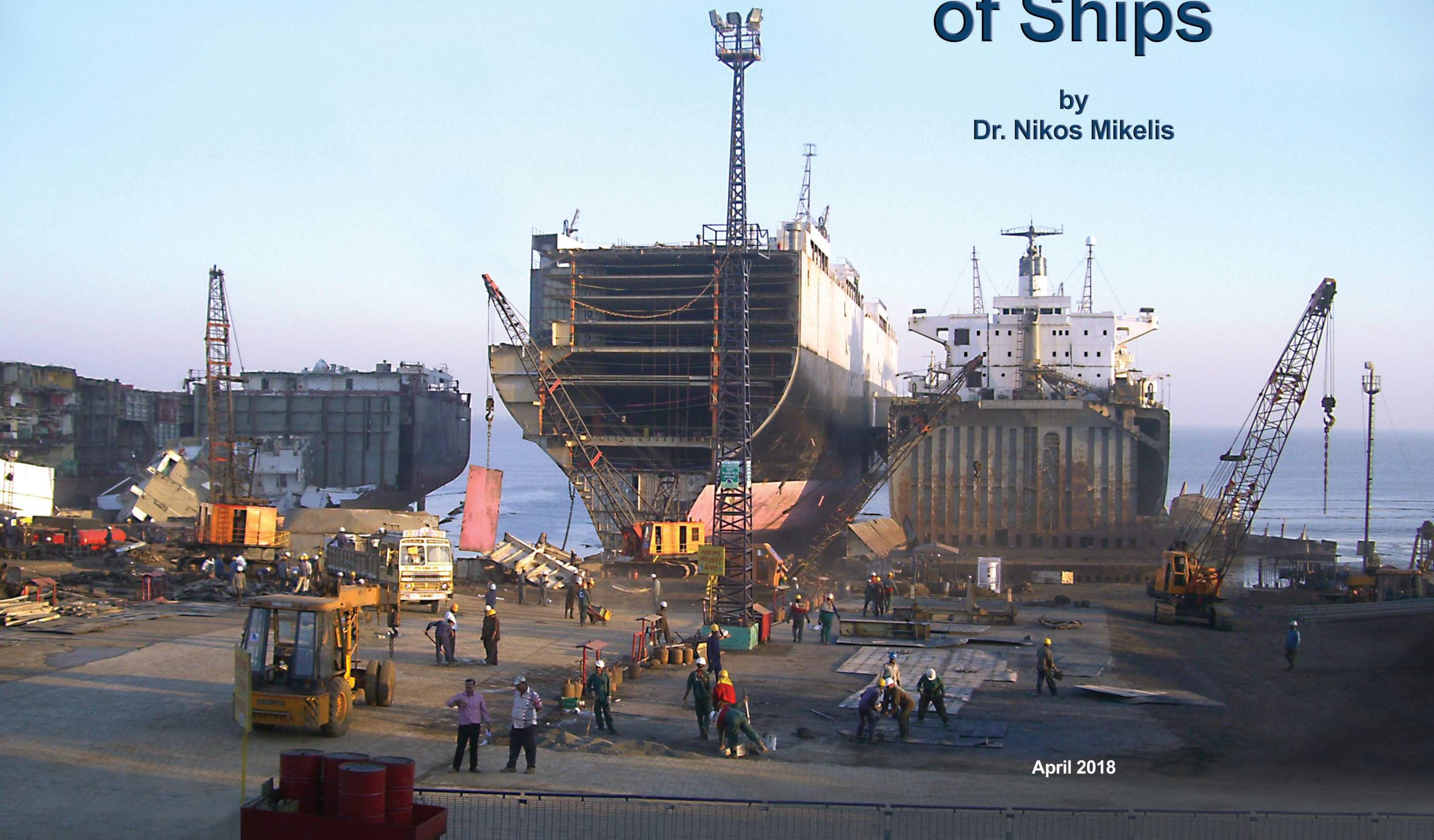


The Recycling of Ships

by
Dr. Nikos Mikelis



April 2018

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Few Words from the Author

I was employed by the International Maritime Organization from the beginning of 2006 until my retirement at the end of 2012 as the Officer responsible for the development of a new international Convention on the safe and environmentally sound recycling of ships. In that period I was fortunate to oversee the development of the Hong Kong Convention and of its set of six guidelines, from the first submission of documents to their adoption. I participated as the IMO representative in meetings of the Conference of the Parties of the Basel Convention and travelled extensively to most locations where ships are being recycled. Thereafter, I had the opportunity of being closely involved (mostly on an informal capacity) in the development of the new European Union Regulation on Ship Recycling. Following my retirement from IMO, I continued working in the field as independent consultant, this way obtaining further insights in the commercial aspects of the international ship recycling industry, while also having the privilege to witness the improvements that have been taking place in the ship recycling industry in line with the standards advocated by the, as yet, not-in-force Hong Kong Convention. However, throughout my involvement with ship recycling I have been aware of a gap in the public understanding of the functionalities and the economic aspects behind this very niche industry, and on the eve of the full application of the new European Regulation I felt compelled to write this booklet so as to share my knowledge, shed some light, and hopefully correct certain misapprehensions about the industry.

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1 Introduction

1.1 The world fleet and ship recycling

At the end of December of 2016, the world fleet of ships in service of 100 Gross Tons (GT) and above comprised of 113,888 ships totaling 1,248,583,186 GT (IHS Maritime & Trade, World Fleet Statistics 2016, Table 20). The majority of ships in the world fleet are small vessels, mostly trading in domestic waters. In fact 73% of the ships in the world fleet (83,449 ships) were less than 5,000 GT. If on the other hand, we consider the fleet above the size limit used in relevant international regulations, namely 500 GT, at the end of 2016 we had a fleet of 61,666 ships of 1,235,529,688 GT. Looking at the age distribution of the world fleet over 500 GT we find that 21,684 ships of 134,532,727 GT were over 20 years old. Interestingly, this represents 35.2% of the fleet in terms of ship numbers but only 10.9% in terms of their tonnage, reflecting a skewed size-age distribution, with smaller ships having a much larger average age than the large, ocean going ships. For example, examination of the 2016 data shows that 55.3% of ships between 500 GT and 5,000 GT were 20 years old or more, whereas only 8.1% of ships larger than 20,000 GT were of that age.

In general, while small ships used in domestic or regional trading tend to have longer lives, larger ships tend to be sent for recycling at around 25 years of age (or a few years later when demand for ships is high, or earlier, in periods of low demand). Ships retain significant economic value at the end of their life, as their steel, non-ferrous metals and their machinery and equipment are sold for recycling, reconditioning and re-use. This value can often represent 10% or more of the newbuilding value, such a figure varying with the price trends in the newbuilding market and separately in the recycling market. In general ships reach their end of life when their second-hand sale value for further trading drops to their recycling value. This may happen due to a ship's deteriorating condition with increasing age that may necessitate uneconomic repairs; due to the demand for ships being lower than the available supply; due to specific regulatory requirements (as is the case with the forthcoming requirements for the retrofit of expensive ballast water treatment systems, or the "phase-out" requirements for single hulled tankers in the early 2000s); or very occasionally due to the introduction of innovative technology (transition from steam to diesel), or abrupt changes in trading patterns (as was the case with the recent widening of the Panama canal which devalued Panamax sized ships). It may just be relevant to make the point here that, for as long as end-of-life ships have economic value there is no alternative to recycling them. If on the other hand the liabilities of end-of-life ships were to grow and become larger than residual value, we would then most probably witness abandonment of ships or deliberate scuttling on a large scale.

1.2 Countries that recycle ships

Figure 1.1 depicts the annual tonnage (GT) of recycled ships analyzed by country of recycling, while Figure 1.2 expresses the same data in terms of the countries' market share (IHS Global Ltd, World Casualty Statistics 2016, Table 7C; also back issues of the same publication from 1998 to 2015). The two figures underline four important facts of the ship recycling industry.

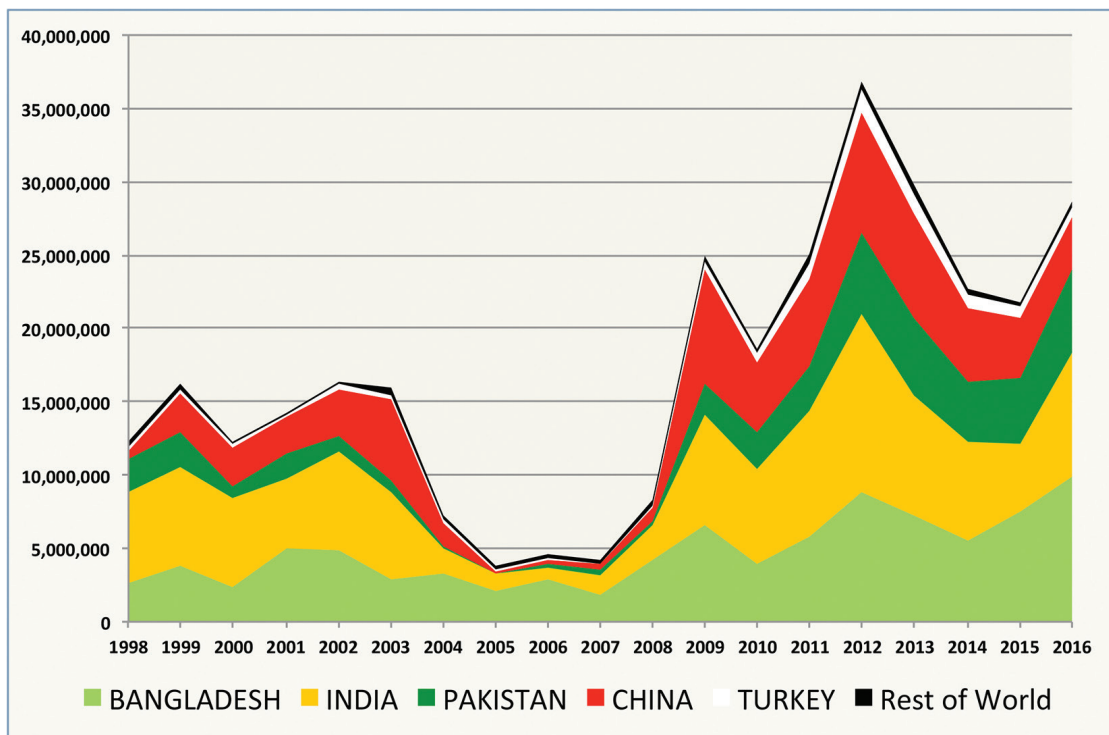


Figure 1.1: Annual tonnage (GT) of recycled ships analyzed by country of recycling

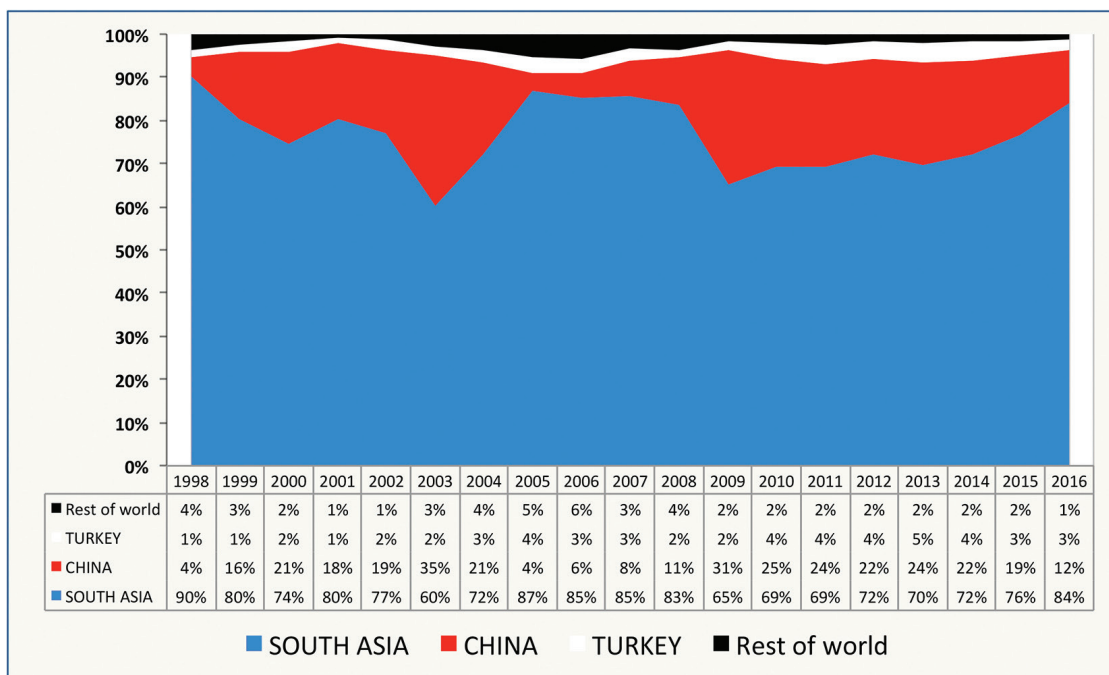


Figure 1.2: Market share of ship recycling (expressed in % of GT)

Firstly, the ship recycling business is seen to be particularly cyclic, providing the recycler with no guarantees of future employment and no guarantees of a smooth depreciation of investment. This is caused by the cyclic nature of the shipping industry's supply and demand imbalance and, importantly, by the fluctuations in the price of steel nationally and internationally.

The second key fact of the industry is that, for the last twenty years, ship recycling yards in the five leading ship recycling countries (Bangladesh, China, India, Pakistan and Turkey) have been recycling 97% to 98% of all the tonnage that is recycled in the world. Table 1.1, detailing the worldwide ship recycling activities in 2016 illustrates this point (IHS Global Ltd, World Casualty Statistics 2016, Table 7C).

The third notable fact is the fluctuation of the volumes recycled in China, who for relatively long periods has recycled 25% to 30% of the world's tonnage and then for other periods has almost withdrawn from the market.

The fourth striking feature of the industry, clearly depicted in both figures, is the dominant position of the three South Asian countries, namely Bangladesh, India and Pakistan, who, for the last twenty years have been recycling more than two thirds of the world's recycled tonnage (in 2016 their combined market share was 84.1%). They achieve this dominance by being able to pay the most competitive prices for buying end-of-life ships.

	RECYCLING COUNTRY	No.	GT	Average GT	Average age	Cummulative % of tonnage	Cummulative % of ships
1	BANGLADESH	230	9,888,137	42,992	23	34.6%	22.3%
2	INDIA	325	8,474,617	26,076	26	64.2%	53.8%
3	PAKISTAN	134	5,703,133	42,561	24	84.1%	66.8%
4	CHINA, PEOPLE'S REPUBLIC OF	131	3,464,380	26,446	25	96.3%	79.5%
5	TURKEY	81	721,083	8,902	35	98.8%	87.4%
6	UNITED STATES OF AMERICA	7	70,249	10,036	50	99.0%	88.1%
7	UNKNOWN	14	60,376	4,313	38	99.2%	89.4%
8	RUSSIA	9	39,646	4,405	37	99.4%	90.3%
9	CANADA	6	33,305	5,551	57	99.5%	90.9%
10	CUBA	17	23,021	1,354	43	99.6%	92.5%
11	PUERTO RICO	2	18,398	9,199	38	99.6%	92.7%
12	BRAZIL	2	16,177	8,089	39	99.7%	92.9%
13	DENMARK	17	14,457	850	40	99.7%	94.6%
14	BELGIUM	6	12,358	2,060	39	99.8%	95.2%
15	VIETNAM	8	11,188	1,399	19	99.8%	95.9%
16	KOREA, SOUTH	2	9,871	4,936	34	99.9%	96.1%
17	NETHERLANDS	5	8,482	1,696	45	99.9%	96.6%
18	INDONESIA	3	6,708	2,236	30	99.9%	96.9%
19	SPAIN	9	6,105	678	39	99.9%	97.8%
20	NORWAY	7	4,821	689	48	100.0%	98.4%
21	UNITED KINGDOM	3	3,589	1,196	41	100.0%	98.7%
22	AZERBAIJAN	2	3,112	1,556	38	100.0%	98.9%
23	GHANA	2	1,658	829	34	100.0%	99.1%
24	GERMANY	2	1,534	767	45	100.0%	99.3%
25	LATVIA	1	1,313	1,313	36	100.0%	99.4%
26	SOUTH AFRICA	2	1,256	628	51	100.0%	99.6%
27	MEXICO	3	660	220	28	100.0%	99.9%
28	LITHUANIA	1	466	466	52	100.0%	100.0%
	Grand Total	1,031	28,600,100	27,740			

Table 1.1: Worldwide ship recycling activity in 2016

Plates 1.1 to 1.6 show recycling yards in the five recycling countries. For China there are two yards shown, one of which (Plate 1.3) is the newly built recycling yard at Dalian that has been equipped with two large drydocks. Unfortunately the completion of the construction of the yard coincided with the downturn of China's ship recycling industry in 2013 and consequently the yard and its drydocks have been used very little for ship recycling but instead have been utilized in offshore business.



Plate 1.1: View of recycling yard in Bangladesh



Plate 1.2: View of recycling yard in China



Plate 1.3: View of China's Dalian Shipbuilding Industry Ship Recycling Co. Ltd



Plate 1.4: View of recycling yard in India



Plate 1.5: View of recycling yards in Pakistan



Plate 1.6: View of recycling yards in Turkey

2 The economic drivers of ship recycling

2.1 The dominance of South Asia in ship recycling

Compared to China and Turkey, the three South Asian countries are currently less developed and poorer. As poverty is usually linked to lower safety, social welfare and environmental standards, it is often claimed that the market dominance of the South Asian recycling countries is owed to their lower labor costs and lower compliance costs. This however is only one part of South Asia's competitive advantage.

The next section examines the sale and purchase process for end-of-life ships and subsection 3.2 provides an illustrative breakdown of an Indian recycler's income from selling the materials and equipment of a recycled ship. Although the data that is provided would not be applicable to a specialized ship (such as a ship with stainless steel tanks), nor would it apply to China or Turkey, the data nevertheless points to the importance of ferrous scrap to the recycler, representing more than 80% of the ship's value. The same data also points to the additional income ship recyclers in South Asia derive from selling equipment, machinery, furniture, stores, parts, etc., in the impressive second hand markets that exist in Alang, Chittagong and Gadani. This does not only provide additional competitiveness to South Asia's recyclers, but is also a paradigm of a more environmentally friendly utilization of resources.

South Asia's ship recycling industry has a further advantage, helping it dominate the international ship recycling market. In South Asia there are large numbers of rerolling mills making steel products, such as reinforcing bars for the construction industry, by heating and reshaping semi-finished steel products, such as billets, or plates from recycled ships. In the rerolling process the steel does not reach its melting point and, compared to making new steel, the process requires lower temperatures. As the chemical composition of rerolled steel is not controlled, the quality of the products is not considered to be equal to new steel. Nevertheless, for appropriate applications rerolled steel products offer good economic alternatives. As the chemical composition and therefore quality of all structural steel that goes into shipbuilding is certificated by Classification Societies, steel plate from ship recycling competes with billets as the raw material for South Asia's rerolling mills. Consequently, South Asia's recyclers have the advantage of commanding better prices for flat rerollable steel compared to scrap steel destined for melting.

2.2 Steel making as the driver for ship recycling

There are two main processes in modern steel making: (i) melting of steel scrap in Electric Arc Furnaces (EAF), which in 2016 accounted for 24.9% of the world's production of new steel; and (ii) smelting of iron ore in Oxygen Blown Converters (OBC), accounting for the remainder 75.1% of the steel production. The EAF is the more environmentally friendly of the two methods as the OBC requires more energy input, it requires the burning of coking coal, and also it produces more wastes. As however the price of iron ore has dropped in the last few years, the economics have somewhat shifted in favor of the OBC, as can be seen from the drop in EAF's world market share in Figure 2.1 (see curve for "world average").

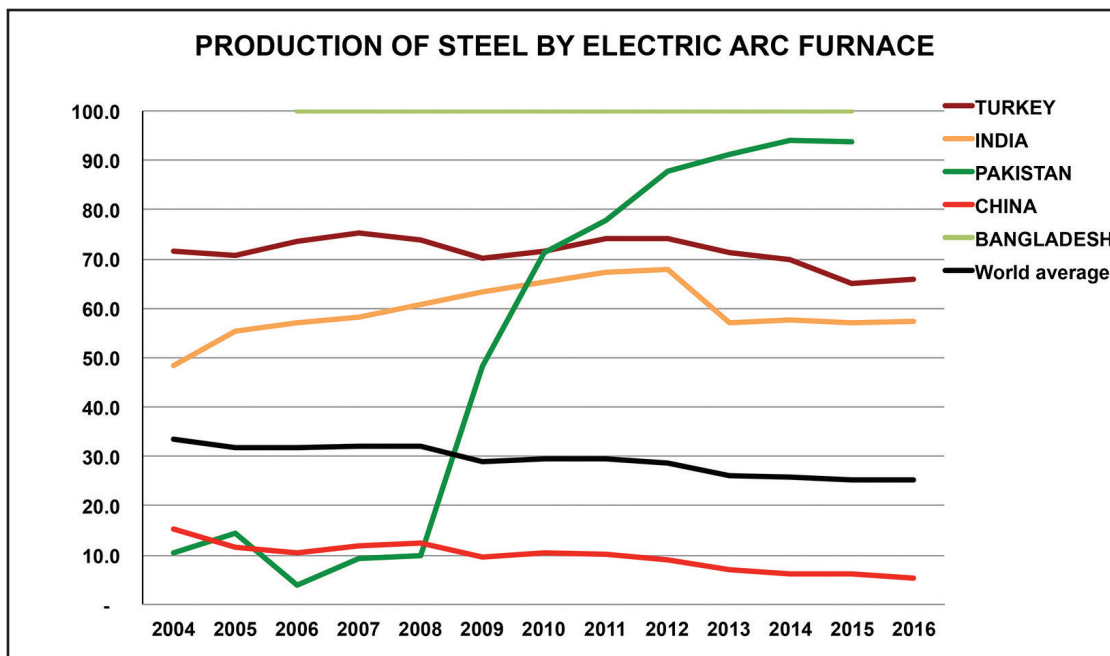


Figure 2.1: Production of crude steel by EAF in the ship recycling countries
(Data for 2004 to 2015 from Steel Statistical Yearbook 2016, Table 8; and from earlier issues;
data for 2016 from World Steel Figures 2017)

In 2016 a total of 1,630 million tonnes of new steel were made worldwide using 560 million tonnes of steel scrap (note: this is more than the 24.9% share of production by EAF, as some steel scrap is also needed when smelting iron ore). There are three sources of scrap steel for steel making: (1) “own arisings”, which arise internally in steel mills as rejects from melting, casting and rolling; (2) “new steel scrap” which is generated when steel is fabricated into finished products; and (3) “old steel scrap” which is scrap steel from obsolete products (including ships) sold to steel plants for re-melting. This category forms around 40% to 44% of the total steel scrap used in steel making (World Steel Recycling in Figures 2012-2016).

Table 2.1 shows the total world production of crude steel from 2010 to 2016; in the twelve largest steel producing countries; and also in Pakistan and Bangladesh. Three of the five leading ship recycling countries feature in the top eight positions of the world’s leading steel producers.

		2010	2011	2012	2013	2014	2015	2016
	World total	1432.8	1538.0	1560.1	1650.4	1669.9	1615.0	1630.0
1	China	638.7	702.0	731.0	822.0	822.8	798.8	808.04
2	Japan	109.6	107.6	107.2	110.6	110.7	105.1	104.8
3	India	69.0	73.5	77.3	81.3	87.3	89.0	95.6
4	USA	80.5	86.4	88.7	86.9	88.2	78.8	78.6
5	Russia	66.9	68.5	70.2	69.0	71.5	70.9	70.8
6	Korea Rep.	58.9	68.5	69.1	66.1	71.5	69.7	68.6
7	Germany	43.8	44.3	42.7	42.6	42.9	42.7	42.1
8	Turkey	29.1	34.1	35.9	34.7	34.0	31.5	33.2
9	Brazil	32.9	35.2	34.5	34.2	33.9	33.3	30.2
10	Ukraine	33.4	35.3	33.0	32.8	27.2	23.0	24.2
11	Italy	25.8	28.7	27.3	24.1	23.7	22.0	23.3
12	Taiwan	19.8	20.2	20.7	22.3	23.1	21.4	21.6

..	Pakistan	1.4	1.6	1.6	1.8	2.4	2.9	N/A

..	Bangladesh	0.05	0.1	0.1	0.1	0.1	0.1	N/A

Table 2.1: World's leading steel producers together with Pakistan and Bangladesh's production (in million tonnes)

Table 2.2 shows the world's leading importers of steel scrap together with the quantities imported by Pakistan and Bangladesh from 2010 to 2016. Again, three of the five leading ship recycling countries feature in the top seven positions of the world's leading steel scrap importers.

		2010	2011	2012	2013	2014	2015	2016
1	Turkey	19.20	21.45	22.42	19.73	19.07	16.25	17.72
2	India	4.64	6.18	8.18	5.64	5.70	6.71	6.38
3	Korea Rep.	8.09	8.63	10.13	9.26	8.00	5.76	5.85
4	USA	3.77	4.00	3.71	3.88	4.22	3.51	3.86
5	Taiwan	5.36	5.33	4.96	4.45	4.27	3.37	3.16
6	EU-28	3.65	3.71	3.20	3.19	3.14	2.85	2.74
7	China	5.85	6.77	4.97	4.47	2.56	2.33	2.16
							
	Pakistan	0.79	0.96	0.92	0.87	1.34	2.12	N/A
							
	Bangladesh	0.24	0.32	0.20	0.28	0.46	0.95	N/A
							

Table 2.2: World's leading ferrous scrap importers together with Pakistan and Bangladesh's imports (in million tonnes)

Table 2.3 shows the world's leading exporters of steel scrap from 2010 to 2016 and also the top two net exporters (i.e. exports minus imports), these being the European Union and the USA.

		2010	2011	2012	2013	2014	2015	2016
1	EU-28	19.03	18.81	19.58	16.81	16.95	13.74	17.81
2	USA	20.56	24.37	21.40	18.50	15.34	12.98	13.23
3	Japan	6.47	5.44	8.59	8.13	7.34	7.84	8.71
4	Russia	2.39	4.04	4.35	4.55	5.77	5.65	5.57
5	Canada	5.15	4.83	4.25	4.52	4.51	3.42	3.63
6	Australia	1.64	1.74	2.25	2.20	2.36	1.90	1.58

		2010	2011	2012	2013	2014	2015	2016
1	EU-28	15.38	15.10	16.38	13.62	13.81	10.89	15.07
2	USA	16.79	20.37	17.69	14.61	11.13	9.47	9.37

Table 2.3: World's leading ferrous scrap exporters, and the two top NET exporters (in million tonnes)

(Source of data: Tables 2.1 to 2.3 of World Steel Recycling in Figures 2012-2016; and earlier issues; Data on Pakistan and Bangladesh from Steel Statistical Yearbook 2016, Table 1).

As pointed in the previous section, for the last twenty years the ship-recycling yards in Bangladesh, China, India, Pakistan and Turkey have dominated the industry having recycled 97% to 98% of the worldwide-recycled tonnage. Figure 2.2 shows the light displacement tonnage (LDT) recycled annually in each of the five countries. Published data on LDT are generally not available, so the author has collected the data presented here from the ship recyclers' associations of each of the five countries.

The data shown in Tables 2.1 to 2.3 and in Figure 2.1 go some way to help explain the success of the five recycling countries, all of which are importers of scrap steel:

China is the largest steel making country, currently producing 50% of the world's steel. As seen in Figure 2.1, China relies heavily in OBC for its steel production, with the EAF's share having dropped from 15.3% in 2004 down to 5.2% in 2016, while in the same period its steel production tripled from 272 to 808 million tonnes. As seen in Table 2.2, China's imports of steel scrap have been reducing (from a record 13.7 million tonnes in 2009) down to 2.2 million in 2016. Figure 1.1 illustrates the fortunes and problems of China's ship recycling industry: In 1998 and in the period 2004-2008 China's ship recycling market share was small, while in 2009 China was the leading ship recycling country with 31% market share. From 2010 the Chinese share declined, to the fourth position and 12% in 2016. Also, since 2013 Chinese ship recyclers have imported very few ships and have had to rely on a "scrappage" subsidy that the government offered to Chinese shipowners from 2013. The subsidy applies to the recycling of Chinese owned and flagged ships and pays Yuan 750 per GT (currently US\$113). Assuming a ratio of GT to LDT of around 3.5 (see Table 3.1) the State subsidy works out at about US\$395/LDT. Current ship recycling prices in China are around US\$250, whereas prices around US\$400 can be obtained in South Asia (see Figure 3.1). Chinese shipowners are therefore mightily encouraged to renew their fleets by recycling their old ships in China, receiving US\$395/LDT from the government, plus around US\$250/LDT from the Chinese recycling yards. The scheme has been extended twice and is still in force. In the longer term China will probably increase the EAF's share of its steelmaking to reduce its severe industrial pollution. This will result in increased imports of scrap steel and will probably propel again China to a leading position in ship recycling.

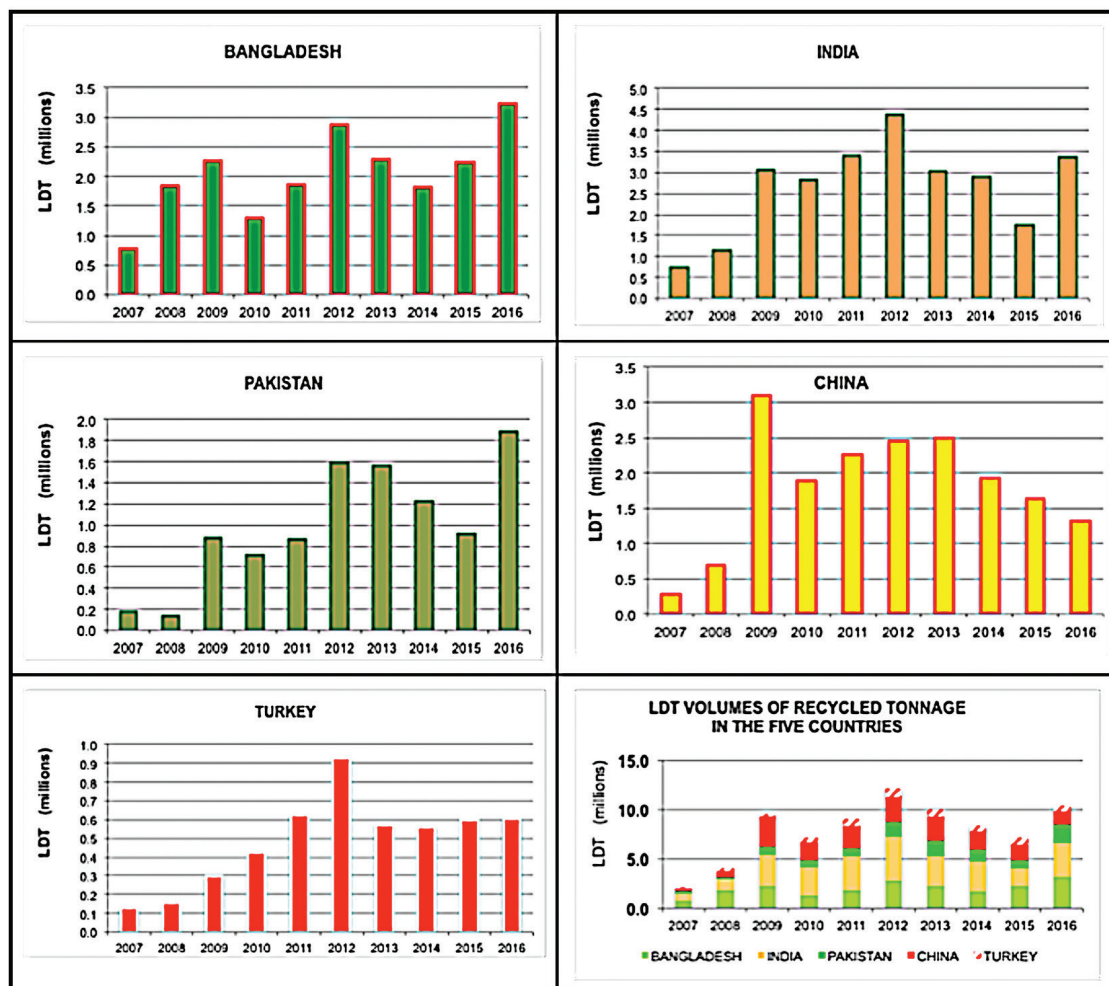


Figure 2.2: LDT of recycled tonnage in the five ship recycling countries

India in the last two years has overtaken the steel making industry of the USA and is heading to become in a few years' time the world's second largest steel maker. The majority of its steel is being made with the EAF process making India a major importer of scrap steel. Some of the imported scrap steel comes from its ship recycling industry, which has been the world's largest in terms of LDT in six of the last ten years. As discussed in the next section, 90% of a ship's LDT is steel, which can be sub-divided into melting steel (30% of LDT) and re-rollable steel (60% of LDT). In India, as also in Bangladesh and Pakistan, ship recyclers separate flat plates, lengths of girders, beams and angle bars from smaller irregular pieces of metal. The smaller pieces become melting scrap, while the larger items attract higher prices as they can either be used directly in construction, or road building, or can be heated and re-rolled into bars and rods in re-rolling mills. It therefore follows that a fraction (possibly of the order of 30%) of the annually recycled LDT serves the country's needs for new steel making, whereas the majority (around 60%) is re-rolled.

Turkey has substantial steel making industry, currently being the 8th largest in the world. Its steel making relies to a great extent on the EAF process and is thus characterised by high demand for scrap steel. Turkey has been and continues to be the world's largest importer of scrap steel. Its ship recycling industry is the smallest of the major five ship recycling countries, but recycles more tonnage than the rest of the world put together (excepting of course the four major ship recycling countries). There is little re-rolling of ships' plates in Turkey and therefore the main outlet of ship recycling is new steel making.

Pakistan produces little steel, although its production has increased in the last few years, mostly through the addition of EAFs. Consequently Pakistan's ship recycling industry has been growing fast, providing scrap steel for rerolling and for melting, while enjoying additional economic benefits from second hand markets for machinery, equipment, spare parts, etc., as do India and Bangladesh.

Bangladesh currently produces very little new steel, all based on EAF. Its ship recycling provides scrap steel for the rerolling market, which is very active due to the urbanisation of this very densely populated country. Consequently, Bangladesh's ship recycling industry has been the world's largest in terms of LDT in three of the last ten years, including 2015.

Other countries have not recycled any significant quantities of tonnage in the last twenty years. Of course it is uneconomic for a small ship or for a damaged ship to sail thousands of miles to reach one of the main ship recycling centres, and for this reason ship recycling facilities also exist in many countries that have no need for ferrous scrap (see Table 1.1). Ship recycling in such cases can be seen as a service for disposing boats and ships, rather than an industry driven by the economy of steel making. Although the five main ship recycling countries dominate the industry, it is certainly possible that, in the proximate future, another country might join the major league. Such a country would most probably be a developing country with low labour costs and will be an importer of scrap steel for its steelmaking industry. Vietnam or the Philippines could be such a new entrant.

On the other hand, environmental activists and some European politicians have been promoting in recent times the development of facilities for the recycling of large ships in Europe, claiming that this will provide best practice ship recycling services to international shipping, and in so doing, create much needed jobs and economic prosperity. The reality however is that Europe is the world's largest net exporter of scrap steel, as seen in Table 2.3. The vast majority of the ferrous scrap exports from the European Union go to Turkey, with some quantities also being exported to Egypt, India, China and Pakistan. It makes no sense to recycle large ships in Europe to produce scrap that will have to compete with the large quantities of other European ferrous scrap in order to be sold and transported to countries most of which already recycle ships.

3 Sale & Purchase of end-of-life ships

3.1 Selling of ships for recycling

Almost all recycling sale & purchase transactions are quoted in US\$ per lightship (long) ton. The long ton is an imperial measurement unit equating to 2,240 pounds (lb) or 1.016 tonnes. Lightship (or light displacement tonnage, or LDT) is defined as the extreme displacement of an unloaded ship, with or without the bunkers and lubricants of the main and auxiliary engines, the hydraulic oil contained in hydraulic systems and the water needed to fill the ship's boilers up to working level. Lightship excludes crew, passengers, stores, fuel, ballast, potable water, paints, cargo, liquids and constants in the system and all other items not affixed to the vessel. Lightship is relevant for ship recycling transactions because it provides the basis for estimates of the weight of the ship's steel and approximate quantities of various other commercially valuable materials belonging to the vessel that can be obtained from the ship's recycling.

Often the question arises what is the lightship content of different ship types and sizes, and what is the relation between lightship, gross tonnage and deadweight. These quantities are related empirically and therefore these questions can be answered using tabulated data, such as those shown in Table 3.1, which were obtained by interviewing an experienced shipbroker (Mikelis, 2007).

Ship type	Cargo carrying capacity (DWT tonnes)	Gross tonnage (GT)	Lightship (LDT)
Tanker VLCC	300,000	159,000	35,000
Tanker Suezmax	150,000	80,000	22,000
Tanker Aframax	80-120,000	45-67,000	15-18,000
Tanker Panamax	70,000	40,000	10-13,000
Tanker Handysize	35,000	22,000	7,000
Capesize bulkcarrier	150-170,000	78-86,000	20-21,000
Panamax bulkcarrier	70,000	40,000	10-12,000
Handysize bulkcarrier	35,000	22,000	7,000

Table 3.1: Approximate estimates of lightship content of different ship types

To put ship recycling prices in perspective, consider the sale of a middle-sized ocean going ship, say a Panamax tanker of around 10,000 LDT. Figure 3.1 provides historic price data for each of the five main recycling centers (data compiled from GMS Weekly, published from 2006 to 2017). The graph shows that the three South Asian countries compete with each other very closely on price, whereas the prices offered by China and Turkey tend to be separated further away on the pricing spectrum, be it lower or (rarely) higher (as has been the case with China). As an example, in October 2017, a 10,000 LDT Panamax tanker could be sold to South Asian recyclers for around US\$4,000,000, but only for US\$2,500,000 to Turkey or China.

A shipowner who is contemplating the sale of a ship for recycling will normally contact a shipbroker that specializes in ship recycling. The broker would then market the ship to different “Cash Buyers” (that is companies that specialize in trading end-of-life ships). The broker will represent and advise his client (the Seller) during the sale negotiations that lead to the drawing of the sale contract, known as the MOA, or Memorandum of Agreement. On completion of the sale, the broker receives a commission for his services from the Seller, which usually is an agreed percentage of the value of the contract (the industry standard being 1%). It is important to underline that at no time does the broker own the ship.

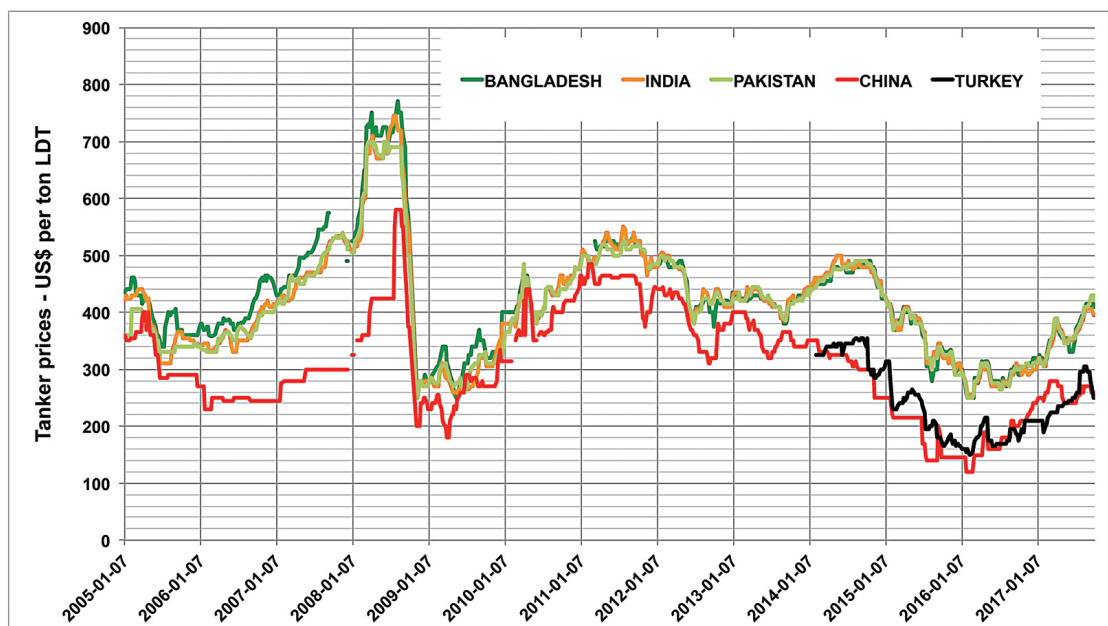


Figure 3.1: Weekly tanker recycling prices by country of recycling

Nearly all merchant ships are sold for recycling via Cash Buyers, who purchase ships for cash (as opposed to by Letter of Credit) and then sell them (usually at a profit) to the recycler, who normally pays the Cash Buyer with a Bank Letter of Credit. Unlike a broker, the Cash Buyer takes legal ownership of the vessel (albeit for a limited time). Cash Buyers are an integral part of the industry because they provide indispensable services to the shipowner, namely: expertise in a specialized and a difficult market; reduction to the shipowner’s risk; payment in cash of a sizeable advance on signing of the MoA and of the balance on delivery (as opposed to payment by Letter of Credit).

Completion of the sale occurs with the payment of the balance of the purchase price to the shipowner and execution of the Protocol of Delivery and Acceptance (the “PoDA”) between the shipowner and the Cash Buyer. In most cases, delivery takes place at the anchorage of the recycling yard (sale on a “delivered basis”) or, less frequently, at an agreed port or anchorage in another country (sale on an “as-is where-is basis”). In either case, the shipowner has to deregister the ship and obtain a certificate from the flag State authorities showing that the ship has been deleted from their register and that there is no outstanding mortgage. If the ship is sold on a “delivered basis”, the Cash Buyer does not need to re-register the ship or to obtain new statutory certificates from a flag State, as the voyage from the anchorage of the delivery location to the recycling yard at the same location, is a brief one within domestic waters. On the other

hand, when a ship is delivered to the Cash Buyer on an “as-is where-is basis”, before departing on the international voyage to the recycling location, the Cash Buyer has to crew the ship, re-register it (with a flag State), obtain valid statutory certificates, and normally insure it for the duration of the international voyage to the place of the final delivery. A number of open registers facilitate such short-term registrations and for this reason, statistics of ship recycling by country of registration always show a disproportionate number of recycled ships for these flags compared to their number of ships in service.

3.2 Purchasing ships for recycling

On a delivered deal, the recycler will normally take delivery of the ship from the Cash Buyer at the anchorage, however, the Cash Buyer will have terms in the MoA with the shipowner that require the shipowner's crew to move the ship from the anchorage to the recycling yard. The ship recycler normally pays for the ship with a bank Letter of Credit. In addition to the purchase price the recycler will incur financial costs, insurance costs (related to the yard and his recycling labor force), (import) taxes and duties related to the vessel, yard rental costs, investment costs (yard equipment etc.), costs of consumables and utilities (oxygen, LPG, diesel, electricity), and labor costs. For the purpose of illustration we can approximate these costs to around 15% to 20% of the purchase price of the ship (note: this is a crude simplification, as the purchase price can vary by large amounts, as already seen in Figure 1).

An approximate breakdown of a ship's LDT is as follows: 5% of LDT is assumed to be waste and losses due to corrosion and aging over time. Another 5% of the LDT is made up of equipment, machinery (excluding the main engine), cables, shafting, fittings, spares, lubricants and non-ferrous metals. The remaining 90% is steel, which can be sub-divided into melting steel (30% of LDT and which includes the ship's main engine) and rerollable steel (60% of LDT). In South Asia, flat rerollable steel attracts a higher price than scrap steel (by around 10%), as plate can be utilized in rerolling mills for shaping it into long or flat steel products, without having to go through the more costly process of making new steel in a mill.

Data obtained from a recycler in India provides an illustrative analysis of income from the sale of different components of a ship. It should be stressed that the following figures are changeable as the prices of steel and of non-ferrous metals are volatile: Steel 82%; non-ferrous metals and cables 10%; electrical panel and various machineries 1.4%; motors and winches 1.3%; shafting 1.3%; generators 1.2%; spare parts and lubricants 1%; compressors 0.8%; other items 1%.

The recycler usually obtains from his bank a Letter of Credit in US Dollars for a period of 180 days, although in some cases it can be for a longer period. For an average sized ship of 10,000 LDT it might take 100 to 120 days to complete the recycling work. From around the 40th day from the commencement of work and until completion, the recycler sells the ship's metals, machinery, equipment and other materials.

The recycler has to contend two key volatilities: (a) domestic steel plate prices; and (b) domestic currency exchange rate with the U.S. Dollar. The Indian recycler of our example borrows US Dollars, then starts earning rupees from the 40th day, and finally has to buy US Dollars with Rupees in order to pay back his loan on or before the 180th day. If in that time the price of steel in India has moved up, the recycler will receive extra income, as was the case in the last three months depicted in Figure 3.2. Had the recycler based his budget in mid-July on a steel price of 23,000 Rupees per tonne, forty days later his income would be noticeably higher. However, as can be seen from Figure 3.2, the converse situation is equally likely.

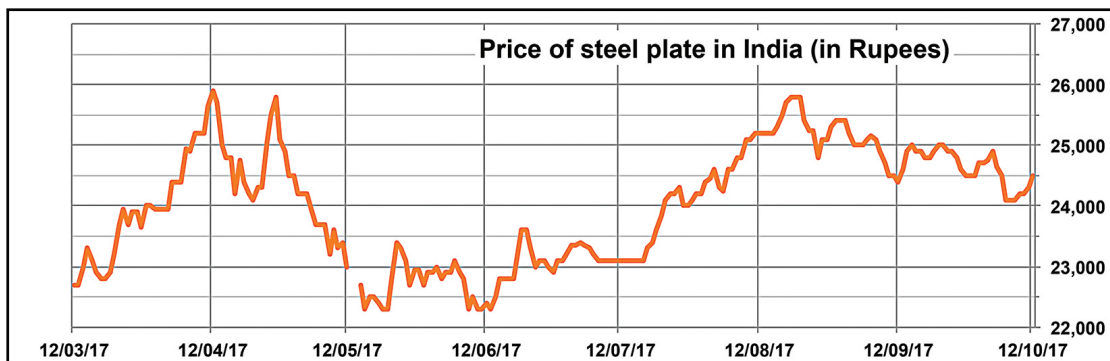


Figure 3.2: Price of 12mm steel plate in India

The second source of volatility and risk to the recycler is the exchange rate between his currency and the currency of his loan. Figure 3.3 shows the actual fluctuations of Rupee against US Dollars from March to October 2017. As the recycler cannot predict the movements of the exchange rate, he has to face and factor the risk of incurring higher costs (or the bonus of cheaper US Dollars).

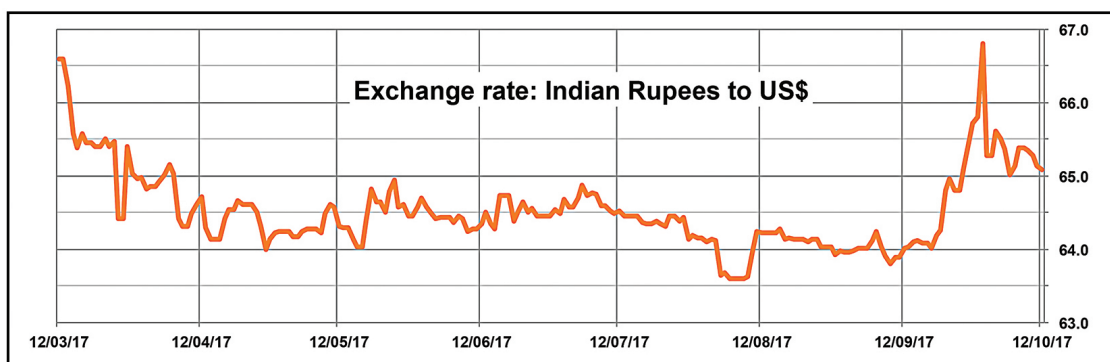


Figure 3.3: Exchange rate fluctuations – Indian Rupee to US\$

Ship recycling is an informal industry wedged between two powerful players, the steel industry and the shipping industry. When demand for shipping is healthy and charterers are paying well for the hire of ships, the volume of tonnage offered for recycling decreases. Ship recyclers may increase their offers to tempt more tonnage to come out of trading, but the prevailing price of steel forms a natural ceiling on how much recyclers can afford to pay. When recyclers cannot attract sufficient tonnage at affordable prices, a number of recycling facilities face temporary (or permanent, depending on the severity) closures.

Conversely, when the shipping markets are depressed, more tonnage is offered for recycling and, consequently, recyclers can reduce the prices they pay for ships. If at such times steel prices happen to be high, ship recycling becomes more profitable, attracting more recycling capacity through the reactivation of closed yards.

4 Hong Kong Convention

In the 1990s international attention focused on the poor working conditions in ship recycling yards following reports of recurring accidents with fatalities and also of degradation of the environment through persistent pollution. At that time it was not uncommon for some yards to clean cargo holds and tanks of beached ships by drilling holes on the side shell and then pumping seawater into the cargo spaces. Often, the removal of a ship's propeller led to spilling of the tail shaft hydraulic oil onto the beach. Plates 4.1 and 4.2 depict common scenes from a major ship recycling yard in Bangladesh, as recently as 2008.



Plate 4.1: Carrying waste oil in a major ship recycling yard in Bangladesh in 2008

During the 1990s environmental activists, led by Greenpeace International, campaigned to bring ship recycling into the public attention. The environmental NGOs also took their campaign to the meetings of the Basel Convention that was established under the United Nations Environment Programme and which is the forum for Ministries of Environment of Member States of the UN. Around the same time, the government of Norway also led some first discussions at the International Maritime Organization (IMO) on the need to address in the future the recycling of ships with an international regulatory instrument.



Plate 4.2: Temporary storage of waste oil in a recycling yard in Bangladesh, 2008

4.1 The Basel Convention and its implications

The Basel Convention (or, to give it its full title: “*The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*”) was adopted in March 1989 and entered into force in May 1992. To date it has been ratified by 186 countries (i.e. most of the world with the important exception of the USA). The Basel Convention provides controls for the international movement of hazardous wastes and for their environmentally sound management. These controls are implemented through the establishment of a chain of communications, aimed to reach consent for the shipment, between the authorities of the country exporting the hazardous wastes with the authorities of the importing country, and with the involvement of the authorities of any transit State. The consent is based on the understanding that the hazardous waste in question will be treated in an environmentally sound manner in the importing country. In most countries the implementing authorities of the Basel Convention are Ministries of Environment.

Towards the end of the 1990s the subject of ship recycling¹ first entered the agendas of the Conference of the Parties (COPs) of the Basel Convention. In December 1999 COP 5, in its decision V/28, instructed its technical working group to develop guidelines in collaboration with IMO for the environmentally sound management of the dismantling of ships. It also instructed its technical working group, together with its

¹Note: While IMO uses the term “ship recycling”, Basel Convention refers to “ship dismantling”, whereas ILO uses “ship breaking”. In the shipping industry the term “ship scrapping” still persists.

legal working group “to discuss the legal aspects under the Basel Convention relating to the issue of the full and partial dismantling of ships”, this in effect being a formal request to assess whether Basel Convention could be implemented to regulate ship recycling. COP 6 in December 2002 adopted the Basel Convention’s *“Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships”* and also extended the mandate of the working group on the legal aspects of ship dismantling for another intercessional period. It should be pointed out here that guidelines are voluntary standards that do not have the mandatory role of international Conventions. Incidentally, the growing international interest in ship recycling also resulted in the publication by the International Labour Office (ILO)² of a further set of voluntary guidelines in 2004 on: *“Safety and health in shipbreaking – Guidelines for Asian countries and Turkey”*.

COP 7 of the Basel Convention, in its decision VII/26 in October 2004, reached an ambivalent compromise position when addressing the question on whether Basel Convention can regulate the movement of end-of-life ships. The decision noted: *“Noting that a ship may become waste as defined in article 2 of the Basel Convention and at the same time it may be defined as a ship under other international rules”*. Importantly, the same decision VII/26 also: *“Invites the International Maritime Organization to continue to consider the establishment in its regulations of mandatory requirements, including a reporting system for ships destined for dismantling, that ensure an equivalent level of control as established under the Basel Convention and to continue work aimed at the establishment of mandatory requirements to ensure the environmentally sound management of ship dismantling, which might include pre-decontamination within its scope”*. IMO responded positively to this invitation by developing a Convention specific to ship recycling, namely the *“Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009”*, also known as the *Hong Kong Convention* (hereafter also the *HKC*).

It is important to realise that whereas the Basel Convention may have been most successful in fighting against illegal exports of hazardous wastes to countries that are unable to process and dispose of them in an environmentally sound manner, on the other hand the Convention is unsuitable for defining minimum standards for the recycling of ships. The author’s critical view is that the attempt by the international community in the early 2000s to establish and enforce Basel Convention as the international regulatory regime for the recycling of ships was an avoidable mistake, encouraged by the persistent lobbying of environmental activists, and aided by the fact that the Convention was already in force and therefore could be implemented without delay. Nevertheless, it is also a fact that Basel Convention does not contain any requirements that are relevant to ships and to ship recycling facilities, nor does it concern itself with issues on workers’ safety. The only relevant requirement of Basel Convention to ship recycling being its generic requirement that the wastes should be managed in an environmentally sound manner. Furthermore, the mechanism for achieving the Convention’s “prior informed consent” relies on the establishment of communications between the exporting and importing countries, which, when applied to end-of-life ships, means in practice the authorities of the State from where the ship departed for its last voyage and the authorities of the recycling State. This is because the Convention is not cognisant of the concept of flag State that is central to the United Nations Convention on the Law of the Sea and to all maritime Conventions and therefore leaves no option but to consider the State from where the ship departed for its last voyage as being the exporting State.

²The International Labour Office is the Secretariat of the International Labour Organization (ILO), which is a Specialized Agency of the UN for setting labour standards, developing policies and devising programmes promoting decent work for all women and men.

Implementing the Basel Convention to control the movements of end-of-life ships creates a number of problems: (a) it takes inordinate amount of time to arrange for the necessary communications between exporting, importing and any transit States – communications which in any case have no effect whatsoever in improving the standards under which ships are recycled; (b) the managers of the ship will most often have no connection with the country that is deemed to be the State of export; (c) a number of countries are unwilling to recognise that Basel Convention should regulate the recycling of end-of-life ships, thus making the communications between the managers of the ship, the State of export and the other involved States even more cumbersome; (d) the decision to recycle a ship may not be taken, or may not be finalized, or may not be admitted until after the ship has departed from the port and is in international waters, in which case there is no exporting State to lead the inter-State communications envisaged by Basel Convention. In practice the above problems make the Basel Convention unenforceable to ship recycling. The difficulty in applying the provisions of the Basel Convention to ship recycling and the circumvention of the Convention's controls by ships destined for recycling are acknowledged in the website of the Basel Convention³.

Notwithstanding the above, in October 2010 following intense lobbying by environmental activists, COP 10 of the Basel Convention failed to reach conclusive consensus that Hong Kong Convention can replace Basel Convention for the recycling of ships. Instead its decision BC-10/17⁴ maintains all options open:

- “1. Notes that, while some parties believe that the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships provides an equivalent level of control and enforcement to that established under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, some parties do not believe this to be the case;*
- 2. Encourages parties to ratify the Hong Kong Convention to enable its early entry into force;*
- 3. Acknowledges that the Basel Convention should continue to assist countries to apply the Basel Convention as it relates to ships.”*

4.2 The Ban Amendment and the European Waste Shipment Regulation

In an effort to strengthen protection to developing countries, COP 2 of the Basel Convention adopted in March 1994 its “Ban Amendment”, banning the export of hazardous wastes from OECD to non-OECD countries. However, the Ban Amendment is not yet in force internationally. It will enter into force between member States that have ratified it 90 days after it has been ratified by at least three-fourths (66) of the 87 countries that were Parties to the Convention at the time the Amendment was adopted. In November 2017 the Amendment had received 93 ratifications, 63 of which from States who were Parties at the time of its adoption. The Amendment is therefore expected to enter into force relatively soon.

The Ban Amendment however has already been enforced unilaterally in the European Union, through the European Waste Shipment Regulation, which implements the Basel Convention and the Ban Amendment in European Union law. The European Union had implemented the Basel Convention into European law from as early as February 1993. In 2006 the Union replaced its earlier regulation by the *Waste Shipment Regulation (EC) No 1013/2006*, which additionally implemented unilaterally the Ban Amendment, forbidding the export of hazardous wastes from member States of the European Union to any developing (i.e. non-OECD) countries.

³See section: *Overview on Ship Dismantling* www.basel.int

⁴ec.europa.eu/environment/waste/ships/pdf/COP_10%20Decision_10_17.pdf

When the European Commission tried to enforce the Waste Shipment Regulation to end-of-life ships it faced many difficulties and much evasion, as was seen with ships such as the *Otapan*, the *Sea Beirut*, the *Sandrien*, the *Margaret Hill*, the *Tor Anglia*, etc. This was primarily because, in enforcing the Ban Amendment, the European Waste Shipment Regulation deems illegal the recycling in Bangladesh, China, India or Pakistan of any ship that has started its last voyage from a European Union port (i.e. exporting EU State, regardless of the flag the ship flies). The simple reality is that these four non-OECD countries consistently recycle around 95% of the world's tonnage. In fact a study by the European Commission in 2011 reported that (at least) 91% of ships under the scope of the regulation had ignored or circumvented its requirements. This led the European Commission in 2012 to propose the development of a new European Regulation on Ship Recycling that is discussed in the next section.

For reasons that appear to have nothing to do with improving standards in the ship recycling industry, some environmental NGOs are to this day continuing to lobby for the enforcement of the Basel Convention to regulate end-of-life ships. They are particularly active in Brussels where they have managed to attain undeserved influence in the European Commission and the European Parliament.

4.3 The mechanisms and spirit of Hong Kong Convention

In December 2003 the 23rd session of IMO's Assembly adopted with its Resolution A.962 (23) the *IMO Guidelines on Ship Recycling*. It would have been clear by that time, however, that what was needed was international regulation rather than another set of voluntary guidelines. Therefore, two years later, and following the invitation to IMO by COP 7 of the Basel Convention, the 24th session of IMO's Assembly with Resolution A.981(24) agreed in December 2005 that IMO would develop a "*new legally binding instrument on ship recycling that would provide regulations for:*

1. *the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational efficiency of ships;*
2. *the operation of ship recycling facilities in a safe and environmentally sound manner; and*
3. *the establishment of an appropriate enforcement mechanism for ship recycling (certification/ reporting requirements)."*

Following concentrated work for over three and a half years, IMO's Marine Environment Protection Committee (MEPC) completed the draft text of the new international Convention, which was submitted to a diplomatic Conference that was convened in Hong Kong, China from 11th to 15th May 2009. The diplomatic Conference was attended by representatives of 63 Member States, two Associate Members, representatives from the Secretariats of the Basel Convention and of ILO and observers from one IGO and eight NGOs. The Conference unanimously adopted the final text of "*Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009*", also known as "*the Hong Kong Convention*" (or the *HKC*).



Plate 4.3: The diplomatic Conference held in the Hong Kong Conference and Exhibition Centre between 11th and 15th May 2009



Plate 4.4: Adoption of Hong Kong Convention on 15th May 2009 by a diplomatic Conference held in Hong Kong, China

Highlights of Hong Kong Convention:

The main part of the Convention contains 21 Articles that establish the Convention's main legal mechanisms. This is followed by the Annex to the Convention that contains 25 regulations divided in four chapters: 1 General (regulations 1-3); 2 Requirements for ships (regulations 4-14); 3 Requirements for ship recycling facilities (regulations 15-23); and 4 Reporting requirements (regulations 24-25). Lastly, HKC has seven appendices, with lists of hazardous materials, standard formats for certificates, etc. The text of the Convention also makes reference to six guidelines that were developed by IMO's MEPC in the years following the adoption of the Convention. Although guidelines are non-mandatory texts, they are considered indispensable in providing clarifications, interpretations, and uniform and effective implementation and enforcement of the relevant requirements of the Convention. It is worth noting that when the text of an international Convention requires that a certain set of guidelines are to "be taken into account", frequently this is implemented and enforced by administrations and their recognised organizations as if the guidelines are mandatory requirements. MEPC 68, in May 2015, completed the development of the sixth set of the guidelines for the Hong Kong Convention⁵ listed in Table 4.1.

DEVELOPMENT OF THE GUIDELINES OF THE HONG KONG CONVENTION	
Guidelines	Adoption
2015 Guidelines for the development of the Inventory of Hazardous Materials (Inventory Guidelines)	Revised guidelines adopted by resolution MEPC.269(68)
2011 Guidelines for the development of the Ship Recycling Plan (SRP Guidelines)	Guidelines adopted by resolution MEPC.196(62)
2012 Guidelines for safe and environmentally sound ship recycling (Facility Guidelines)	Guidelines adopted by resolution MEPC.210(63)
2012 Guidelines for the authorization of Ship Recycling Facilities (Authorization Guidelines)	Guidelines adopted by resolution MEPC.211(63)
2012 Guidelines for the Survey and Certification of ships under the Hong Kong Convention	Guidelines adopted by resolution MEPC.222(64)
2012 Guidelines for the Inspection of ships under the Hong Kong Convention	Guidelines adopted by resolution MEPC.223(64)

Table 4.1: Guidelines adopted by IMO for HKC

The key elements of the mechanisms underlying HKC are the following:

- The Convention applies to all ships⁶, except: (a) ships below 500 GT; (b) government owned non-commercial service ships; and (c) ships operated throughout their live exclusively in waters of the State whose flag the ship is flying.

⁵For the texts see: <http://www.imo.org/OurWork/Environment/ShipRecycling/Pages/Default.aspx>

⁶In HKC "ship" is defined as "a vessel of any type whatsoever operating or having operated in the marine environment and includes submersibles, floating craft, floating platforms, self elevating platforms, Floating Storage Units (FSUs), and Floating Production Storage and Offloading Units (FPSOs), including a vessel stripped of equipment or being towed."

- **Inventory of Hazardous Materials (IHM):** The Convention requires that ships will be provided with an IHM detailing the locations and approximate quantities of hazardous materials listed in the Convention's Appendices 1 and 2. Note that the materials listed on Appendix 1 are already controlled by other international Conventions, such as SOLAS, AFS, Montreal Protocol, etc. For new ships, i.e. those built after the entry into force of the Convention, it is required that: (a) materials listed in Appendix 1 must not be used; and (b) any materials listed in Appendix 2 and used on the ship must be shown in the IHM. For existing ships, i.e. those built before HKC's entry into force, it is required that: (a) any pre-existing materials listed in Appendix 1 must be shown in the ship's IHM, while the same materials must not be used on the ship subsequent to the Convention's entry into force; and (b) the inclusion in the ship's IHM of any Appendix 2 materials used on the ship is encouraged but not mandated.
- **International Certificate on Inventory of Hazardous Materials (ICIHM):** Once HKC is in force, ships will be issued the ICIHM, after an initial or renewal survey, by their flag State, or the delegated classification society. The purpose of this certificate, whose validity will be for five years, is to ensure that the IHM continues to correctly reflect the hazardous materials that are on the ship.
- **Ship Recycling Facility Plan (SRFP):** Recycling yards located in countries that are Parties to HKC will document in their SRFP the yard's systems and processes for ensuring safety and environmental protection.
- **Document of Authorization to conduct Ship Recycling (DASR):** This will be issued by the competent authorities in recycling States Parties to HKC to each authorised yard within their jurisdiction. The DASR will list any limitations that are imposed to the yard, such as size or type of ship, and quantities of any specific hazardous materials that the yard may not be qualified to accept. This certificate will be valid for up to 5 years.
- **Ship Recycling Plan (SRP):** Recycling yards in countries that are Parties to HKC, prior to commencing the recycling of a ship, will have to produce a plan based on the specific ship's IHM and other particulars. The SRP will detail how the yard will dispose of the ship's hazardous materials and what precautions will be taken against unsafe situations. The SRP will normally be approved by the competent authority of the recycling State.
- **International Ready for Recycling Certificate (IRRC):** Prior to the commencement of the recycling of a ship, the IRRC will be issued by the ship's flag State or by its delegated classification society, following a final survey. The survey and certificate will confirm the validity of the IHM, and the suitability of the selected recycling yard (on the basis of the IHM, DASR, and SRP).
- Other elements in HKC include: notification by the recycling yard to its competent authority of the commencement of recycling; notification to competent authority and flag State of completion of recycling; port State control by Party coastal States; ability of a ship flying the flag of a non-Party State to be recycled in a yard at a Party State as long as that ship meets the requirements for IHM; inability of a ship flying the flag of a Party State to be recycled in a yard at a non-Party State.

4.4 Implications of Hong Kong Convention

Leaders from the ship recycling industry on occasions have reflected and complained that whereas the underlying requirements of HKC for recycling yards are onerous (in terms of improvements in systems, procedures, training, equipment and infrastructure), on the other hand the requirements on ships are very

light (the costs for the provision of an IHM and for the associated surveys and certification are relatively small). Nevertheless, as discussed in more detail in section 6.2, the equitability between the ship recycler and the ship owner in HKC lies in the fact that a ship flying the flag of a Party to the Convention will have been recycled in a Party (HKC) yard and therefore the costs of compliance to the Convention would pass this way back to the ship owner (unless of course the ship changes flag to a non-Party flag and is recycled in a non-Party yard – note: in the future, avoidance of HKC obligations through reflagging will cease to be possible after all five main recycling countries become Parties to HKC).

Hong Kong Convention has been opposed and is frequently criticised by organised civil society activists for not banning the beaching method of ship recycling. This persistent lobbying by NGO activists has led to beaching being widely associated with poor ship recycling standards, and vice versa. Whereas during the development of HKC there were repeated proposals to ban beaching, the developers of the Convention realized that banning beaching through the Convention would not be viable as presently more than three quarters of the world's recycling capacity utilizes this method. Had HKC banned beaching, eventually this would have led to two distinct regimes in the world, one in accordance with the standards of the Hong Kong Convention, and the second one being the unregulated (by international standards) recycling yards of the countries that continue to employ beaching. As it will always be legal for ships to be sold and to change flag (and thus avoid any flag State requirements to implement the Hong Kong Convention), ship owners would therefore have the choice under which regime to recycle their ships. By keeping the South Asian countries that employ beaching outside the influence of HKC, IMO and its Convention would in effect have turned their backs to the parts of the industry that were in most need for the improvements that are envisaged by HKC. Furthermore, and most importantly, it is not possible now for HKC to enter into force without the recycling capacity of at least one of the three South Asian ship recycling countries.

The Hong Kong Convention addresses the systematic prevention, reduction, minimization and, where practicable, elimination of risks to human health and safety and to the environment through mandatory requirements on: worker safety and training; the protection of human health and the environment; emergency preparedness and response; and systems for monitoring, reporting and record-keeping. This way the Hong Kong Convention has a truly realistic chance of being ratified by all recycling countries, including the three South Asian countries, and thus of providing a single international standard for the recycling of all ships.

4.5 Entry into force of Hong Kong Convention

The Convention will enter into force 24 months after the date on which 15 States, representing 40 per cent of world merchant shipping by gross tonnage, have either acceded to it or have ratified it⁷. Furthermore, the combined maximum annual ship recycling volume of those States must constitute not less than 3 per cent of their combined merchant shipping tonnage⁸. As the size of the world fleet changes every year, so do the second and third of the three conditions. Table 4.2 shows the growth of the world fleet in the last ten years (IHS Maritime & Trade, World Fleet Statistics 2016 and earlier years).

⁷A country wishing to become a contracting Party to an international Convention can do this by accession to the Convention or by a two-stage process that involves first signing the intent to become Party and then ratifying its signature.

⁸For more information on the calculation of the recycling capacity for meeting the entry-into-force conditions of HKC refer to [www.imo.org/en/OurWork/Environment/ShipRecycling/Documents/178\(59\).pdf](http://www.imo.org/en/OurWork/Environment/ShipRecycling/Documents/178(59).pdf) and to document www.imo.org/en/OurWork/Environment/ShipRecycling/Documents/INF-2-Rev.1.pdf

	2007	2008	2009	2010	2011
World Fleet	774,936,508	830,704,412	882,634,804	957,982,304	1,043,081,509
40% of World Fleet	309,974,508	332,281,765	353,053,922	383,192,922	417,232,604
3% of 40%	9,299,238	9,968,453	10,591,618	11,495,788	12,516,978
	2012	2013	2014	2015	2016
World Fleet	1,081,204,742	1,122,649,460	1,166,847,462	1,211,223,165	1,248,583,186
40% of World Fleet	432,481,897	449,059,784	466,738,985	484,489,266	499,433,274
3% of 40%	12,974,457	13,471,794	14,002,170	14,534,678	14,982,998

Table 4.2: Growth of world fleet (2007 to 2016)

In 2017⁹ the requirements for entry into force of HKC are that it has to be ratified (or acceded) by at least:

- (1) 15 States;
- (2) whose fleets amount to at least 499,433,274 GT (i.e. 40% of the 2016 world fleet of 1,248,583,186 GT); and
- (3) whose recycling facilities' combined maximum annual ship recycling volume is at least 14,982,998 GT (i.e. 3% of the tonnage condition of 499,433,274 GT).

To date, six countries have ratified or acceded to Hong Kong Convention (Norway, France, Belgium, Republic of Congo, Panama and Denmark) while Turkey has obtained Parliamentary approval for ratification. Together, these seven countries currently control 21.7% of the world's fleet. A number of maritime countries are making progress towards accession or ratification, and it is expected that it will not be too difficult to fulfil the first two conditions for entry-into-force, especially if shipowners feel the need to urge some of the open registries to accede.

The third condition in 2017 requires a "combined maximum annual ship recycling volume" of at least 14,982,998 GT. The 2016 capacities of the five ship recycling countries and of the rest of the world were as follows:

India	12,210,082 GT
Bangladesh	9,888,137 GT
China	8,167,710 GT
Pakistan	5,703,133 GT
Turkey	1,540,800 GT
Rest of the world	624,848 GT

This data shows that Turkey plus India (or Turkey plus China) do not meet the required 14.98m GT. The key to HKC's entry into force is therefore accession by two of the four large recycling nations (ideally India and China as the hazardous waste management infrastructure and many of the yards of both countries are already well developed, in line with the requirements of HKC).

⁹In 2018 the criteria will change according to the then published figure of the total GT of the world fleet as of end of December 2017 (to be published in April or May 2018).

It is a reasonable expectation that within the next four to seven years HKC will enter into force. In the meantime meaningful progress has been taking place as the main ship recycling countries are working towards implementing tighter safety and pollution prevention requirements. China has implemented stricter requirements for yards that are authorised to import foreign ships for recycling. The Turkish administration has implemented most of the requirements of HKC into its rules. In India the Ministry of Shipping introduced the Shipbreaking Code 2013, which replicated the full requirements of HKC to its ship recycling industry. Furthermore, the Indian Minister of Transport, Mr Nitin Gadkari, told IMO's 30th Assembly in November 2017: *"I am confident that we will ratify the Hong Kong Convention in the not-too-distant future"*. In Bangladesh the Ministry of Industries has been working together with the recycling industry, with IMO and the Secretariat of the Basel Convention under a Norwegian funded project for the creation of hazardous waste management facilities and for the development of training courses for ship recycling workers and managers. The ship recycling industry in Pakistan on the other hand does not appear to have embarked yet on the necessary work to improve safety and environmental standards. Nevertheless, following the disastrous explosion on a tanker which killed 28 workers on 1st November 2016 at a Gadani yard, promises have been made by the Pakistani government and also by the ship recycling industry of significant improvements in the near future.

Recyclers from South Asia have expressed their concern that once their countries are Parties to HKC then any powerful group of opponents to beaching may introduce an amendment to HKC to ban beaching and to close down the ship recycling industries in South Asian countries after the Convention has entered into force (note: it is not possible to amend a Convention before it enters into force). However this cannot happen as provisions in HKC's Articles 18 (*Amendments*); and 19 (*Denunciation*) afford protection to all Parties by ensuring that the introduction of amendments will have to be done in a spirit of compromise and cooperation and by making it impossible to force an amendment to any Parties that do not agree to it. For example Article 18.4 provides that: *"Any Party that has declined to accept an amendment to the Annex shall be treated as a non-Party only for the purpose of application of that amendment"*, and furthermore, Article 19.1 provides that: *"This Convention may be denounced by any Party at any time after the expiry of two years from the date on which this Convention enters into force for that Party."* Conversely, a country that is not a Party to the Convention at a time an amendment is accepted will not be in a position to enjoy the protection described above, as Article 17.4 (*Entry into force*) provides that: *"After the date on which an amend-ment to this Convention is deemed to have been accepted under Article 18, any instrument of ratification, acceptance, approval or accession deposited shall apply to the Convention, as amended."* In other words, for a country to be in a position to control any amendments proposed after the Convention's entry into force, it should be a Party to the Convention at the time the amendments are discussed and negotiated.

In the longer term, the expectation is for the establishment of HKC as the single global standard. This is a realistic and feasible target to achieve in the next 7-10 years, simply by the accession of all five ship recycling countries to HKC. Afterwards, all flag States will have no option but to also accede to the Convention, while all shipowners will also have no option but to recycle their ships in line with HKC.

5 The European Union Ship Recycling Regulation

5.1 The mechanisms and spirit of the new EU Regulation

The progress that has taken place with the voluntary implementation of Hong Kong Convention and the (admittedly slow) uptake of the Convention by IMO Member States should probably have provided sufficient comfort to activists and to the authorities within the European Union. This was not the case. Early in 2012, the European Commission having publicly recognized¹⁰ that the enforcement of its own Waste Shipment Regulation to the recycling of ships was not working, it embarked on the development of new legislation for the recycling of European flagged ships.

In accordance with the political system of the European Union, the Commission is the body responsible for initiating new legislation. On 23 March 2012 the Commission published its *Proposal for a Regulation of the European Parliament and of the Council on ship recycling*¹¹. The document provided the Commission's version of the proposed Regulation and also its "Explanatory Memorandum". The following three extracts from the Explanatory Memorandum convey the Commission's thinking at that time:

"A significant recycling capacity exists outside the OECD in China, India, Pakistan and Bangladesh. It is expected that facilities located in the OECD, in China as well as some facilities located in India will be able to comply with the requirements of the Hong Kong Convention by 2015."

"The objective of the Ship Recycling Regulation is to reduce significantly the negative impacts linked to the recycling of EU-flagged ships, especially in South Asia without creating unnecessary economic burdens. The proposed Regulation brings into force an early implementation of the requirements of the Hong Kong Convention, therefore hastening its entry into force globally."

"While it is difficult to expect the current 'beaching' facilities to be able to meet these requirements, it is possible that upgraded facilities might be able to fulfil these criteria in the future."

The draft Article on "Requirements for ship recycling facilities" in the text of the proposed Regulation virtually reproduced the text of HKC, making no attempt to ban the beaching method.

The draft Regulation then went through the formal European process of negotiations between a Working Group of the European Council (officials from the ministries of the 28 Member States) and the Environment Committee of the European Parliament, which in this instance was led by an MEP of the Green Party (*the Rapporteur*). Unfortunately, during these negotiations the subject became unduly politicized through the persistent efforts of the Rapporteur to enact a ban on beaching. In the end, after a long process of meetings and discussions, the three parties ("the trilogue" between Council, Parliament and Commission) agreed a compromise text on 27 June 2013, which removed all mentions of banning of beaching or of exclusion of South Asia's yards. It was published on 10th December 2013 in the Official Journal of the European Union and on the 30th of December 2013 the new "European Regulation on Ship Recycling (EU) No 1257/2013" (or simply here, "the EU SRR") entered into force.

Whilst the European Council's representatives succeeded in rejecting the Parliament's preferred text which was banning beaching and also managed to preserve the full set of mechanisms of HKC, on the other hand, in order to accommodate political sensitivities, the final negotiations introduced some imprecise and ambiguous terms in the text, such as a requirement that ship recycling facilities shall "operate from built

¹⁰https://www.youtube.com/watch?v=nxk_c0Abhos

¹¹<http://ec.europa.eu/transparency/regdoc/rep/1/2012/EN/1-2012-118-EN-F1-1.Pdf>

*structures*¹²”. Naturally, the persons involved in these negotiations did not attempt to define the meaning of “built structures” but left its interpretation to be given at a future time by the Commission. Furthermore, elsewhere the Regulation requires that, in order to be approved, a ship recycling facility: (a) shall “*demonstrate control of any leakage, in particular in intertidal zones*”¹³ and (b) shall ensure “*the handling of hazardous materials and waste generated during the ship recycling process only on impermeable floors with effective drainage systems*”¹⁴. Whereas the new European Regulation is very similar to HKC, the above two requirements as well as the requirement for facilities to operate from “*built structures*” are not from HKC. While these requirements may look non-controversial and not unreasonable, it now appears that they might be used to justify a ban to beaching, as will be discussed in sub-section 5.2.

Notwithstanding the uncertainty introduced by the ambiguous terms that were invented in the final negotiations, the European Regulation replicates well the standards and the mechanisms of HKC and even requires the implementation of the guidelines that were developed by IMO for HKC. It is relevant to quote from the preamble to the Regulation: “*This Regulation is aimed at facilitating early ratification of the Hong Kong Convention both within the Union and in third countries by applying proportionate controls to ships and ship recycling facilities on the basis of that Convention.*”

There are two noteworthy areas where the European Regulation differs from HKC: (a) in the way yards are authorised; and (b) in defining two additional hazardous materials that need to be controlled in EU flagged ships.

For yards located in EU countries, the Regulation requires each Member State to enforce the requirements of the Regulation and to authorise the operation of yards in its jurisdiction. On the other hand, as the Regulation is not an international Convention, the EU does not have the power to enforce its requirements on yards that are located outside the EU, nor can it expect the administrations of non-EU countries to authorise yards within their jurisdiction in line with the European Regulation. For this reason, yards located outside the European Union wishing to be included in “*the European List of approved facilities*”, are required to apply to the European Commission, providing evidence of their compliance with the requirements of the Regulation, together with certification by an “independent verifier” who has inspected the site. Additionally, yards must accept the possibility of being subject to site inspection by the Commission or its agents.

The second difference between HKC and the EU SRR is that the latter includes two additional hazardous materials, which will need to be controlled on EU flagged ships. The first of these materials is included in Annex I¹⁵ of the EU SRR and is already banned in European Union law (Perfluorooctane sulfonic acid and its derivatives, or PFOS, the main application on board ships being in some fire-fighting foams). The second material is included in Annex II of EU SRR (Brominated flame retardant, or HBCDD, the main application on board ships being in expanded polystyrene used for cryogenic insulation, such as for liquefied gas tanks but also for refrigerator areas). A relevant footnote in Annex I to the EU SRR states that the control on PFOS “is not applicable to ships flying the flag of a third country”, while the HBCDD, being a material of Annex II, strictly speaking need only be included in IHMs of newbuildings, plus in

¹²Article 13.1 (c)

¹³Article 13.1 (f)

¹⁴Article 13.1 (g)(i)

¹⁵Note that with regard to new and to existing ships, Annexes I and II of EU SRR have the same functionality as Appendices 1 and 2 of HKC.

any retrofits involving changes to structure and equipment of existing ships. As the EU SRR treats all ships flying the flag of a third country as existing ships, regardless of their date of built (see EU SRR's Article 12(1), referring to Art. 5(2)), it follows that inclusion of information on either of these materials will not be required on IHMs of non-EU flagged ships, unless the HBCDD has been installed during a retrofit. Conversely, IHMs compiled for EU flagged ships after the date of application of the EU SRR will fully satisfy the requirements of HKC. Note that good descriptions of the properties and typical uses of PFOS and of HBCDD can be found in a Norwegian submission¹⁶ to IMO, which proposed in 2008 their inclusion as controlled hazardous materials under Appendices 1 and 2 respectively of the HKC. The Norwegian submission was rejected at that time by IMO.

On the 30th December 2013 the European Union brought into force the "European Regulation on Ship Recycling (EU) No 1257/2013". The provisions of the Regulation did not take effect immediately, but instead the Regulation specifies a schedule of application, whereby the first version of the European List of approved yards would be published not later than December 31, 2016. Thereafter, EU flagged ships will have to: have an Inventory of Hazardous Materials; be surveyed; be certificated; and be recycled in accordance with the new Regulation, from the earlier of the following two dates (termed as "*the date of application*"): (a) six months after the European List of approved yards reaches a combined capacity of 2.5 million LDT; or (b) the end of December 2018. From the date of application European flagged ships will be excluded from the scope of the European Waste Shipment Regulation, whereas non-European flagged ships departing from European Union ports and destined for recycling will continue to be subject to the Waste Shipment Regulation, which forbids their export to developing countries. Furthermore, all ships visiting European Union ports, regardless of their flag, will be required from December 2020, to be provided with inventories of hazardous materials (IHMs).

It is unclear why the European Commission delayed until the middle of 2016 its invitation of applications from ship recycling facilities located outside the European Union. Applications were received from the U.S. (two yards of 72,868 LDT), China (four yards of 1,767,215 LDT), Turkey (seven yards of 450,903 LDT) and India (initially five yards of 323,497 LDT and subsequently a further four yards) of a combined maximum annual capacity of 2.6 million LDT. Due to further delays, by the beginning of 2018 none of the non-EU applicant yards had been inspected or approved by the Commission. In the meantime the Regulation's requirement for the publication of the first European List by or before December 2016 was satisfied, as the Commission published at the end of 2016 its first list¹⁷, which included 18 yards in 10 EU Member States with maximum annual recycling capacity of 303,065 LDT. In view of the above it is a fair guess that the date of application of the Regulation will be the end of December 2018, and not earlier, as it is improbable that the Commission will approve yards of 2.5 million LDT capacity by the middle of 2018.

5.2 Implications of the EU Regulation

For the last twenty years environmental activists have been campaigning against unsafe and polluting practices in ship recycling. Initially Greenpeace was the lead NGO in this campaign. In 2005 the Brussels based NGO *Shipbreaking Platform* ("the Platform") was set up to coordinate the activities of 19 environmental, human rights and labour rights organisations interested in ship recycling. It is indisputable that

¹⁶See IMO document <http://www.sjofartsverket.se/pages/14179/57-3-19.pdf>

¹⁷See the European Commission's official site for the European List of approved facilities: http://ec.europa.eu/environment/waste/ships/pdf/list_ship_recycling_facilities.pdf

the activists have made a great contribution to the development of awareness amongst the public, the regulators, and the shipping industry. Without their relentless demands it is conceivable that the HKC may not have even been developed. On the other hand, the activists, and more specifically the Platform, have shown a total lack of knowledge and interest to learn how the shipping and the ship recycling industries work. The result is that their campaigns are, more often than not, impractical or unworkable. Over the years, the Platform has campaigned tirelessly for the enforcement of the Basel Convention, of the Ban Amendment and of the European Regulation on Waste Shipment to ship recycling, regardless of the numerous cases that have demonstrated these regimes as impractical and unenforceable to ships. Furthermore, since its inception the Platform has campaigned for the banning of beaching and for stopping the recycling of ships in South Asia. The Platform has opposed HKC, primarily because the Convention does not ban beaching. To start with, they strenuously opposed the development of the European Regulation on Ship Recycling, as they saw this as an admission by the European Union of the failure of the Basel Convention and the related European Regulation on Waste Shipment. However, when the Green Party assumed the leadership of the Environment Committee of the European Parliament for the development of the new regulation, and as the Green Party adopted all the policies and arguments of the Platform, the NGO appeared to change its view on the usefulness of the new regulation as a vehicle for banning beaching. Since the adoption of the new regulation in 2013, the Platform has been pressing the European Commission to interpret the new Regulation as banning beaching.

In parallel to the Platform's lobbying in Brussels, in the summer of 2013, after the final version of the text of the Regulation had been agreed between the Council and the Parliament, there was a highly irregular intervention by an adviser of the Green Party in the European Parliament who managed, unnoticed, to make some small changes to the agreed text in some of the EU languages, including English. The changed text in essence requires that: "*the handling of hazardous materials, and of waste*" must be done on impermeable floors; as opposed to the agreed text, which referred to "*the handling of hazardous materials and waste*" (i.e. the word hazardous applying to both, materials and wastes). As in European regulatory language an "end-of-life ship" is considered "waste", but not necessarily "hazardous waste", it follows that the changed text can be interpreted as requiring that nothing from the ship must touch the beach, not any clean steel blocks, not even a table and chairs! This point of detail obviously having been invented as an impassable obstacle to beaching. It took EU Member States some time before noticing this small but potentially crucial change. When it was also realised how the changed text could be interpreted, the European Council proposed to the Parliament and the Commission a Corrigendum (i.e. a formal correction) to reinstate the agreed text. It is understood that a faction of the Parliament strenuously opposed this and consequently the issue remains unresolved to this day.

In accordance with the European system, the European Commission is the body that enforces and interprets European law, although it should be noted that the final arbiter to interpret the Regulation would be the European Court. The Commission so far has given mixed messages as to what it intends to do about the beaching method of recycling. If the Commission interprets the new European Regulation in line with the rationale of Hong Kong Convention and does not invent reasons to ban beaching, then EU SRR will result in motivating and in providing commercial benefits to those yards that have invested in improvements. In doing so, the EU will be encouraging the accession to HKC of the countries in South Asia. If on the other hand the Commission chooses to interpret the Regulation as providing a ban on beaching (and in so doing use the surreptitiously modified English version of the text, ignoring the originally agreed text which luckily survives in some of the European Union's languages) it will block European flagged ships

from using much of the world's recycling market. In that case, it is very likely that many if not most of these ships will change flag and go for recycling to South Asia, thus electing to ignore Brussels. But even if the European ships do not re-flag but choose to comply with the ban, what a hollow victory the Commission will have scored! By preventing the progressive minded European market from using HKC compliant yards in South Asia, the EU regulation would torpedo the progress that has taken place so far. Without the demand for responsible recycling that is currently filling the HKC compliant yards in South Asia, one of the major driving forces for change would be removed. All the European Commission will have achieved is to abandon the majority of the world's ship-recycling workers and infrastructure to the realm of the non-compliant; which is not in line with the HKC's goal of raising standards at all yards across the world.

6 Enabling mechanisms for the improvement of standards in the ship recycling industry

6.1 The responsibility of shipowners

It is often said that shipowners are, or should be, responsible for the standards under which their ships are recycled. However, as was discussed in section 3, the disposal of an end of life ship involves the transfer of ownership, first from the shipowner (the ship owning company to be more precise) to the Cash Buyer and then from the Cash Buyer to the recycler. At the instant ownership is transferred, the old owner of the ship ceases to have the benefits and the responsibilities of owning the ship, regardless of whether the ship is sold for recycling or for further operation. It therefore makes no sense to expect shipowners to be legally responsible for what happens after their ship is sold, unless the seller is violating some specific law by the way he is selling his ship. It is thought that this will be the case under the new European Union Ship Recycling Regulation, which forbids European flagged ships from being recycled in yards that are not included in the European List of approved yards. However, even in this case, as shipowners do not sell their ships directly to yards there may be serious doubt whether a European flagged ship sold through a Cash Buyer and recycled outside the scope of the European Regulation could be breaking the law. This is because as the moment ownership is transferred to the Cash Buyer, the ship has to be deregistered from its (European) registry and a subsequent sale to a non-approved yard would logically be taking place outside the scope of the European Regulation. Even if European courts were to decide in the future that a seller of a European flagged ship can be held responsible for the actions of a new owner, i.e. the Cash Buyer, the shipowner will still have the escape route of changing the flag of his ship prior to selling it for recycling so that the ship does not fall under the scope of the European Regulation.

The above considerations would suggest that, at least presently, no legal responsibility can be attributed to shipowners for the way they recycle their ships. Nevertheless, NGO activists operating under the umbrella organisation of “NGO Shipbreaking Platform” have been pursuing “name and shame” campaigns against individual shipping companies who have recycled ships in countries whose standards are judged by the Platform as being low. Aside from the claim of the Platform that its activists are qualified and even capable to judge the standards of individual yards (normally done by the Platform on the basis of whether a yard is located in South Asia or not), the activists ignore whether legal responsibility applies or not, and instead imply a moral responsibility for the shipowner. But as we know the world of commerce does not work like that. In the main, shipowners do not decide where to build their ships, or where to repair them, or what cargoes to carry on the basis of subjective judgements of self appointed watch-dogs on safety and environmental conditions in building yards, or in repair yards, or in the mines where ores are extracted. Nevertheless, separate from legal and from moral responsibility, there is another kind of responsibility that is gaining popularity nowadays. This is the Corporate Social Responsibility (CSR), which in fact is a business approach that relies on voluntarily taking responsibility for a company’s effects on the environment and on social wellbeing. CSR applies to efforts that go beyond what may be required by regulation. A main benefit of incorporating CSR in a company’s policies and procedures is a marketing advantage amongst the company’s clients and the wider public. This could explain why most of the shipping companies that have embraced CSR are either publicly listed companies, or companies who, or whose clients, are directly exposed to the vagaries of public opinion.

The above discussion leads us to the conclusion that CSR is the one kind of responsibility that can motivate a shipowner to consider and select the most appropriate recycling yard for his end-of-life ship.

And this is not just theory, but is what has been happening in the market in the last four years, with a small number of well-known and influential shipping companies having managed to create a two-tier market between normal recycling and responsible (or “green”) recycling. Interestingly, at least one of these companies have interpreted their CSR policy on ship recycling as meaning that their ships will not be recycled by the beaching method. The rest of CSR companies have expended considerable effort and resources to select and supervise beaching yards that have improved their infrastructure, procedures and training of their workforce. The one company that has vowed to stay away from beaching has done so apparently by pressure applied by the NGO Platform to the local government who are shareholders of the company. If the ideal of corporate social responsibility is to strive to improve the wellbeing of people and the environment in the wake of the corporation, then the choice to totally abstain from recycling your ships in the very places that need your motivating influence appears to be just a poor cop-out.

6.2 The role of regulations

Issues of safety, prevention of pollution and even social justice cannot be left to the industry at large in the hope that good sense will prevail, nor to the small sector of the industry that may voluntarily adopt high standards. This is the reason why virtually all aspects of ship safety and pollution prevention are regulated by IMO’s international Conventions. Most safety issues are regulated by SOLAS (the International Convention for the Safety of Life at Sea, 1974), which at the end of 2017 had 163 Contracting Parties representing 99.14% of the GT of the world fleet. Safety is also the subject of COLREG (Convention on the International Regulations for Preventing Collisions at Sea, 1972), which in December 2017 had 157 Contracting Parties representing 99.13% of the GT of the world fleet. Prevention of overloading of ships is regulated by the LL Convention (the International Convention on Load Lines, 1966), which at the end of 2017 had 161 Contracting Parties representing 99.13% of the GT of the world fleet. Prevention of pollution is regulated by MARPOL (the International Convention for the Prevention of Pollution from Ships, 1973), which had 155 Contracting Parties at the end of 2017, representing 99.14% of the GT of the world fleet (IMO, 2017). These and other Conventions are enforced by the flag States of the ships when these are Parties to the Conventions and are also policed by the port State control (PSC) officials in ports where the ships load or discharge cargo. The PSC system is enshrined in all of the above Conventions, as is also what is known as the “no more favourable treatment” that allows port States that are Parties to a Convention to demand that a ship flying the flag of a non-Party satisfies the requirements of the subject Convention. For example, a ship that flies the flag of a non-Party to MARPOL will still be expected to satisfy the requirements of MARPOL when it sails in a port of a State that is MARPOL Party. In other words, the ship receives no more favourable treatment by flying the flag of a non-Party. The combination of high percentage of the world fleet being Parties to a Convention; the policing at ports by PSC; and the provision of no more favourable treatment mean that safety and pollution prevention issues are implemented globally and to 100% of ships and therefore a shipowner cannot gain a commercial advantage over his competitors by reducing costs through non compliance.

The majority of IMO’s Conventions apply exclusively to ships. Hong Kong Convention is one of a handful of IMO Conventions whose scope extends beyond the ship, in also regulating safety and environmental protection on land based facilities. Incidentally, this simple fact makes it more complicated and time consuming for a government to ratify or accede to HKC, as the concurrence of a number of ministries becomes necessary. The process will usually involve the ministry or transport (or shipping) being the IMO focal point and the responsible ministry for shipping matters; the ministry of Labour being responsible for

issues relating to the health and safety of workers in the recycling facilities; the ministry of environment being responsible for the treatment, storage and disposal of hazardous materials; plus other ministries or government departments providing input on matters such as law, customs and excise, testing for explosive conditions, etc.

This dual nature of the regulatory regime for ship recycling (i.e. the need to have jurisdiction on ships and also on land facilities) creates profound difficulties for the strict enforcement of the Convention (or for that matter for the strict enforcement of the regional European Union Ship Recycling Regulation). It is instructive to explain these difficulties here, as this will provide the reader with a much clearer understanding of ship recycling.

It has been said that Hong Kong Convention imposes high costs to ship recycling facilities, while it requires very little expenditure from the shipowner. At first, this may appear to be a valid claim, as the owner of a recycling facility would invariably have to spend considerable resources on infrastructural improvements; on training of the workforce; and on developing and implementing working procedures which would inevitably extend the time it takes to recycle each ship, thereby increasing ship recycling costs. On the other hand, the shipowner only needs to procure an Inventory of Hazardous Materials for his ship; perform some surveys; and obtain certification, all of which do not amount to a significant cost. This seemingly unequal distribution of costs appears even more unfair when considering that the great majority of ship recycling facilities are located in less developed countries, while the push for improvements of ship recycling standards has come from the most developed countries in the northern hemisphere. However, the justification for what may appear to be an unfair allocation of investment costs for compliance with the Convention is relatively simple. In the first place it is only natural that the owner of the recycling facility and the shipowner will each invest on their properties. But more importantly, if the shipowner has no option but to send his ship for recycling only to facilities that fulfil the standards of the Convention, then the market forces of supply and demand will adjust the purchase price of ships to cover the cost of the investments made by the owner of the recycling facility. Simply expressed, the shipping industry will have no option but to pay all the costs for the improvements demanded by Hong Kong Convention. Furthermore, in the longer term the shipping industry will also recoup its costs of compliance with the Convention from its clients, the world's consumers.

The above rationalisation relies on one simple but vital assumption, namely that owners of ships flying the flags of Parties to the Convention will send their ships for recycling only to Hong Kong Convention compliant yards. As discussed in section 1.2, presently five countries recycle around 98% of the tonnage recycled worldwide. It follows that if all five recycling countries are Parties to the Convention when this enters into force, then shipowners will truly have no option but to recycle their ships in compliant yards. If on the other hand, one or more of these five countries are not Parties to the Convention when this enters into force, their recycling yards at that time would be operating at a lower cost basis compared to compliant yards in Party countries and would therefore be in a position to pay higher prices for purchasing ships. This is the situation that gives rise to the profound difficulties mentioned above for enforcing a strict regulatory regime to ship recycling.

As Hong Kong Convention make provisions for port State control in its Article 8 and for “*no more favourable treatment*” in its Article 3.4, it should follow that the requirements of the Convention that apply to ships in service (i.e. provision of IHM, survey, certification, and restrictions on installation of hazardous materials) will be implemented and enforced on all ships, including those that fly the flag of non-Parties

by virtue of the provision for “*no more favourable treatment*”. However, while one or more of the main ship recycling countries remain non-Parties, the uniform and strict enforcement of the Convention’s provisions for the recycling of ships flying the flag of Party States cannot be guaranteed. Whereas a ship will be able to demonstrate to PSC inspections throughout its operating life that it fulfils the requirements of the Convention, on the other hand at the time the ship is sent for recycling it will be possible (and certainly not illegal) for the shipowner to take advantage of any better prices that may be offered by non-Convention yards, either by selling the ship to a Cash Buyer on an as-is-where-is basis, or by reregistering the ship to a non-Party flag. The cost of changing flag for an average sized ship is of the order of US\$1 per LDT, which is quite insignificant if a non-Convention yard pays, say, US\$30 to US\$50 per LDT more than a Convention yard.

The above discussion must not be taken as suggesting that yards in non-Convention countries would be having a clear-cut marketing advantage, as it is quite probable that Convention yards would profit from having unhindered access to end-of-life ships of compliant shipowners. Nevertheless, the conclusion and the plain truth is that unlike most Conventions that regulate the shipping industry, the dual nature of Hong Kong Convention will allow shipowners to avoid their obligations for as long as there are ship recycling countries that are not Parties to HKC. Conversely, when all five main ship recycling countries are Parties to the Convention then its requirements will become the universal standard for all ships and all recycling yards. This is one additional reason why IMO, during the development of the Convention, turned-down proposals to ban beaching.

The dynamics discussed in this subsection also apply to the enforcement of the European Regulation on Ship Recycling. If the European Commission approves South Asian facilities for the recycling of European flagged ships, it will motivate the progressive uptake of the Regulation’s standards, which are almost the same as those of Hong Kong Convention. If on the other hand the Commission ignores the improvements that are taking place in South Asia then the intelligent reader should be able to predict easily the outcome of Europe’s involvement with ship recycling.

6.3 Steps towards a global regulatory regime for ship recycling

The above discussion should have demonstrated that, for the global establishment and strict enforcement of minimum standards in ship recycling, there is no alternative to a universally implemented international Convention. This is the intended role and the future of Hong Kong Convention, as long as it is not derailed by the efforts of an overzealous Europe. However, as we are approaching the ten-year anniversary since the adoption of the Convention, it is fair to ask what is keeping all the counties who unanimously adopted the Convention in 2009 from acceding to it. Looking at other IMO Conventions it would appear that long delays between the adoption and the entry into force of Conventions are the norm. Furthermore, as already discussed, the nature of Hong Kong Convention, combining regulations for ships and for land facilities, increases the complexity of accession. Another contributory factor that could be delaying accessions is a perceived conflict between the second and third conditions for entry into force, requiring that countries who have ratified/acceded to the Convention control: (a) no less than 40% of the world’s fleet; and (b) a proportionate (3%) ship recycling capacity. It is presently understood that this may be holding back some large open registries from acceding because of a fear that too much tonnage under the second condition could make it very difficult to satisfy the third condition. However, on closer examination of the fleet and ship recycling data presented in subsection 4.5 on entry into force of Hong Kong Convention, it would appear that the risk of too much tonnage jeopardizing the satisfaction of the third condition is far

too remote: As the ideal minimum, the third condition would require accession by India and China. The recycling capacities of these two countries presently correspond (according to the 3% formula of the third condition) to 54.4% of the world fleet. Furthermore, if the recycling capacity of Turkey, which is due to complete its ratification of the Convention, is added to those of India and China, the capacity of the three countries corresponds to 58.5% of the world fleet, providing ample cushioning against the perceived risk of conflict between the two conditions.

The Diplomatic Conference that adopted Hong Kong Convention in May 2009 also adopted six Conference Resolutions, including one on *“Early Implementation of the Technical Standards of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009”*. The Resolution, which has no binding power, in apparent anticipation of the delay in the Convention’s entry into force, invites Member States of the Organization to consider applying the technical standards contained in the Convention on a voluntary basis to ship recycling facilities under their jurisdiction and also invites the industry to apply the technical standards contained in the Convention to ships and to ship recycling facilities. The Government of India adopted its “Shipbreaking Code, 2013”, which replicated substantial parts of the technical standards of Hong Kong Convention and applied these to India’s recycling industry. At the end of 2017 the Government of India commenced pre-legislative consultations with stakeholders on its draft “Safe and Environmentally Sound Recycling of Ships Bill, 2017”, to give effect to the provisions of Hong Kong Convention. The Government of Bangladesh also commenced the process of aligning its regulations with Hong Kong Convention with the adoption of “The Ship Breaking and Recycling Rules, 2011”. On 23 January 2018 the country’s Parliament adopted the “Bangladesh Ship Recycling Act 2018”, which aims to create the necessary capacity and infrastructure for Bangladesh to meet the requirements of HKC within the next five years. In Europe, the *“Proposal for a Regulation of the European Parliament and of the Council on ship recycling”*, which led to the development of the European Regulation on Ship Recycling, had the stated aim to: *“bring into force the requirements of Hong Kong Convention, therefore hastening its entry into force globally”*.

The delays of governments to accede/ratify Hong Kong Convention; the concerns over a ban to beaching by the European Regulation; the propaganda of the NGO Platform; and the decline of the Chinese ship recycling market have led a number of quality shipping companies, first from Japan and then from Europe, to work closely with selected recycling yards in India who agreed to upgrade their infrastructure, training and procedures so as to comply with Hong Kong Convention. Initially four recycling yards decided to invest in improvements, on the expectation that they would benefit financially from the custom of quality shipping companies who needed the availability of yards that can recycle ships in compliance to Hong Kong Convention. Following more than one year’s work, towards the end of 2015 the four yards were awarded Statements of Compliance (SOCs) with Hong Kong Convention by Japan’s ClassNK. Plates 6.1, 6.2 and 6.3 were taken at three of these yards. What followed can be described as a virtuous cycle at work. With growing demand for responsible recycling from shipowners a two-tier market developed with a price differential between normal recycling and responsible (or green) recycling. The four compliant yards enjoyed demand for their services, which was reflected in profitable contracts. Profiting from compliance with Hong Kong Convention incentivised numerous other recyclers in Alang to start upgrading and to seek Statements of Compliance for their yards. Whereas in 2015 the majority of the recycling industry in Alang was openly hostile towards Hong Kong Convention, attitudes changed and by the end of 2017 half of Alang’s 120 recycling yards have obtained Statements of Compliance with HKC from IACS classification societies.

Following the voluntary initiatives taken by the shipping and the ship recycling industries, the European Commission is now in a position to further motivate the virtuous cycle of improved standards for improved rewards, by approving the leading yards in India and, in this way, helping increase the number of ships that are seeking responsible recycling in the traditional recycling centres.

Whereas so far limited progress has taken place in Bangladesh (and even more limited in Pakistan) one of the largest yards in Bangladesh has taken notice of the growing international expectations for improved ship recycling standards and has responded with startling improvements to its infrastructure and working procedures, as can be seen in Plates 6.4, 6.5 and 6.6.

Until governments finally bring Hong Kong Convention into force, the shipping industry will need to continue to support and to channel its business to those yards that are investing in improved standards.



Plate 6.1: Yard in Alang with HKC SOC by ClassNK



Plate 6.2: Yard in Alang with HKC SOC by ClassNK



Plate 6.3: Yard in Alang with HKC SOC by ClassNK



Plate 6.4: PHP Shipbreaking and Recycling Industries Ltd in Chittagong Bangladesh with HKC SOC by RINa



Plate 6.5: PHP Shipbreaking and Recycling Industries Ltd in Chittagong Bangladesh with HKC SOC by RINa



Plate 6.6: PHP Shipbreaking and Recycling Industries Ltd in Chittagong Bangladesh
with HKC SOC by RINa

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