7209876</td>
<td>Panama</td>
<td>Alang, India</td>
<td>Benelex Overseas Incorporated</td>
<td>Greece</td>
</tr>
</tbody>
</table>

Source: http://www.shipbreakingplatform.org/v2/?page=v2/ressources/reports/

It is also obvious that reputation is becoming the most important notion for shipping companies and a company can easily lose its good reputation gained after lots of years in the business for an extra $200 per LTD following an accident or an environmental disaster in a recycling yard where his vessel is beached. As can be
observed from Table 3.3, NGOs are using the last two significant concepts; available data, which is more detailed than ever before and the value of reputation, which is more valuable than ever before, and becoming a significant threat for irresponsible ship owners and recycling yards.

The Goldman Environmental Prize, 2009 granted to Rizwana Hasan, who is a lawyer and the Executive Director of the Bangladesh Environmental Lawyers Association (BELA), a public interest law firm, and who is “working to reduce the impact of Bangladesh’s exploitative and environmentally-devastating ship breaking industry” (http://www.goldmanprize.org/2009/asia) may be meaningful. It is not a secret that she is strongly arguing that IMO is not competent neither for the global waste management matters nor the labour health and safety issues and the Hong Kong Convention will not make any positive changes for insensible actors for the market (FIDH, 2009).

Recently, Greenpeace and FIDH consequently called upon UN institutions and governments to implement an effective and enforceable mandatory regime, based on the existing Basel Convention and on the ILO, IMO and Basel Guidelines on ship recycling (Greenpeace & FIDH, 2005).

3.6 INTERNATIONAL MARITIME ORGANIZATION

It was in 1999, when IMO first opened the Pandora’s Box, and the ship recycling has been accepted as a global shipping matter on the IMO level since then. During the 43rd Marine Environmental Protection Committee (MEPC), Norway proposed a new work item on ship scrapping and establishment of a corresponding group at MEPC 44 and a Working Group at MEPC 46 in 2001 followed each other.

In 2003, Guidelines on Ship Recycling were developed and the Green Passport concept was introduced in addition to the ship recycling plan which are constituent components of the Hong Kong Convention as of today. The context of the first Guidelines was mainly inspired by the Industry Working Group’s Industry Code of Practice and the first Green Passport was issued for the Shell LNG Tanker Granatina.
in 2004. During the 24th Session of the Assembly in 2005 a critical decision was taken towards developing a new global mandatory regime on ship recycling (Greenpeace & FIDH, 2005; Mikelis, 2010a). The new instrument would include regulations for all stages of a lifespan of the ship so as to facilitate safe, environmentally sound ship recycling which operates under the occupational health and human right principles (Greenpeace & FIDH, 2005).

Following the first submission of the draft text of the Convention to IMO, it took 3 years and 2 months for the Working Group to develop the text. The Hong Kong Convention was adopted on 15 May 2009 and is currently open for ratification by individual countries that are members of the IMO (European Community, 2010). The short duration of developing the Convention was surprising and considered as a record.

The Hong Kong Convention has created a number of new concepts and presented that shipping still has some places never regulated before, for example the huge number of issues which industry actors and rule makers were turning a blind eye until the Hong Kong Convention was created. The cradle to grave approach awakened the other shipping markets and recalled that every new built ship would end up at a recycling facility sooner or later; and recyclers are not suppose to pay all the dues for a new builder or for the operator. Further, the survey, certification and final survey mechanisms for ships, the authorisation mechanism for ship recycling facilities, the notion of the inventory of hazardous materials, ship recycling plan, international ready for recycling certificate and of course the reporting requirements of the Convention are all means for protection of the environment and ensuring the occupational health and safety measures (European Community, 2010).

The intention of the Convention is to touch all the issues around ship recycling in order to reduce or eliminate risks to the environment, labour health and safety, without compromising the operational efficiency of vessels and without trespassing the existing Basel Convention regime and ILO Conventions’ regimes. The Hong Kong Convention is not building a totally independent framework but rather
establishes an appropriate enforcement mechanism for ship recycling, and prescribes incorporating certification and reporting requirements.

Although many UN conventions can only be powerful within the boundaries of a particular signatory state, the IMO Conventions may have extra teeth regarding boundaries. The ‘no more favourable treatment’ clause of the Convention means a lot for the market. To make it clear, it is more than not allowing a ship entitled to fly the flag of a non-Party to a signatory state’s recycling yard and can be far reaching like refusing the entry of a non-Party flagged and substandard/not compliant ship to the State’s waters or harbours (LR, 2011).

Currently the Working Group is working on the Guidelines for Authorization of Ship Recycling Facilities, Guidelines for Port State Control under the Hong Kong Convention and the Guidelines for Survey and Certification of Ships under the Hong Kong Convention through its Corresponding Group. Guidelines are crucial during the transition period and for an early entry into force. These guidelines will be the assurance of practicability of the Convention regulations and will ensure confidence in ratifying. Besides the benefits of the guidelines which tend to be non-mandatory instruments, it is possible to make them mandatory through the national legislation and this has been generally done by States.

By the same token, ship buyers would also accept greater responsibility by requesting the use of environmentally sound practices when placing their orders for ships, for example in areas such as material usage, construction methods, and ship designs. In turn, ship dismantling enterprises could take greater environmental responsibility by sharing information about their dismantling and recycling practices, further work with constructors on how to reduce the environmental and related impacts of the dismantling/recycling process. It is clear that the implementation of a full-fledged life-cycle approach in the shipbuilding industry would not be an easy task. The process goes well beyond environmental management systems (EMSs), which to some extent have been implemented by the industry, and demands greater
information sharing and collaboration between input manufacturers, construction yards, shipping companies, ship owners and recycling yards (OECD, 2010).

While IMO officers are presenting and demonstrating the new requirements of the Convention almost in all international meetings, workshops and other occasions oppositions are also being expressed by either some recycling states and some NGOs. For instance Indian recyclers’ claims that the Convention and Guidelines have been prepared mainly under the influence of EU countries and oblige recyclers to handle all the responsibility while not assigning any obligation to ship owners (Aggarwal, 2010). Indian recyclers have a relatively cogent ground, considering the fact that except Turkey’s and China’s limited contributions to the Convention and Guidelines, South Asian recyclers have not actively participated in the IMO meetings and corresponding groups. However, there has been no reason for the recyclers not to act jointly during the development process of the Convention and Guidelines.

Specifically, the Hong Kong Convention policy has placed emphasis on ensuring that maritime transport operations and the undertakings of maritime-related industries are in accordance with international standards and responding to the global concerns regarding maritime safety, security as well as the marine environment.
IV. Transition from “Scrapping” to “Ship Recycling”

The terms “scraping” and “ship recycling” are being used fairly evenly and depend, to some extent, on the perspective and standpoint towards the economic, social or environmental aspects of the challenging process of disposing obsolete vessels. The first use of the “ship recycling” term by Jim Davies of the International Maritime Industries Forum (IMIF) concurs with the time of attitude changes in the industry (LR, 2011). His approach for the alternative wording was for mentioning the responsible recycling of ships and today the approach and wording seem to be approved by the public.

A disaster caused by a comparatively large vessel can easily grab the public attention and it is clear that the shipping industry as a whole is not immune to strong societal and political pressures. The investigating articles that revealed the dangers in the ship recycling industry brought the Pulitzer Price to Will Englund and Gary Cohn in 1998, 11 years before Rizwana Hasan (see page 41) and including several other occasions, the 1990s can be assumed as the early stage of building the pressure on the notion of traditional “scraping” (LR, 2011).

The choice of wording may have a clue to whether the process of disposing ships is considered as the most environmentally sustainable way and a modern idea or a significant global concern. Using the “ship recycling” term does not eliminate the facts. The industries like ship building or ship repair also have gravitated for some reason to different regions and countries in past; however the shifting of the recycling industry is rightfully criticized due to reallocation depending on low labor
costs, lack of regulations on occupational safety, and limited environmental enforcement in the new spots (LR, 2011).

Nowadays it is possible to come upon the use of the term “green recycling” to express the high environmental, safety and occupational standards in the facility as well. Some facility owners, NGOs, EU, ISRA and even recycling states use one or another way to express the standards. However, there is no consensus on the use of terms yet, and the guidelines being developed by IMO do not have such an intention to classify the facilities under a certain terminology; the entry into force of the Hong Kong Convention may inherently define the use of these terms for facilities.

4.1 NECESSITY FOR THE HONG KONG CONVENTION

The capacity of green ship recycling in terms of EU standards was around 2 million LDT/year in 2007, which means 30% of the average annual recycling demand globally (DG ENV, 2007) However, it does not mean that 30% of the recycled ships handled in green facilities, conform to necessary and satisfactory standards, as working full capacity is not the case for these facilities like the competitors in South Asia.

As mentioned in previous sections, the Hong Kong Convention is not the only and the first introduced legal mechanism to restrict obsolete vessels to be recycled in unsatisfactory conditions and to regularize the transboundary movements of hazardous wastes. Among the existing mechanisms, the Basel Convention and EU legislation have already had mainly what was discussed during the development of the Hong Kong Convention. To clarify the need of the Hong Kong Convention, especially these instruments should be analyzed although the need for the Hong Kong Convention could be explained with the dramatic growth of interest in safety, environment and occupational health issues.

Maybe the only point, which all the international bodies are all of one mind, is that all international instruments should be complementary to each other and coherent with the others. None of the instruments are trying to build a different level of
control, enforcement or implementation, however, they have different approaches to a number of issues.

A very basic answer to such question why the Hong Kong Convention is needed could be the fact that existing international legal mechanisms are not the best solutions for shipping in practice; however, they may be relatively suitable for most wastes.

One of the main new approaches that the industry needs and the Hong Kong Convention will provide is the life cycle approach or in other words the cradle to grave approach, which is not expressed directly in the Basel Convention and the EU waste shipment regulation. With the new Convention designers, ship builders and operators will have to take into consideration the impacts that were caused by construction, repair or operating processes which is not the case for the Basel Convention or the Basel Ban where the last owner and facility owner should handle all responsibility. A more integrated environmental and safety level and approach will be reached with the Hong Kong Convention entry into force (OECD, 2010).

The Hong Kong Convention seems to be offering a more combined and complex reporting sequence compared to the Basel Convention which essentially comprises the notion of the PIC-procedures and export bans. As can be seen from Figures 4.1 and 4.2, it is possible to add that the Hong Kong Convention’s reporting mechanism with the ship recycling plan (SRP), initial notifications, International Ready for Recycling Certificate (IRRC) and other new procedures gives a broader playing ground for administrations.
Figure 4.1: Reporting instruments under the Hong Kong Convention prior to recycling
Source: Doyduk, 2010

Figure 4.2: Reporting instruments under the Hong Kong Convention following the completion of recycling
Source: Doyduk, 2010

The Basel Convention and the EU waste shipment regulation principally cover all types of ships when they are subject to transboundary movements for recycling purpose and aim to regulate the transboundary movements of hazardous wastes; cover the succeeding processes and downstream treatment of wastes, at all types of facilities, including interim operations (European Community, 2010). However, the Hong Kong Convention covers 500 GT and bigger vessels with the exclusion of
warships or government owned ships, and the authorised facility’s activities are under the scope of the Hong Kong Convention but not the further treatment for wastes.

Table 4.1: Scope and objectives of main legal instruments

<table>
<thead>
<tr>
<th>Scope: ships</th>
<th>IMO Convention</th>
<th>Basel Convention</th>
<th>EU waste shipment regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>All end-of-life, privately owned ships apart from certain small ships (&lt;500GT), no coverage of warships and other state-owned ships.</td>
<td>All end-of-life ships.</td>
<td>All end-of-life ships.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scope: facilities</th>
<th>IMO Convention</th>
<th>Basel Convention</th>
<th>EU waste shipment regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first dismantling and recycling site, but not any interim facilities or installations for subsequent processing and disposal of waste.</td>
<td>All waste management facilities, including collection, transport, interim- and final recovery and disposal.</td>
<td>All waste management facilities, including collection, transport, interim- and final recovery and disposal.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objectives and applicability</th>
<th>IMO Convention</th>
<th>Basel Convention</th>
<th>EU waste shipment regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control of ships from design, through construction, operation and at the recycling stage. However, specific requirements for authorization and environmentally sound management of hazardous waste not clear until the IMO guidelines, that are currently been developed, are adopted.</td>
<td>Prior informed consent procedure (PIC). The principle of environmentally sound management (ESM) of waste applies to all facilities that receive or dispose of waste and is defined by guidelines, also specifically covering ship dismantling. The Basel guideline on ESM for ship dismantling does not accept 'beaching' (impermeable floors are prescribed for full ship containment).</td>
<td>PIC procedure. “Basel ban” is implemented prohibiting exports of hazardous waste from OECD countries to all facilities in non-OECD countries. Exports of non-hazardous waste are not allowed to facilities which do not respect environmentally sound management. The EU regulation refers explicitly to the Basel Convention’s technical guidelines on ESM.</td>
<td></td>
</tr>
</tbody>
</table>

Source: European Community, 2010

The geographical limitations for the Basel Convention and EU waste management regulation, which include the Basel Ban are deficient in geographically export boundlessness compared to the Hong Kong Convention unless the facility is not authorised according to the Hong Kong Convention regulations. Setting borders in the shipping business where ship owners would lose more than $200 per LDT in order to follow regulations does not seem a practical arrangement and the Hong Kong Convention allows ship owners to sell their assets to a developing country or a non-OECD country if the facility is authorised (European Community, 2010).

The beaching method for recycling is not prohibited by the Hong Kong Convention and still remains a disagreed issue among IMO and NGOs, where beaching has not been recognized as a dismantling method by the Basel Convention and EU waste
management regulation. Although both legislations are in force, it is clear that this clause cannot necessarily be enforced on ship owners (DG ENV, 2007). Economics of the recycling industry may not allow terminating all recycling activities in South Asia, which may lead to another dead born regulation like the clauses in the Basel Convention and EU waste management regulation. Practices will present the decision of market players whether, as a consequence of the Hong Kong Convention, beaching methodology will be perpetuated or the responsible ship owners will follow a responsible attitude towards a safer and greener industry (FIDH, 2009).

Furthermore, EU believes that the Hong Kong Convention will be a step forward towards obstructing the negative aspects of the beaching method (Van, 2010).

The Basel Convention and EU level applications have presented that shipping should be evaluated considering its unique characteristics, while strict and time consuming port state, flag state, vetting and all other procedures are all in place, PIC procedures have not been accepted and fulfilled by every segments of the industry.

The Hong Kong Convention was developed by considering the market dynamics and industry facts, without the expectation to reshape the industry’s structure but to regulate the existing processes (Mikelis, 2010b) where “obvious deficiencies and the failure to provide for socially and environmentally sustainable ship dismantling have alerted the international public and created political momentum” (Commission of the European Communities, 2007, p.3)

4.2 DYNAMICS TOWARDS THE ENTRY INTO FORCE OF THE HONG KONG CONVENTION

Succeeding the observation of the fact that the existing international instruments are not the completely appropriate and adequate solutions for the growing demand for a sustainable, safe and environmentally sound ship recycling industry, the Hong Kong Convention is envisaged as the trigger point for the difference in the market dynamics, recycling facilities’ standards and in the public perception.
The analysis, following the Diplomatic Conference in 2009, claimed that the Hong Kong Convention would enter into force by 2015; however, passing years and according to the author initial steps have presented that the interim period may be longer than expected. Still there is no State that has ratified the Convention and according to author’s observation both the ship owners and the recycling facility owners have economic concerns with regard to possible changes in the market structure.

All stakeholders are aware that although the interim period may be extended, there is no way back as the genie is out of the bottle and sooner or later the Hong Kong Convention will enter into force. Further, there are two options during the interim period: ship owners and facility owners, flag states and recycling states can do noting or voluntarily initiate implementation of feasible technical requirements of the Convention, which is required by Resolution 5 adopted by the Hong Kong Diplomatic Conference (Mikelis, 2010b).

IMO is giving a great importance to encourage and motivate, especially the principal recycling states, to agree on implementing some of the regulations of Convention voluntarily. During the Regional Workshop on the Early Implementation of the Technical Standards of the Hong Kong Convention in 2010, principal recycling states and several other stakeholders, including IMO, discussed the possibility of reaching an agreement on implementing some of the particular regulations of the Convention on a voluntary basis. The logic was to make the agreed regulations among recycling countries de facto international requirements; considering that more than %95 of the recycling is being handled in just five countries and if all agreed to implement certain regulations, ship owners would have no other option. While looking for the applicable regulations, some of the mechanisms came up front like the Inventory of Hazardous Materials, the Ship Recycling Plan or accepting only tankers with pre-cleaned and gas-freed tanks. Commonly enforced regulations would not lead to a loss of a particular recycling state’s commercial advantage and dealing with five recycling states is easier than to deal with several flags of convenience.
and/or major flags. Although as of today, there is no consensus on such a common practice.

One significant issue to be taken into consideration is the future recycling demand expectations which may affect the recyclers’ decisions on even a company level or on a national level. World Bank (2010) expresses that the recycled tonnage is not expected to be as low as in recent years even if the global economy advances. It seems like the massive ordered tonnage, which has been delivered till 2008, will be in excess of demand and will lead old vessels as the supply of the recycling industry for at least next 5 to 10 years (see Figure 4.3), (World Bank, 2010).

![Figure 4.3: Recycling volume 2000 to 2009 and projected volume by 2030 (million GT)](image)

Source: The ship breaking and recycling industry in Bangladesh and Pakistan. World Bank, 2010, p.30

The shipping industry is also getting ready for the new investments and business opportunities coming along with the Hong Kong Convention. Classification Societies are developing their action plans and when they become ready, they may be more eager for a safer and more environmentally sound ship recycling industry, which will be felt as an additional pressure by administrations.
However, the exact number is not available it is known that hundreds of vessels already have a class certified inventory whether in accordance to the Green Passport format or to the IHM format in compliance with the Hong Kong Convention and thousands of IHMs will be verified and approved following the entry into force (World Bank, 2010). The Japan Ship Technology Research Association gives a reference cost for preparation of the IHM at around $30,000 or $50,000 depending on ship’s particulars and available resources (ClassNK, 2010).

Further, researches for a safer and more environmentally sound oriented recycling process are being conducted. Under the growing interest of ship owners for the green manufacturing process, IACS members are conducting several research projects on green ships as well (LR, 2011).

The public attention and growing concerns are not only on beaches where recycling takes place but also on the exported ships for recycling even if they belong to governments like the US’ ships. The Navy and the Maritime Administration has stopped exporting ships to foreign countries since 1997 and 1998, which today leads the US to find or form green recycling facilities (OSHA, 2010). Noting that the USS Coral Sea, the aircraft carrier, which was recycled in Brownsville in 1995 was the first instance of an accusation for the environmental violations within the US shipbreaking industry resulting in the imprisoned owner of the facility dying in prison five years later. These occurrences in the USA may explain the headlines in almost every maritime magazine regarding the decision of recycling the former Royal Navy warship, HMS Invincible, in a Turkish recycling facility in 2011. (http://www.bbc.co.uk/news/uk-england-13778654)

Some articles asserted that the decision to choose a Turkish yard was crediting the facility to be green and it was a justifiable claim as the author’s next example will be on the same company which is on third party inspections to the facility and the recycling process. However the Hong Kong Convention does not directly concede the third party inspections, market dynamics allow and urge companies for it which can also be interpreted as one the shifting reflections of the industry through the early
entry into force of the Convention. The Turkish recycling facility, Loyal Ship Recycling Facility, let Lloyd’s Register (LR) to observe whether the facility was carrying out the dismantling, handling and treating processes in accordance with the ship owner’s conditions and instructions. LR (2011, p.22) envisages that “such benchmark projects are the way forward in the interim period before the Hong Kong Convention enters into force.” It is a fact that it is not a feasible investment to take the risks of a third party check or site inspection for a recycling facility, unless a responsible ship owner is being placed on the supply side of the equation. By the time the responsible ship owners’ number escalates the transparency will be a must for facilities.

Bangladesh, India and Pakistan do not claim that the industry is ready for an early ratification, while, the Court decisions or authorities’ efforts for new legal instruments push the industry to focus on a ratification process as soon as possible despite the infrastructural and financial deficiencies and the inconvenient political situation. Rizwana Hasan, Executive Director of BELA expresses that both the “ship owners and the exporters can’t afford to lose the territory of Bangladesh for their dumping purposes!” (NGO Platform on Shipbreaking, Annual report 2010) and it is a fact of the global recycling industry, which determines the calculations for an early into force scenario. On the other hand, Mr Aytas, Director General of Undersecretariat for Maritime Affairs reveals that Turkey has no such a large scale infrastructure and legislative inadequacy considering the Hong Kong Convention’s safety and environmental concern level and further due to the comprehensive nature of the Hong Kong Convention, new acts and regulations are being developed to achieve the compliance up to a considerable extent before ratifying or entry into force of the Convention (Aytas, 2011, Online interview).

A recent study by the World Bank (2010) presents the economic burden of compliance for two main recycling states, Bangladesh and Pakistan in economic terms. The estimated cost of compliance with the Hong Kong Convention will be around $80/LDT and pre-cleaning operations and towing of a medium size oil tanker
would cost $180–280/LDT. Although the burden of a particular state to decide implementing the regulations of Hong Kong Convention would lead to a tonnage decline, an early and synchronized step forward ensures a less painful transition period and further provides a viable and sustainable industry (World Bank, 2010).

During an interview with Mr. Sunata (Online interview, 2011), he mentioned that after 30 years of work in the ship recycling industry he claimed that the industry has a bright future without a supply decrease in the medium term, and further he believes that someday ships will be recycled in the green yards free of charge or even for a recycling fee paid to the facility. This happened before for four MARAD ships, which were recycled in Able, the UK or for the facilities located in Brownsville, Texas. If these examples become more frequent, it would not be necessary to argue about the issues that are being discussed today as the facilities would be competing about being “more green” with an economic approach.

On the other hand it is dramatic that it is possible to come across the discussions on how to by-pass the Hong Kong Convention. The concern underlying the by-pass quest is the possibility that the Convention may operate as a barrier for recyclers or ship owners after its entry into force, which would negatively affect the shifting forces towards an early ratification or voluntary steps during the interim period. Dr. Mikelis (2010b) clarifies the Convention’s terms regarding Regulations 8.1, 16.1 and 17.2 of the Hong Kong Convention to dissolve the worries. The mentioned regulations briefly stress that “Party ships can only be recycled at Party recycling facilities, and Party States can only accept ships that comply with the Convention (Party ships); or the ships meet the requirements of the Convention (non-Party ships)” and Dr. Mikelis utilizes some numbers and calculations to simply present the possible commercial reflections of the industry for these Regulations.

According to Mr. Mikelis, if a Panamax (10,000 LDT) owner decides to meet the requirements of the Hong Kong Convention, the cost will be around $3 per LDT and then this non-Party ship may legally be recycled in a Party facility. Conversely, a Party ship can legally become a non-Party ship and choose a non-Party recycling
facility for a cost of US$1 per LDT for the aforementioned Panamax by changing the flag. When these cost ranges ($3 per LDT or US$1 per LDT) are compared to scrap prices ($250 - 600 per LDT), it allows market dynamics to be structured depending directly on ship owners and facility owners’ decisions (Mikelis, 2010b).

In addition to all these interacting dynamics being reshaped and reassessed by all stakeholders in the maritime industry, the effectiveness of the Hong Kong Convention will rely on other significant factors as well. Whether during the interim period or following the entry into force administrations should develop consistent authorisation policy, monitoring and auditing mechanisms, the practices for flag state implementations, enforcement mechanisms and could even make the third party involvements to site inspections possible, and so forth (European Community, 2010).

The last but not the least issue which will urge the maritime industry to move faster during the interim period will be the outcomes of the researches regarding the effects of beaching considering climate change and sea level rise. (NGO Platform on Shipbreaking, Annual report 2010). Climate change has the public attention already and NGOs are aware that to gain the public support against worsening environmental effects due to sea level rise can be easier.

4.3 Projection For Relocation

Prospects on relocation should be assessed by taking into account the historically experiences examined in the second chapter and significant factors on the profitability. The fact that, as of today South Asia is enjoying the comparative advantage of almost all profitability factors mentioned throughout this study, precludes a large scale relocation of the industry from this region. The resistance of the main recycling countries to change these conditions will be further discussed in the next section.

All five major recycling countries were developing countries in 2010 (http://www.imf.org) and expanding urbanization in South Asia is assumed to be continued and the economic growth for China and Turkey seems sustainable, which
means the demand for scrap steel and other recyclable materials will have a positive effect. World Bank (2010) has an evaluation depending on the low wage criteria, which presents that Cambodia and Myanmar has the low wage advantage against Pakistan but not Bangladesh. The risk of relocation from the low labour cost point of view obviously makes Turkey and up to a certain degree China likely to lose their shares in the market. At this point Turkey’s and China’s more green profile may help to keep their market shares and the World Bank concludes that the low costs of the beaching method and local market dynamics in Pakistan and Bangladesh will not let a relocation in near future from these countries (World Bank, 2010).

Beyond the comparative analysis, the recycling methodology of South Asian countries, so called beaching, which is prohibited by the Basel Convention, is the means of recycling of up to 95% (LR, 2011) of the global recycling capacity and the author could not reach any suggestions for such massive recycling replacement capacity. This means that although NGOs and other bodies concerned are arguing strongly against beaching and its consequences, there is no replacement recycling state with a greener approach. It is another fact that safety, environmental and occupational health concerns are not sufficient for ship owners to choose Turkey instead of South Asia as Turkey never faced a capacity problem, even during the times when China was not assumed having green recycling facilities. The attitude of the South Asian recyclers against NGOs’ campaigns and the strong resistance against the change also support the author’s thesis as recyclers do not believe that relocation is possible in the near future.

The European Union clearly mentions that it is not the aim to form a recycling capacity in Europe or to terminate the beaching practise which can be interpreted not envisaging large scale relocation (Commission of the European Communities, 2007).

The possibility of a new recycling location whether a compliant or a non-compliant location, where ship recycling activities have never existed before or an already engaged location, depends on domestic steel demand, a reuse market for equipment and other consumables, level of enforced regulations, low wages, and a non-capital
intensive berthing methodology. So, if the existing principle recyclers’ standards reach to a compliance level for the Hong Kong Convention, there may be chance for a new location which stays outside the jurisdiction of the Hong Kong Convention (World Bank, 2010).

As of today, a number of countries, which embody some of these conditions, can be compared to major recyclers. Countries located in the Bay of Bengal or the South China Sea including Myanmar and Cambodia (which has a less wage advantage) may form a capital intensive sector due to lack of tidal difference. The impracticability of beaching methodology for most of Africa may be considered as the main obstacle too. Assessing the recycling activity transfer to Europe is also unlikely considering the strong regulatory framework in addition to the conditions mentioned for the Bay of Bengal or South China Sea; therefore, niche markets located in Europe may be retained but a large scale recycling capacity boom is not expected (World Bank, 2010).

The author claims no big scale relocation in the short term under prevailing regulatory conditions and with the assumption that beaching will not be banned on a global or national basis.

4.4 Theories for the entry into force of the Hong Kong Convention

Besides economical incentives, the date of entry into force will be influenced by political and legal motives. While the willingness of administrations will be determined by the compliance level of national legislation, ensured enforcement and implementation instruments and the level of public pressure; the motives for the ship and facility owners will be economic benefits and less procedural burdens.

Several international institutions expect the new International Convention for the Safe and Environmentally Sound Recycling of Ships will enter into force in 2015 (World Bank, 2010), which means 24 months after the date on which the conditions of Article 17 are met.
Before digging deeper the conditions of Article 17 are: The Convention should have been ratified by fifteen states, and merchant fleets of those states should constitute not less than 40 percent of the gross tonnage of the world’s merchant shipping fleet and further the recycling volume of those states during the preceding 10 years should not be less than 3 percent of the gross merchant shipping tonnage of those states.

The unusually high percentage for the merchant fleet (Article 17.1.2) deserves consideration which is also asked to be even higher during the Diplomatic Conference by a number of States (LR, 2011).

If the numbers are assigned to these conditions, 15 states, whose fleet volume is not less than 383,192,992 GT, and combined maximum annual ship recycling volume is at least 11,495,788 GT by 2011 depending on data until 2010, and the figures will change accordingly in 2012 (Table 4.2).

Dr. Mikelis classifies the major recyclers according to their capacities; three of the states have large capacities: India (6.5 MGT), China (4.7 MGT), and Bangladesh (3.9 MGT); and Pakistan (2.4 MGT) has medium capacity; and Turkey (0.7 MGT) has small capacity. The recycling tonnage by all other states is less than Turkey’s capacity.

Taking into account Article 17 and data provided in Table 4.2 and 4.3; ratification by India and China provides the sufficient recycling capacity for the entry into force. Further, when the statistics were analysed for the last ten years, it is clear that at least one of the large capacity states’ ratification is essential for the entry into force (Table 4.3). When 2010 is considered and the average annual increase of the world fleet is assumed as %5, two large states’ ratification will be sufficient until 2015 or beyond (Mikelis, 2011).
Table 4.2: Recycling data referred at Article 17 (in GT)

<table>
<thead>
<tr>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% of WORLD FLEET</td>
<td>229,000,410</td>
<td>242,033,321</td>
<td>246,307,504</td>
<td>253,356,440</td>
<td>270,646,382</td>
<td>299,042,192</td>
<td>309,974,843</td>
<td>332,269,765</td>
<td>363,063,522</td>
</tr>
<tr>
<td>20% of 40%</td>
<td>45,800,082</td>
<td>49,206,063</td>
<td>49,263,509</td>
<td>50,671,380</td>
<td>54,129,274</td>
<td>59,808,418</td>
<td>61,958,926</td>
<td>66,453,905</td>
<td>72,614,704</td>
</tr>
</tbody>
</table>

Source: IHS Fairplay, World Casualty Statistics, 2011

Table 4.3: Annual volumes of recycled tonnage (in GT)

<table>
<thead>
<tr>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORLD TOTAL</td>
<td>16,216,481</td>
<td>15,376,664</td>
<td>15,928,192</td>
<td>7,196,452</td>
<td>3,772,216</td>
<td>3,591,845</td>
<td>4,152,847</td>
<td>8,279,787</td>
<td>21,958,520</td>
</tr>
<tr>
<td>BANGLADESH</td>
<td>2,950,452</td>
<td>2,600,073</td>
<td>2,633,803</td>
<td>3,035,567</td>
<td>2,113,768</td>
<td>2,882,556</td>
<td>1,837,593</td>
<td>4,176,296</td>
<td>6,608,531</td>
</tr>
<tr>
<td>CHINA</td>
<td>2,920,742</td>
<td>3,598,818</td>
<td>5,592,442</td>
<td>1,538,087</td>
<td>1,167,084</td>
<td>294,546</td>
<td>243,758</td>
<td>262,762</td>
<td>7,307,330</td>
</tr>
<tr>
<td>INDIA</td>
<td>4,767,003</td>
<td>6,761,249</td>
<td>6,509,249</td>
<td>1,916,586</td>
<td>1,123,467</td>
<td>882,965</td>
<td>3,132,192</td>
<td>2,481,113</td>
<td>7,861,248</td>
</tr>
<tr>
<td>PAKISTAN</td>
<td>1,738,650</td>
<td>197,235</td>
<td>815,986</td>
<td>205,088</td>
<td>47,938</td>
<td>185,987</td>
<td>373,631</td>
<td>273,937</td>
<td>2,109,637</td>
</tr>
<tr>
<td>TURKEY</td>
<td>164,720</td>
<td>58,637</td>
<td>283,367</td>
<td>200,143</td>
<td>157,553</td>
<td>143,148</td>
<td>177,487</td>
<td>441,561</td>
<td>552,654</td>
</tr>
<tr>
<td>REST OF THE WORLD</td>
<td>121,936</td>
<td>239,623</td>
<td>472,221</td>
<td>272,246</td>
<td>196,846</td>
<td>266,371</td>
<td>144,211</td>
<td>262,698</td>
<td>393,113</td>
</tr>
<tr>
<td>% of big 6 to world total</td>
<td>99%</td>
<td>59%</td>
<td>97%</td>
<td>98%</td>
<td>95%</td>
<td>94%</td>
<td>97%</td>
<td>96%</td>
<td>94%</td>
</tr>
</tbody>
</table>

Source: IHS Fairplay, World Casualty Statistics, 2011
As was explained and assessed in this study, the author does not foresee a new principal recycling state to join these major recycling states. Therefore, theories will focus on existing major recycling states.

World Bank (2010) envisages that Bangladesh and Pakistan have to invest noteworthy funds, time and effort to comply with the Convention. Legislative gaps should be eliminated, additional institutional capacity should be endured and upgrading of facilities infrastructure should be carried out, which are presented in Tables 4.4 and 4.5. The situation and conditions of India can be assumed comparable to these two countries with a judgement of NGOs’ claims.

The time schedule for Bangladesh presents at least 3 years for a move towards ratification; further, as the Hong Kong Convention does not require ships to be pre-cleaned prior to be received by recycling yard, the period may extend up to 10 years due to developing facilities and procedures for hazardous wastes even the expenses ($50 million and $9–11/LDT) are covered either by government or facility owners. Further, the following Table 4.4 illustrates a similar situation for Pakistan, which foresees compliance over a 10 year period (World Bank, 2010).

Table 4.4: Necessary measures to achieve the Hong Kong Convention compliance in Bangladesh

<table>
<thead>
<tr>
<th>Time</th>
<th>Necessary measures</th>
<th>Total investment costs ($ million)</th>
<th>Costs per LDT*</th>
</tr>
</thead>
</table>
| 1–2 years | • Worker registration and PPE  
               • On-site pollution and safety control equipment  
               • Preparation of various plans (EHS management, ship recycling action plans) | 3.5 | 2–3 |
| 3–5 years | • On-site equipment (variable)  
               • Training/capacity  
               • Health care system  
               • Monitoring Laboratory | 20–25 | 3–4 |
| 6–10 years | • Hazardous waste disposal  
               • Thermal treatment facility | 25 | 4 |

*Including costs of operation and interest payments (10 percent pa) at 1.4 million LDT/year.

Source: World Bank, 2010
Table 4.5: Necessary measures to achieve the Hong Kong Convention compliance

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1–2</td>
<td>Draft guidelines for facility operation, local standards from IMO work</td>
<td>\textit{R15}</td>
<td>Worker safety–training and personal protective equipment</td>
<td>\textit{R22}</td>
</tr>
<tr>
<td></td>
<td>Develop facility inspection regime (existing legislation)</td>
<td>\textit{A9}</td>
<td>Prepare plans</td>
<td>\textit{R21}</td>
</tr>
<tr>
<td></td>
<td>Establish health and training centers, including training for inspectors</td>
<td></td>
<td>Emergency preparedness</td>
<td>\textit{R19}</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Prevent adverse effects to human health (gas free entry, spill prevention)</td>
<td></td>
</tr>
<tr>
<td>Year 3–5</td>
<td>Establish interim standards</td>
<td>\textit{R15}</td>
<td>Prepare plans</td>
<td>\textit{R18}</td>
</tr>
<tr>
<td></td>
<td>Authorize facilities—simplified version</td>
<td>\textit{R16}</td>
<td>Ship recycling facility</td>
<td>\textit{R23}</td>
</tr>
<tr>
<td></td>
<td>Inspect facilities (existing legislation)</td>
<td>\textit{PR}</td>
<td>Incident reporting etc</td>
<td>\textit{R17}</td>
</tr>
<tr>
<td></td>
<td>Establish hazardous waste management facility(ies)</td>
<td>\textit{PR}</td>
<td>Establish management systems to protect workers and the environment</td>
<td>\textit{R20}</td>
</tr>
<tr>
<td></td>
<td>Establish laboratory</td>
<td></td>
<td>Safe and environmentally sound management of hazardous materials</td>
<td></td>
</tr>
<tr>
<td>Year 6–10</td>
<td>Ratify Convention</td>
<td>\textit{A16}</td>
<td>Upgrade facility to HKC guideline standard</td>
<td>Guidelines</td>
</tr>
<tr>
<td></td>
<td>Full authorization of facilities</td>
<td>\textit{A4, R16}</td>
<td>Reporting–notify start of recycling</td>
<td>\textit{R24}</td>
</tr>
<tr>
<td></td>
<td>Designate competent authority</td>
<td>\textit{R15}</td>
<td>Completion</td>
<td>\textit{R25}</td>
</tr>
<tr>
<td></td>
<td>Control violations</td>
<td>\textit{A9, 10}</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notify IMO</td>
<td>\textit{R16}</td>
<td></td>
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</tr>
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</table>

*It is not necessary to ratify the Convention in order to apply its standards, as the resolutions at the Diplomatic Conference in May 2009 made clear. PR = Prerequisite for applying environmentally sound management.

Source: World Bank, 2010

For all major recycling states, which are all developing countries, the domestic scrap steel market will have an appetite and comparatively high prices for the ships would lead to a decision to be outside of the Convention. It is not considered unlikely that one or more recycling state(s) will not ratify the Convention such as some flag states; thus two different recycling markets will be operating simultaneously and competing (Knapp, Kumar, & Remijn, 2008). However, on the recyclers’ side only 5 states have pivotal roles, ship owners and flag states have a more complex interconnection as Figure 4.4 envisages, which may enable a two market structure.
Figure 4.4: Main countries of ownership and their flags of registration by 2010 in DWT (cargo carrying vessels of 1,000 GT and above)


During the Regional Workshop on the Early Implementation of the Technical Standards of the Hong Kong Convention and the Ship Recycling Transfer of Knowledge and Technology Transfer Workshop, the principal recycling states played all the cards openly and actually they presented the same time line in the aforementioned figures. Pakistan and Bangladesh did not hesitate to clearly express that they need time, which is open-ended. Indian ship recyclers emphasized that they were against the Convention and they believed that beaching will be banned sooner or later and the industry will not be existing any more in India. Moreover, a message from the recyclers to the Shipping Ministry of Government of India telling them not to ratify the Convention with the signatures of almost all the ship breakers was sent (Aggarwal, 2010).
On the other hand, Turkey and China presented their developing conditions and Turkey revealed that all national institutions are in favor of the Hong Kong Convention and the industry is getting prepared for the entry into force or for a better reputation in case an extended interim period due to political reasons. Besides the industry’s efforts, it is known that the Turkish Administration is already working on adaptation of national legislation for the compliance. Even though China had not given a clue on the ratification date during the Regional Workshop on the Early Implementation of the Technical Standards of the Hong Kong Convention, the evolution in Chinese yards can be interpreted as positive and China may be the most likely state to ratify the Convention among the four principle recycling states.

The expectations asserted by some South Asian recyclers such as the “special discount” which may be a $100/LDT worth discount on market prices for green recycling (The oldest ship recycling facility in the sub-continent, 2010) or similar proposals regarding sharing the costly burden for becoming green with ship owners and governments are also raising concerns for the length of the interim period.
V. CONCLUSIONS

This study may be considered as a broad interpretation of the Hong Kong Convention which was developed to moderately regulate the ship recycling facilities and practices and which is the only IMO Convention devoted to a land based activity except ports. The text of the Hong Kong Convention commences with the statement: “noting the growing concerns about the safety, health, the environment and welfare matters in the ship recycling industry” (The Hong Kong Convention, 2009, p.1) which is accepted as the underlying motive by the author not only for the international and national level efforts but also for the development in the structure of the practices in the industry and also for the change of the terminology from “scraping” to “ship recycling”.

Further, the importance of consistency and harmony among existing legislative and enforcement instruments which was elaborately discussed in the dissertation takes place in the following lines of the first page of the Hong Kong Convention. ILO Conventions, the Basel Convention, European Union implementations and the Hong Kong Convention regulations were evaluated individually in the dissertation. Additionally the “equivalent level of control” and enforceability notions were critiqued through the views of different stakeholders.

Although, the maritime industry may be the first industry which faced several challenges of internationalisation, this dissertation concludes that there are still issues to be solved. The points highlighted in the first page of the Hong Kong Convention, the “particular characteristics of shipping” and “the smooth withdrawal of obsolete vessels” are taken into consideration throughout the dissertation while analysing these unsolved issues, the needs of the Hong Kong Convention and the projections.
The fact that the enforcement range of the Basel Convention is only limited with a few numbers of ships amongst more than a thousand ships destined for recycling each year makes the concern crystal clear, and that Turkey is the only major ship recycling country who has applied the Basel Convention to ships destined for recycling in a number of occasions (Dogru, 2011, Online interview).

All principal recycling countries recognize the need, at the international and national level, for a legally binding framework to ensure a safe and environmentally sound industry. Thus recycling states, particularly Turkey, are obliged to follow an adaptation path which avoids lengthy processes and extra costs for ship owners and recycling facilities where already a quasi-Basel notification mechanism is in place since 2004.

While almost all recycling states are playing their cards openly regarding voluntary implementation and early ratification, Turkey is the only recycling state announcing that all the national stakeholders from both the practical and the regulatory side have reached the consensus on the ratification of the Hong Kong Convention, and the act of ratifying the Hong Kong Convention is only a matter of timing and political decision.

Other recyclers should be prepared for the stronger NGO leverage in case of ratification by Turkey and/or China in the near future as an official green market would occur. By every consequent European Commission Enlargement Progress Report, Turkey’s waste management and ship recycling capacity is increasing and being approved as complying with the EU standards although recyclers do not gain a proportional rise in their profit for their efforts. The enthusiasm of recyclers may wane if the ship owners do not respect the recyclers’ efforts accordingly, which would further slowdown the infrastructure investments in the South Asian yards.

Market dynamics will force administrations to adopt their national legislation in accordance with the Hong Kong Convention regulations in the next years. Even if the Hong Kong Convention would not enter into force by 2015, all ship recycling
countries would probably announce their new regulations or at least political attempts similar to Turkey’s Adhoc group which was established in 2010 by the participation of relevant ministries’ experts to revise the existing legislation taking into account the Hong Kong Convention, its guidelines and EU Directives (Kemerci, 2011).

Principal ship recycling countries will reasonably compromise the balance between the costs relevant to worker safety and health; and precautions for adverse environmental impacts; and being green and compliant to international conventions despite the estimated lower revenue in order not to lose their market shares or not to exit the market. On the other hand, ship owners will reconsider the value of reputation and decide for green recycling for their ships or an easy move of changing flag and face with NGOs’ pressure.

As of today it is obvious that other markets of the maritime industry will be affected more than it was envisaged when the global legally binding instrument idea was initially introduced. The examples given in the dissertation and the fact that the recycle friendly ship notion has already been incorporated in the environment friendly concept for futuristic ships and equipment designs suggest that the ship building industry is also at a critical threshold prior to the entry into force of the Hong Kong Convention.

Growing tonnage to be recycled in next 20 years and no extensive relocation are the author’s presumptions which are consistent with those of many other scholars. On the other hand, the author contrarily does not believe that the Hong Kong Convention will enter into force by 2015 considering the evaluations in Chapter III and IV and believes that it is not likely to constitute a truly competitive market under the prevailing regulatory regimes. Thus, mainly Turkey’s and China’s attitude is crucial to create a self-motivated green industry.

The steps forward by the shipping industry and administrations will demystify whether the expression “ship recycling” is only a superficial cover for the
transboundary waste movements with the existing symptomatic safety, security, health, welfare, human rights and environmental problems or it is the calling for the next generation waste management for the shipping industry in its essence.
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