REPORT ON
SHIP RECYCLING FACILITIES IN SOUTH ASIA

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Contents

Executive Summary

The industry has seen some enormous changes since the late 1990s when the problems in the ship recycling industry became apparent (or came to the attention of the public). India in particular has led the way forward but the best facilities in Bangladesh are also showcasing world leading technologies for safe and environmentally sound recycling.

The report looks at how the world's largest recycling nations are responding to the long-awaited entry into force of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC). It will force a dramatic change by 26 June 2025 when India, Bangladesh and Pakistan must ensure their facilities comply with the requirements. If not, there will be a serious issue with steel supply for construction and infrastructure.

Both the ships and the ship recycling facilities must prove their compliance under the control of the flag state and the ship recycling state, respectively. The ship must have a "final survey" with a completed Inventory of Hazardous Materials (IHM). The facility must have a "Ship Recycling Facility Plan" detailing its procedures and the hazardous materials that it can handle. At the "handover" the shipowner and facility use this information to agree on the hazardous materials on board, and the ability of the facility to handle them.

These regulatory changes will provide for a sustainable basis so that the scrap steel from the ship recycling processes can ultimately feed into the circular economy.

The maximum historic recycling was 39 million GT in 2012. The maximum newbuilding market was around 100 million GT at approximately the same time. Recycling capacity has to build rapidly to compensate for the newbuilding boom, which has seen the world fleet grow from 77 million tonnes GT in 2007 to over 150 million tonnes in 2023. This will be a long-term problem. There will also be short term constraints caused by the existing backlog due to low recycling rates for the past three years (and probably 2024), and by an insufficient number of South Asian facilities achieving compliance.

There are four clear challenges:

Capacity	Annual rate, short term and long term.
Compliance	Meeting the deadline of 26 June 2025 and building from there.
Certification	Ensuring that the certificates of compliance issued are reliable and to a common basic standard.
Capability	Size of ship; catering to the future recycling needs of ever-larger ships.

The short-term challenge is to rapidly build compliant capacity. This is not only to increase the annual recycling rate, which is presently unsustainably low, but also to clear the backlog of ships that has built up during the decline in recycling since 2012. The industry also needs to build long-term capacity to keep up with the demand for recycling ships caused by the newbuilding boom that started around twenty years ago.

This historic boom in shipbuilding started in the 2000s and then accelerated to a peak in 2011. This could mean a growth of 5 million GT per year every year to a total of 65 million GT – to try to match shipbuilding statistics peaking at 100 million GT per year.

Regarding the short-term problem of achieving compliance by June 2025, India is probably most advanced in this although certification of compliance is uncertain. Bangladesh is trying to develop but lacks investment capital. The government is aware and acting, but it may be too late with too little resources. Pakistan was showing good signs in early 2024 but is now appearing to slip back.

Regarding certification, the role of class societies and independent verifiers is mentioned throughout the report without clear conclusion since the future is unclear. Some top-level class societies and independent verifiers have undoubtedly been especially important in driving technological change. However, at the same time others have apparently handed out "statements of compliance" without proper controls. On 26 June 2025, certification will go from voluntary to mandatory. A question remains as to whether governments will involve third parties as part of their responsibility for ensuring facilities are compliant. If so, what demands might the governments make on independent third parties to ensure all their certificates operate at the same fundamental level? In order to help this, a simple table of key characteristics of facilities is presented for debate.

Finally, capability is another long-term issue; where the problem relates to very large, deep draught ships such as the ultra large container ships which will soon need to be recycled. There are signs that India may be able to start with these ships, at least on a small scale.

The report also seeks to explore how the HKC and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (BC) may coexist after the entry into force. Critical to the success of any convention are its guidance documents. This report, therefore, presents a side-by-side study of the two guidance documents written by the International Maritime Organization (IMO) and the BC on ship recycling facilities. Details can be found in Annex 1 of this report. The conclusion is that both sets of guidance are valuable and that the two conventions will be able to coexist.

Note: South Asia, for all intents and purposes in this document, is defined as a region encompassing Pakistan to the Northwest, through the Indian Sub-continent, to Bangladesh in the Northeast.

1 Ship Recycling in South Asia

This report, commissioned by BIMCO, aims to summarise the state of ship recycling facilities in the South Asia region, especially in Bangladesh, India and Pakistan. Particular emphasis has been placed on the facilities' ability to provide services compliant to the HKC, taking into account Resolution MEPC.210(63) *2012 Guidelines for Safe and Environmentally Sound Ship Recycling*.

The main ship recycling facilities of South Asia are located in:

- Alang in Gujarat, NW India
- Chattogram (or Chittagong) in SE Bangladesh
- Gadani in South Pakistan

Changes over time

To fully appreciate developments at recycling facilities in South Asia it is necessary to review the recent past and look to the future. For convenience, we can divide the timeline of ship recycling in South Asia into four segments:

- 1990s Beginnings of change
- 2000 to 2009 Legislation
- 2010 to 2019 Guidance and first examples of compliance – real change
- 2020 to 2029 Compliance and business as usual – capacity growth

1990s — Beginnings of change

In the 1980s and early 1990s, ships were routinely sold to ship recyclers at 'beaching' facilities with little or no attention from shipowners.

Sub-standard conditions in facilities were not recognised, with essentially no knowledge of acceptable safety, environmental, or worker health and welfare practices. This was due to lack of regulation, awareness and understanding from legislators that control was needed.

It would be wrong to blame governments in South Asia for these failings since western governments must have intuitively known that ships being scrapped contained hazardous materials and operationally generated wastes. The lack of action from foreign governments, and the race for the cash prizes of selling ships for scrap, cannot be ignored as an essential characteristic encouraging such actions.

The 1995 Greenpeace battle with Shell over the Brent Spar oil storage facility was still fresh in the minds of many western governments and it showed Greenpeace that there was a valuable fight to be had in the ship recycling arena, with big targets such as oil majors. And, in 1998, extensive

reporting on shipbreaking by Gary Cohn and Will Englund (The Baltimore Sun) won the Pulitzer Prize for investigative journalism.

These events, coupled with increased shipowner engagement due to concerns surrounding negative publicity, led to the first International Ship Recycling Conference (1999), and the drafting and acceptance of the Industry Guidance on Ship Recycling.

The seeds for change had been sown.

2000 to 2009 — Legislation

In terms of developing and delivering robust and much needed international information – and eventually draft legislation – this decade was by far the most active. It culminated in the adoption of the HKC in early 2009, after considerable efforts by many parties, including the IMO, shipowner representative bodies, and class societies. It was also the beginning of engagement from local ship recycling bodies and governments.

However, this period got off to a mixed start.

The voluntary industry-led best practice guidelines provided good basic guidance and introduced the concept of the Green Passport Inventory which, in turn, became the foundation of the HKC's Inventory of Hazardous Materials (IHM).

However, protests by Greenpeace at IMO and increased media reporting of dangerous ship recycling practices shocked the public and had a huge effect in raising awareness.

Bangladesh, 2008 © Marprof Environmental Ltd.

The release of the film *Ironeaters* (2007) was heavily promoted by the NGO Shipbreaking Platform[1] and painted a horrific picture of life at beaching facilities including indentured slavery, death, severe injury and other hardships. What is interesting about this film is that the facility where it was filmed genuinely did not expect the outcome. They had welcomed various parties in this period, including the United Nations Environment Programme (UNEP) and other stakeholders, in good faith, thinking that it would be positive. This honest openness revealed the true position of much of the industry at this time and contributed greatly to change. It should also be noted that the same facility is now considered one of the leading HKC-compliant ship recycling facilities in Bangladesh.

India was the first South Asian ship recycling nation to notice the need for change and, during the end of this period, started the first improvement projects of note.

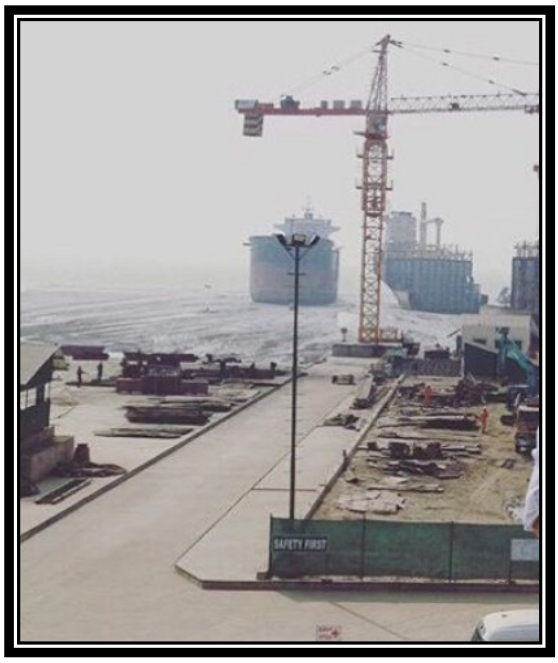
2010 to 2019 — Guidance and first compliance – real change

As noted in the case studies that follow later in this report, the adoption of the HKC did not lead to sudden wide-sweeping change across South Asia. But it certainly raised further awareness of sub-standard working practices, as did the recycling boom of 2012 and the entry into force of the European Union Ship Recycling Regulation (EU SRR) in 2013[2].

This was a difficult period. The EU member states had decided that the IMO was not going to act fast enough and thus they would write their own regulation, based on the HKC but coming into effect much earlier.

Vocal elements in European politics wanted to ban “beaching” altogether. Essentially a compromise was reached whereby the European Commission (EC) would not explicitly ban beaching, but only facilities on an approved “EU List” could be used. It was clear from the start that non-EU facilities, particularly those in South Asia, would find it very difficult to meet technical requirements of the EU SRR.

This left shipowners in a difficult situation. A few shipowners tried to tackle the regulation by liaising and working with a few well-selected facilities and working with them to provide the kind of working environment and activities that would be compliant with the EU SRR. This led to a model whereby, initially, only a few facilities agreed to upgrade to the standards required, with financial support from the shipowner, and allow shipowner inspectors permanently in the yard. It was a period of genuine improvement for several facilities in India and, on a smaller scale, Bangladesh, as noted elsewhere in this report.



Bangladesh (PHP), 2015 © Marprof Environmental Ltd.

At the same time other stakeholders were trying to help with improvements, but some of these initiatives had mixed results. There is no doubt that there were various levels of compliance and certification, and this is discussed elsewhere in this report.

2020 to 2029 — Compliance and business as usual – capacity growth

This is the twin-headed challenge for the future; robust but financially efficient compliance coupled with capacity growth. India has laid down the model and some facilities in Bangladesh are following – one or two very successfully. Inland infrastructure and downstream waste management continues to be a problem – although solutions are in hand, as discussed later.

Pakistan seems to be behind in terms of compliance, with ongoing issues due to a series of extended shutdowns caused by both casualties and financial difficulties and will have to work very hard to catch up. However, technical solutions have already been demonstrated in India and Bangladesh and so there is a clear pathway and guidance to follow.

All three countries would benefit from better landside infrastructure (downstream waste management, roads, hospitals, accommodation, etc) and this will need investment.

Ultimately investment opportunity comes from the economic asset (the ship that is purchased from the shipowner), and therefore shipowners could partner with and invest in ship recycling facilities. External costs such as infrastructure for downstream waste management need to be internalised by the facility, but this is not always easy. The government needs to be involved and through implementation of BC waste management regulations, ensure that the full process is properly accounted for.

Furthermore, many facilities are part of large family-owned groups or have well-established links to cash-buyers. As such, these stakeholders could also at least partly finance infrastructure investment.

Levels of performance

It is impossible to walk into any ship recycling facility in the world and quickly make a statement that the organisation is compliant. While it may be easy to spot serious non-compliance, true compliance depends on many factors, many of them hidden, such as training programmes, records management, worker safety and health procedures, etc.

However, over time, common characteristics persist at certain levels of achievement. These are displayed in Table 1. These are not intended to be absolute; they are subjective and intended as a starting point for debate.

At which level is a facility HKC-compliant?

Level 1 is considered below HKC requirements, due to lack of basic measures such as training programmes, emergency preparedness, written procedures, etc.

Level 2 is where compliant yards would need to be for basic HKC-compliance.

Level 3 would easily comply with the requirements of HKC.

Level 4 exceeds IMO Guidelines in certain areas.

Table 1 — Four levels of performance (an illustrative example):

Feature / Level	1	2	3	4
No impermeable surfaces	x			
No waste segregation	x			
No downstream waste management	x			
Disreputable certification, or none	x			
No procedures or written controls	x			
On the job training only	x			
No spill or emergency response plans	x			
Blocks fall into sea	x	x		
Gravity dismantling	x	x		
Second hand PPE	x	x		
Poor accommodation	x	x		
Poor sanitary provision	x	x		

No fixed hours	x	x		
No restrictions or preferences for selecting Cash Buyers	x	x		
Basic spill and response capability		x		
Generic, “borrowed” procedures		x		
Basic external training		x		
International, but poor certification		x		
Waste segregation		x	x	x
Distinct areas in facility		x	x	x
Site specific, accurate and relevant recycling plan			x	x
Daily plan of activities, prepared, communicated			x	x
Specific external training for all activities			x	x
Impermeable surfaces with water collection and treatment			x	x
Mobile cranes			x	x
Safety culture			x	x
Specific purchasers			x	x
Targeted owners			x	x
All items lifted			x	x
On site medical facility			x	x
New, specific PPE			x	x
Good accommodation			x	x
Welfare facilities			x	x
Advanced spill and response plans and equipment			x	x
Good sanitary provision			x	x
Fixed hours, not 24hrs			x	x
International high quality HKC compliance certificate			x	x
Applied for EU List and inspections underway / pending			x	x
Full set of procedures and accredited ISO certification			x	x
Double paid overtime				x
Paid holidays				x
On site medical personnel				x
No blocks in sea				x

Permanent barrier or bund between facility and sea				x
Owners on site / independent inspection				x
Highly reputable certification / EU List				x
Weighbridge	x	x	x	x

Percentage of facilities in each group

Table 2 provides an indicative estimate as to what percentage of facilities fall into each group both today and as expected at the entry into force date of the HKC in 2025. This has been derived through conversations with facility owners, and through using satellite image data to examine the yards individually. It may be contentious in detail, but it is believed that the general patterns are broadly representative. Government representatives in India and Bangladesh have been contacted for actual numbers but have not been forthcoming.

It is estimated that India could have 90% of facilities at Group 2 or above at, Bangladesh 40% and Pakistan 5%.

Table 2 — Percentage of facilities estimated at each level:

% of yards	Level 1 current	Level 1 EiF	Level 2 current	Level 2 EiF	Level 3 current	Level 3 EiF	Level 4 current	Level 4 EiF
India	40	10	50	70	8	15	2	5
Bangladesh	80	60	18	35	2	3	0	2
Pakistan	100	95	0	5	0	0	0	0

Classification Societies and Independent Verifiers

Since the adoption of the HKC, various class societies and other independent verifiers have worked on compliance and certification projects with the facilities in South Asia, most notably in India. It is well acknowledged in the industry that there are different levels of results and degrees of compliance within these voluntary certifications from the various class societies. As such, there is so far not one single interpretation of the certification requirements to support the implementation of the HKC.

Now, with the entry into force of the HKC, governments will have to decide how and if they will rely, at least in part, on this body of certification, whether they will rely on class societies and independent verifiers as part of their compliance system and, if so, who.

2 Overview of the existing facilities in the region

2.1 India

Recent developments

In 2021, the Indian government announced ambitious new plans to invest in the ship recycling sector and double capacity by 2024[3]. This built upon the existing Recycling of Ships Act 2019. This act led to around 90 facilities achieving HKC compliant certificates (provenance unknown).

The estimated existing capacity is 4.5 million LDT (divided by 167 plots = 26k LDT per plot per annum) or 7 million GT. This doubling of capacity was expected to add 150,000 jobs for the youth of India, on top of the 60,000 directly employed on current estimates. This would bring India's share of global ship recycling from 30% to 50%. To achieve this growth, India has focussed on attracting European and Japanese ships.

The driving reason behind this growth is that India wishes to increase its steel production.

Steel

India has recently overtaken the USA and Japan to become the world's second largest steel producer behind China. Ship recycling provides 1-2% of steel supply (figures vary depending on year) and approximately 28% of the imported ferrous scrap. Heavy scrap is a very valuable commodity since, in life cycle terms, it has considerable benefits. Normally primary steel production occurs in an integrated blast furnace / basic oxygen furnace (BF/BOF) using iron ore that requires coal as a reductant, and very high temperatures for melting. Using a secondary process such as an electric arc furnace (EAF) with scrap steel means coal is no longer needed and the required temperatures are lower to melt scrap steel. In terms of energy reduction, the values can be between 25GJ/t of energy for iron ore in a BF/BOF plant but 10 GJ/t in an EAF. Furthermore, the EAF can source its energy from electricity generated from renewables rather than fossil fuel[4].

Another element lies in the different ways steel can be produced. Concrete reinforcement bar (rebar) can be made by simply cutting the second-hand plate steel using cold shears into thin strips for use in concrete foundations, and other instances where it is fully encased in concrete. There are no known internationally recognised standards for this practice. A step above this process are various technologies of hot or cold rolling rebar without melting. Many of these technologies can produce a homogeneous material with predictable mechanical properties which are suitable for construction purposes, again with considerable saving over fully melting steel[5].

India topped the recent ship recycling capacity records in 2012 with 12 million GT per year, so the planned increase to a maximum of 14 million GT might not sound too great. However, working practices at yards in 2012 were vastly different to HKC-compliant facilities operating today.

Ship recycling is a very volatile market and production can vary greatly. As detailed in the case studies that follow, recycling facility owners report that they were processing 70,000 LDT of steel per year per plot prior to making EU-SRR compliant upgrades; that figure has reduced by 50% and may reduce even further.

If India wants to attract ships flying the flag of an EU member state and Japanese ships, then more facilities will presumably have greater reductions in capacity. This, allied with increased downstream waste management requirements and costs, may change the fundamental economics of Indian ship recycling.

Further, the requirement to attract such ships to fuel this growth is not as clear as it seems. Although these are very large ship-owning blocs, currently very few of their ships go directly to scrap, due to the lack of a clear legal framework and the inability of the BC to regulate ships.

Draught

A major reason that Alang came into being as a ship recycling region is the high tides but coupled with expansive mud flats. It is still essential that larger ships can lighten themselves by several metres to float over the mud flat at the highest tides and reach the shore. Most traditional ships, and especially tankers and bulkers, are deadweight constrained. The ship needs to be able to carry large amounts of cargo with a specific gravity of almost one or considerably more. Therefore, when the ship has no cargo, the draught is reduced dramatically.

The new breed of container ships is volumetrically bound and must provide space for large numbers of containers. A 20-foot container has a volume of 38.5 cubic meters but a maximum weight of around 20 tonnes meaning the average specific gravity is a lot less. When the ship has no cargo, it still has a very large draught since cargo is volume not weight.

A large tanker can achieve a draught for recycling of under 8m, but a large container ship may be 10m or even more. This may now be too much for Alang[6].

However, the industry in Alang is adaptable and plans are not only in place but have been proven to work. Draughts of up to 9.5m have been achieved by offshore lightening. The ship gets as far in as possible and is dismantled “afloat” offshore. Using cranes on barges and with the ship’s hull as containment for spills, many heavy items can be removed (main engine, cranes, deck fittings, accommodation, etc). These are lifted onto more barges and towed ashore – nothing touches the sand. Once sufficiently lightened the ship can be winched in.

Height

Future capacity concerns are not just about draught, but also about height. Since a potential new requirement is “off the beach,” ie, avoiding any blocks from falling into the sea or touching the shore, then reducing height without traditional means is difficult and cranes are needed.

Heights are considerable. The largest “ship” in the world, Prelude FLNG (technically a barge), has a height of over 100m. On a large container ship, the distance to the top of the accommodation is likely to be of the order of 50m. Less, but still considerably more than most of the floating cranes predicted to be used in the offshore lightening process.

So, what is possible? Standard industrial tower cranes. These have been taken near the top of the tallest mountain in peninsular Europe (Mont Blanc) so there is no reason they cannot be taken onboard the ship and secured to the deck or elsewhere.

Such cranes can be self-erecting with a maximum unsupported height of around 70m; more than enough for a sister crane on a barge to lift it onto the deck, and then install itself so it operates above the highest part of the ship – even the masts.

Offshore assets

In addition to draught and height, another potential threat to capacity is offshore recycling. This is potentially far more profitable than ship recycling and indeed most new facilities in Europe are clearly planned as offshore recycling facilities, using the HKC or the EU SRR as the regulatory base.

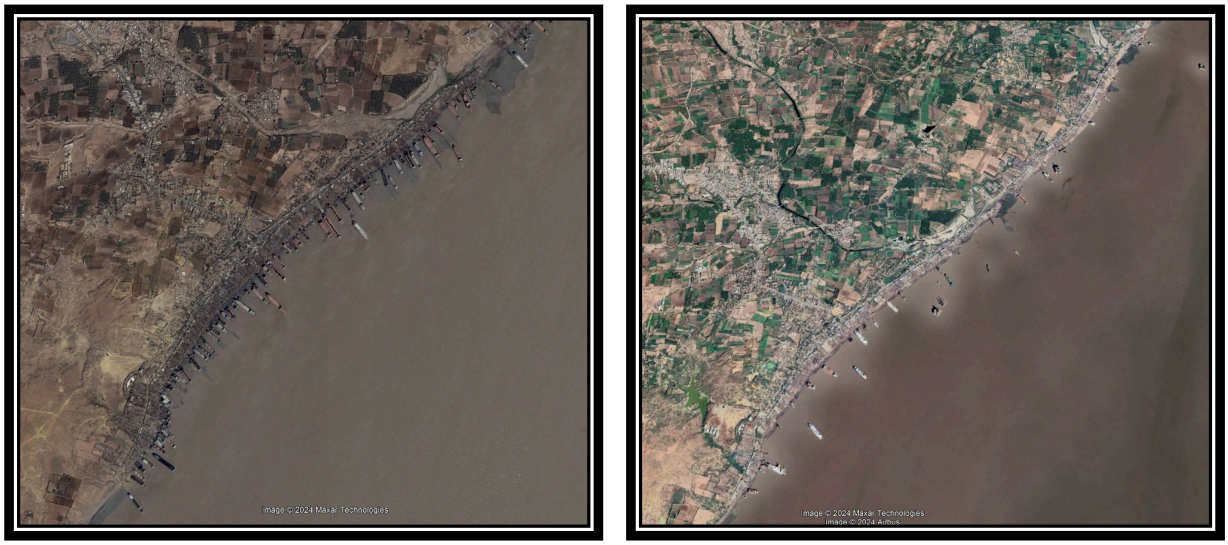
Typical aerial view of Alang from Google Earth in 2022, © 2024 Airbus, showing offshore assets: a semi sub, a drill ship, possibly a barge conversion and an FPSO with turret.

In conclusion, Alang is facing numerous challenges; increased health, safety and environmental regulation is leading to a reduction in operational efficiency and increased costs, and further operational adjustments will be needed to deal with significantly larger ships that will inevitably need to be scrapped.

But these appear balanced by a more mature and experienced Alang, with a capability for structured, centralised government investment – as well as entrepreneurial determination to succeed.

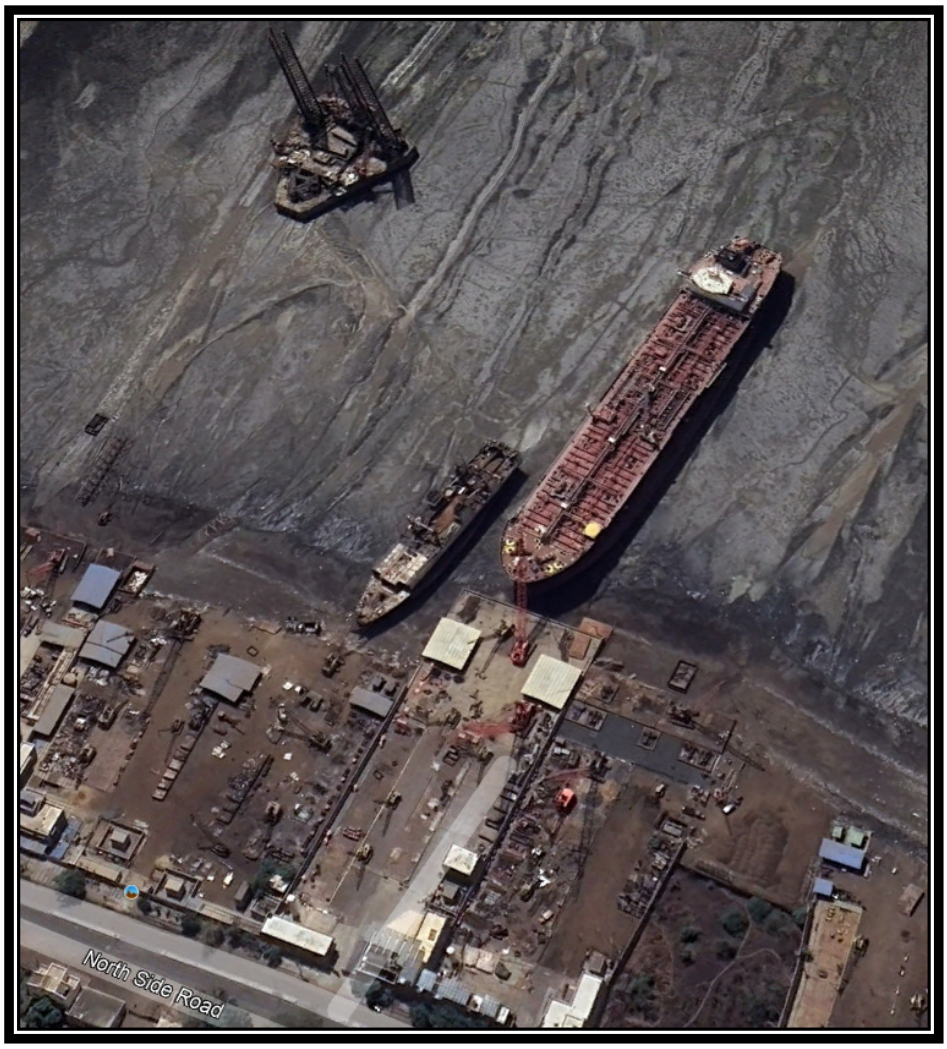
Small scale solutions for larger ships exist, and as new working procedures become embedded then production efficiency has already been seen to increase in some areas. An example of this is newly developed concrete surfaces allowing lorries and crawler cranes with electromagnets to move steel plates around the yard faster, and with significantly less workforce. Some facilities recognise these challenges now and the need for a more open, compliant market. In turn, this

should be recognised and invested in by shipowners to further improve all facilities and provide a reliable and competitive marketplace for end-of-life ships.



Left: Alang in 2012 – peak recycling. Image from Google Earth © Maxar Technologies. Up to 50 significant ships and about 75 smaller ones. Only 9 or 10 empty plots can be seen.

Right: Recent Google Earth image, March 2024, © Google Earth © 2024 Maxar Technologies © 2024 Airbus. No more than 20 significant ships. Most plots empty.



A small, modern yard in Alang. © Google Earth © 2024 Airbus. The front is around 50 metres and the ship beam about 30m. This shows that it is feasible to upgrade even small facilities since they can take significantly sized ships.

Although many improvements like concrete flooring contribute to better, safer and more environmentally sound ship recycling, it must be mentioned that one should refrain from extrapolating some of these measures without considering the possible consequences. For example, calling for wall-to-wall concrete flooring in facilities in South Asia might not necessarily be the best way forward as working temperatures in these yards can easily reach over 40°C. For example, space should be left for trees and plants which can cool temperatures and provide necessary shade. In addition, wall to wall concrete flooring will limit the infiltration capacity during heavy rains. This is just an example to showcase that all measures must be approached in a holistic manner.

2.2 Bangladesh

Recent developments

Ship recycling is centred on the area of Chattogram, the new official name for Chittagong. Locals often consider that Chittagong is the main city and that Chattogram is a district northwest of the city, and this is where ship recycling takes place.

As well as the ship recycling facilities, the area has 37 steel re-rolling mills, three oxygen plants, and 204 other small and large industries – including a dozen LP gas plants[7].

In April 2024, the authors of this report were fortunate to work with the IMO on Phase III of the Safe and Environmentally Sound Ship Recycling in Bangladesh (SENSREC) project[8] in the role of international experts, co-delivering two workshops – one for government officials and high-level stakeholders in the capital, Dhaka, and the other for the facility owners and senior management in Chittagong.

There was also an opportunity for the SENSREC team to visit three facilities.

The progress at the high-end in Bangladesh is startling. The few top-end facilities have made developments that meet or even exceed the best examples around the world; extraordinary size, capacity and, most importantly, utilisation of high tide water level drainage, and gradated concrete from the water edge draining back into the facility and the drainage sump.

It appeared that at the workshops, all the groups of stakeholders had at least one expert who was thoroughly familiar with the HKC and its local solutions.

Bangladesh has taken the decision that the responsible department for authorising recycling facilities will be the Ministry of Industries (MOI)[9].

Importantly, other governmental departments were also in attendance at the workshop. The International Labour Organization (ILO), which has a vital role in helping developing nations in achieving its international targets, was also there in some strength and given much time and attention.

There are clearly some serious challenges to overcome, not least the urgent need to eradicate the continued, frequent incidents at the facilities[10].

Over 60% of Bangladesh steel supply comes from the scrap of the recycling facilities, and steel production is clearly the responsibility of the MOI. It would be all too easy for the ship recyclers to hold the MOI hostage to steel production by failing to achieve compliance by the due date and theoretically strangling scrap supply.

Although the ILO was clearly respected, no one really admitted a practical method to properly apply fundamental human rights, such as collective bargaining within a typically migrant labour workforce as per the Universal Declaration of Human Rights, Article 23, Clause 4[11].

The compliance deadline of 26 June 2025 is creating some concerns in Bangladesh.

It remains to be seen if the MOI can provide a compliant system by that time. What is clear is that not all facilities will be able to demonstrate compliance by June 2025. There is concern about the number of non-compliant facilities, and the actions that they and the MOI will need to agree on.

At present, while developing its own competence, the MOI is likely to rely on external certification for confidence, and this is principally in the form of the Japanese class society ClassNK. It is hard to overestimate the force for positive change that ClassNK (and others such as the Japanese and Norwegian governments) have made.

But capacity is limited. There are at least four facilities in Bangladesh certified as HKC compliant, but exact numbers on the total number of active facilities are hard to find. Bureau Veritas has certified two facilities and is actively engaged with others, and delegates at the workshops reported that ClassNK are working on several more. Other class societies are also visiting facilities to see if support is required.

The key problem is not rapidly certifying five, 25, or even 100 facilities. It is ensuring that as many facilities as possible are genuinely compliant by June 2025, for the MOI to fulfil its responsibility to the steel business and Bangladesh's overall economy and growth – and, of course, to provide capacity to the shipowner, while ensuring that the HKC guidelines are adhered to.

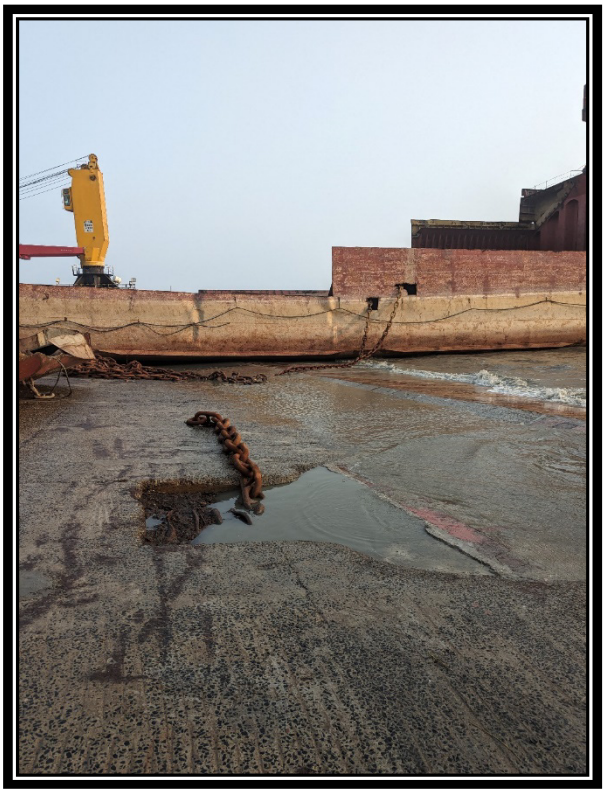
If only 25 facilities are authorised and operational, this may place an unacceptable stranglehold on the supply of steel and this problem will only become worse after the entry into force of the HKC in 2025.

Case Study

PHP Ship Breaking and Recycling Industries Limited

So, what are the main differences between the traditional "beaching" method of recycling and HKC-compliant safe and environmentally sound ship recycling?

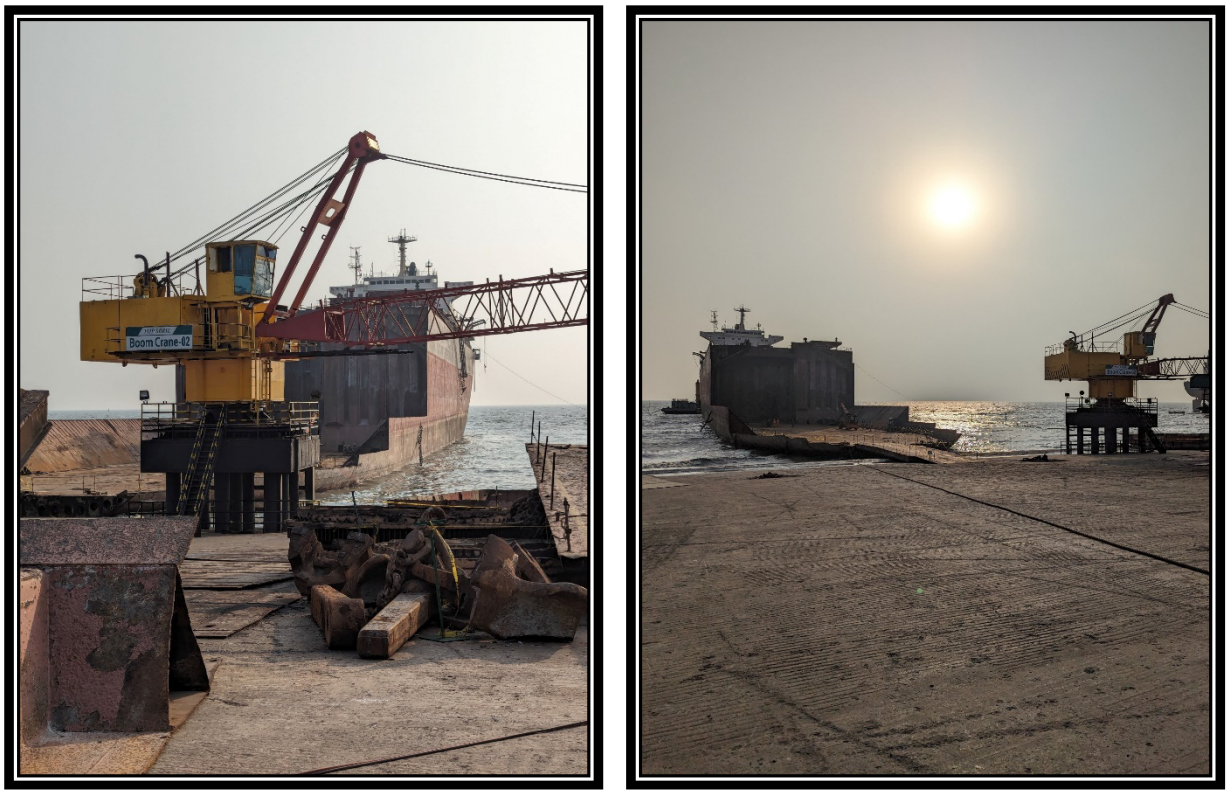
The IMO SENSREC Phase III included visits to three facilities. With the kind permission of Mohammed Zahirul Islam, Managing Director of PHP Ship Breaking and Recycling Industries Limited, the following examples found in the photographs are specifically from the PHP facility.



Left: Safe access to the ship for workers, equipment, and emergency vehicles © Marprof Environmental Ltd.

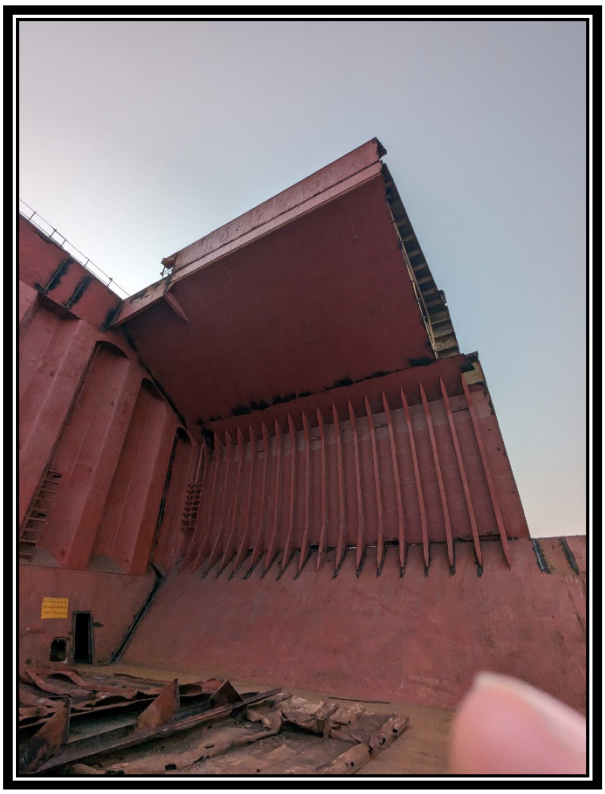
Right: Protection of the intertidal zone from spills, etc., with drainage channel (only partially visible due to high tide) approximately two metres wide running parallel to the shore © Marprof Environmental Ltd.

The line of the drainage channel can be seen on the surface of the water, near the wave. This channel makes a considerable knuckle, or lip, on the shoreline; as the ship is dragged over it, and as the strength section of the ship is removed, this knuckle causes the remaining double bottom of the ship to buckle above it. The vertical buckling lines can be clearly seen, illustrating that the substantial cutting of the double bottom is undertaken above the high-water spring mark.



Above: Cranes to lift blocks and items from ship, especially at the inter tidal zone © Marprof Environmental Ltd.

Such cranes (as depicted) should obviate the need for any blocks to be dropped into the water, and everything can be lifted – or even driven – off the ship.



Left: Temporary storage areas © Marprof Environmental Ltd.

Each of these shipping containers forms a dry protected storage space, in this instance for glass wool. Ships contain substantial quantities of glass wool insulation, and having numerous 20-foot containers is realistic, rather than just a small room with a few bags in it. It might be preferable for the flooring around to be impermeable concrete or steel, but the box itself forms an impermeable surface and is easy and realistic to transport and replace frequently as needed. This is a working facility, not a display facility.

Right: Controlled collapse into the ship for large blocks © Marprof Environmental Ltd.

The long black scars are burn lines / cutting lines. The topside tank is a large block, as is the side shell underneath. Wires will be strung to the topside block, and it will be pulled down separately, disposed of, and then the side shell will similarly be pulled down into the ship. Behind this photo was another topside block that had recently been pulled down.

Left: Proper lighting and access within the ship © Marprof Environmental Ltd.

Two lights can be seen on the photo. There were several more, with the entire engine room well lit. Access guard rails and ladder rails were well maintained, and even replaced in some areas where they had been damaged. Numerous signs and other items were visible.

Note: This was a “surprise” visit, requested in the morning and undertaken that afternoon. It is impossible to arrange a staged visit in this time frame. Access was supervised, not directed, and was granted to all areas.

Right: Testing and control of hazardous materials and enclosed spaces © Marprof Environmental Ltd.

An asbestos sample reference can be seen above the hatch gasket, with a slice of gasket removed for testing. Also visible is a confined space danger sign. Note most of the bolts have been removed, except one or two to stop access. This is particularly good practice and the sort of detail that shows operator experience.

© Marprof Environmental Ltd.

The facility had two large bulk carriers in and was managing the workload. This photo not only shows that overall maintenance is in good order; it shows a steel stacking area. A lorry takes partially cut-up plates from the far left of the photo, for further, precise cutting in the lower left-hand corner. When asked why there was this additional process – why not just finish cutting the

plates in the top left and then lorry them straight out of the facility, removing a process and improving efficiency – the answer provided was “We shouldn’t do too much in one place.”

Transport, Storage and Disposal Facilities

The sections above show good illustrations of activities within the facility but concerns remain about critical downstream waste management activities in Bangladesh.

The foundation of the BC and the concept of “prior informed consent” (PIC) is predicated on one thing: downstream waste management. The point about BC, PIC, the Basel Ban and the potential bilateral agreements, as explained in Annex 1, is acknowledgement between intelligent parties of the receiving party’s ability to manage waste.

Historically, Bangladesh has had problems providing downstream waste management for ship recycling facilities.

This has now been formally recognised and is being dealt with. Bangladesh is building its own Transport, Storage and Disposal Facility (TSDF).

For the time being, wastes are transported to and stored in a large warehouse north of Chattogram until the required waste disposal facilities are available. Introduced by the IMO SENSREC project in 2016, a 10-year design basis allowed for over 250,000 metric tonnes of incinerable waste, 112,000MT of landfillable waste and 800,000MT of liquids[12].

It is planned to be on a 20-acre site and would cost $11 million to build.

However, the TSDF is not fully ready yet and temporary storage of wastes at the recycling facilities is severely limited. Furthermore, a familiar legal limit on temporary storage of waste is around 90 days. In some circumstances up to 180 or 270 days may be allowed, with a year as an absolute maximum is only permitted in the most exceptional circumstances.

As such, urgent work on the TSDF is required.

2.3 Pakistan

Recent developments

Gadani is about 30 miles northwest of Karachi and has been an area of ship recycling since pre-independence in 1947. In 1978, recognition was given to the activity in Gadani, with plots officially recognised.

Ship recycling then boomed in the 1980s with an average of one million tonnes scrapped per year. Since then, the volume has tended to be influenced by other socio-economic factors, such as the tax regime. It is reported that the amount of tax collected can vary between 5 and 12 billion Pakistani rupees ($18m - $43m) in taxes annually[13]. When this is adapted to be favourable (such as the late 2000s) more ships come; when not, the ships go elsewhere in South Asia.

Pakistan has for several years been in a multi-level crisis.

Safety

The first is a safety crisis. Pakistan is historically a venue of choice for large dirty tankers (other areas placed requirements for cleaning and gas freeing before entry, which Pakistan has been less stringent about). There has been a series of serious multi-fatality accidents where, following a major explosion, the authorities responded by stopping all recycling activities.

The most widely reported disaster in recent years was on 1 November 2016 with a very large explosion on a tanker which reportedly killed at least 39 people. A few months later, after having received all sorts of assurances, the facilities were allowed to open again, only for another major incident to occur leading to another immediate closure[14]. Towards the end of 2023, there was no evidence this cycle was about to be broken which, combined with other factors such as difficulties with letters of credit, effectively ended large scale ship recycling in Pakistan, at least temporarily.

Left: Gadani, early 2017 © Maxar Technologies, © Landsat / Copernicus, © Google Earth

Right: Gadani, Nov 2023 © Maxar Technologies, © Landsat Copernicus, © 2024 Airbus

Economics

The economic situation continues to give uncertainties. Up until July in 2023, there were restrictions on non-essential imports and banks were unable to issue the letters of credit needed to purchase ships. These functions are critical to the functioning of ship recycling in Pakistan. Since these have been lifted, around 20 ships have been sold for recycling in Pakistan. These are the first significant scrapping actions for at least a year. High interest rates and customs duties also serve to constrict the industry.

Ratification

However, on 6th December 2023, Pakistan became the 23rd country to ratify the HKC.

The resolution of the letter of credit crisis showed that powerful forces wanted change. Pakistan needs steel to build and develop. As Pakistan's source of a large amount of steel is from ships, it is important to reinvigorate the ship recycling market. Furthermore, in late 2023, Pakistan hosted a major international IMO ship recycling workshop in Karachi. The local attendees were reported as knowledgeable and determined to provide safe and environmentally sound recycling, which also extended to downstream waste management.

Karachi should be a major benefit to Gadani. Karachi is the 12th largest city in the world with a population of over 20 million, as opposed to Chattogram with a population of around 5.4 million and Alang (with Bhavnagar) with less than 650,000. Such a large population means that there will already be other markets for downstream waste management, as well as a large pool of investors who recognise the opportunities that downstream management of ship recycling will bring to the larger area. Karachi is the industrial and financial centre of Pakistan with an estimated GDP of over US$200 billion; the money and the demand is there, so investors should be confident that there will be a market for whatever service they choose to provide.

Additionally, the overall economy in Pakistan is picking up. Debt is 78.4% of GDP and only 37% of the total is external, so currency risk is lower than many more "advanced" nations (EU 83%, US 129%, India 87%). Medium-term growth rate (FY2018-FY2022) is 4.0 and expected to rise to 5.5% in FY2026, whilst the IMF estimates global growth to be 3.0% in 2024[15].

As 2024 progresses, Pakistan is slowly re-entering the global ship recycling market. Videos from Gadani show a few small ships dispersed along the coast, and cash buyers are now alert to possibilities in Pakistan. India is reportedly struggling with imports of cheap steel, a declining rupee and a general election year. Bangladesh is also reported to be struggling for larger tonnage. Therefore, 2024 is a critical time for Pakistan to both deliver on its safety promises and expand its market in challenging times.

Sadly, some serious early indicators are not good. There continues to be reports of injuries and deaths, although it should be noted that such incidents are not restricted solely to Pakistan but are still of concern to the industry in general and across the region specifically[16].

Infrastructure, healthcare and downstream waste management are all items of major ongoing concern.

Finally, corruption, unreliability and uncertainty can be overwhelming problems in Pakistan. For the shipowner, this can be mitigated by using experienced cash buyers but external companies wishing to invest in Pakistan, to work with the facilities, to inspect ships during dismantling, and to authorise facilities, all face very serious concerns.

But, on a positive note, the National Trade Union Federation of Pakistan is working with the government of Baluchistan to draft legislation that will bring the country into compliance with the HKC[17].

In conclusion, although much needs to be done, Pakistan is lucky in that they have the good examples from India and Bangladesh to follow. It is important to remember how recent many of the positive developments are. Significant improvements can be made in a relatively short space of time, provided finance and a genuine commitment, supported by national authorities and the shipping industry, are in place.

3 Capacity and HKC-compliance

Are we heading for a capacity squeeze?

Introduction and data sources

The following is based on a mixture of figures. The primary source is the various IMO Marine Environment Protection Committee (MEPC) papers produced by the IMO secretariat such as MEPC 66/INF.3 (November 2013) and MEPC 79/INF.3 (September 2022), all titled "*Calculation of Recycling Capacity for Meeting the Entry Into Force Conditions of the HKC*". In turn, this data is sourced from IHS Fairplay / IHS Maritime and Trade. BIMCO data is also used, which is extracted from the S&P Global Sea-Web Database.

Global picture

Whilst the coastlines of South Asia have almost infinite theoretical capacity, the shipping industry could be heading for a scenario where there will be insufficient recycling capacity available. The reasons are:

- The requirements in the HKC.
- The increase in ship size and draught.
- The recent low recycling figures leading to an enormous backlog of ships to be recycled.
- The growth of the global fleet.

The rest of the world, excluding South Asia

Certainly, China and Europe do not have spare capacity to deal with a significant increase in the demand for recycling. China has legislated itself out of the international ship recycling market, and the number and size of facilities in Europe is mainly dedicated to the local or offshore markets.

The US and South America only have limited resources, although expansion in these areas would be useful.

Africa has no major recycling to speak of, although projects are being examined.

The Middle East has the ability to build new or convert existing facilities and such projects are also being examined. Further expansion in this region would also be useful.

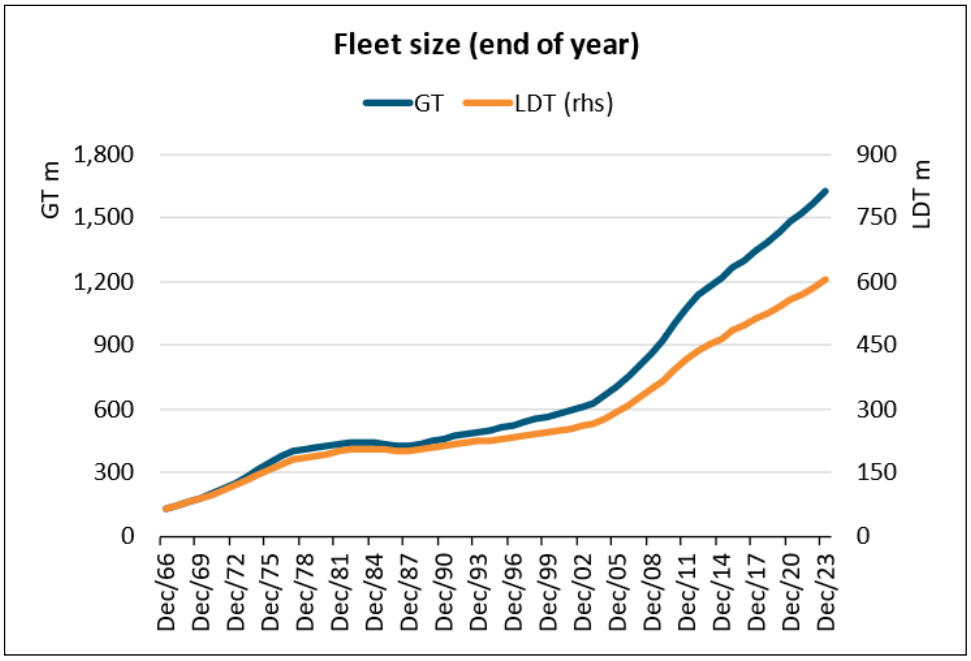
Indonesia, the Philippines and Malaysia are all known to be looking at ship recycling, although the pressure from offshore decommissioning is likely to be overwhelming.

This leaves Türkiye, historically the fourth (or fifth, if China is included) largest ship recycling nation, although considerably behind South Asia.

Realistically, Türkiye should have hit its capacity limit. Aliaga is a constricted bay, hemmed in by rocky headlands and other industries. There is no room for significant expansion nor for individual facilities to increase capacity.

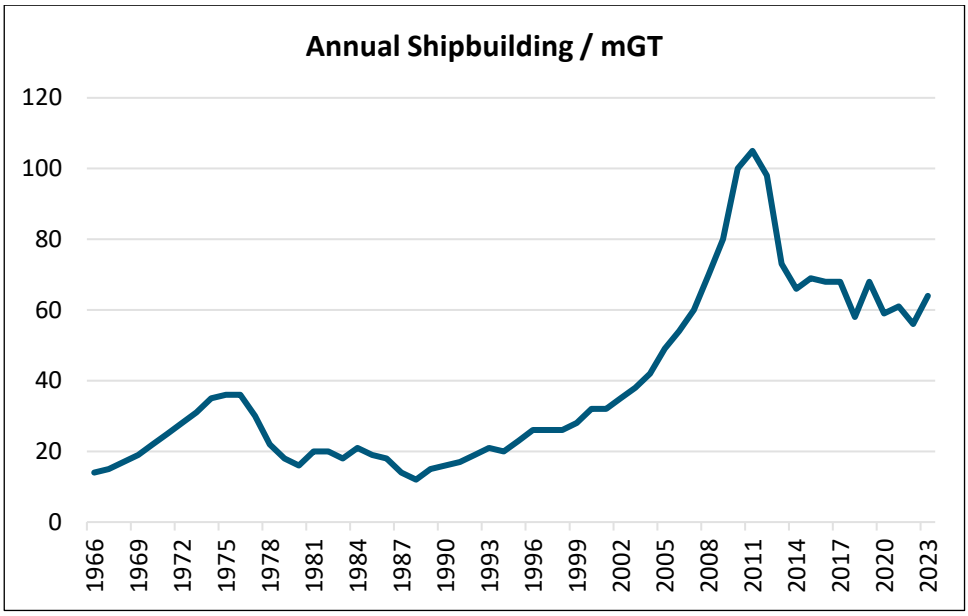
We therefore estimate that the maximum year of 2012 (when 1.54M GT tonnes were scrapped) should be proportionate to the likely capacity of Aliaga for the next 10 years.

Global fleet growth



Graph 1: Global fleet size, million GT and million LDT (BIMCO)

The growth curve of the world fleet due to market demand in shipbuilding is important. From 2000 onwards, shipbuilding underwent an enormous boom. The 25-30 years old ships which are currently being recycled were built before the boom (ie during the period 1994 to 1999). Therefore, we will experience a boom in the demand for ship recycling capacity in about 25-30 years after 2000.



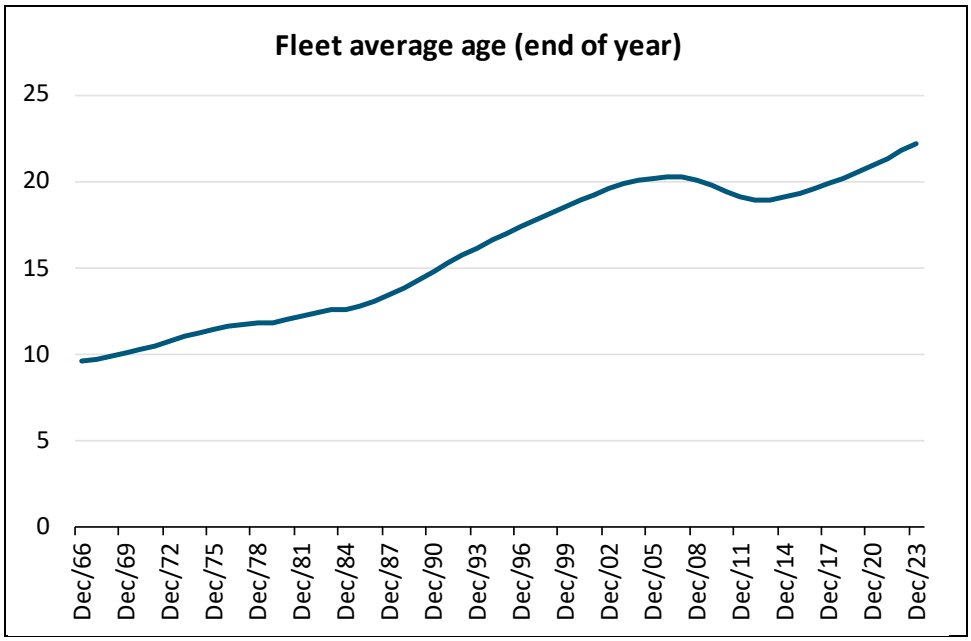
Graph 2: Amount of newbuilding in GT each year (BIMCO)

In addition, we are currently running at historically low recycling rates due to a strong market demand for ships. As a result, ships remain trading longer than foreseen. The low number of ships sent for recycling has caused many yards to cease operations and makes it difficult for facilities to invest in becoming HKC compliant.

The key parameters that indicate this recycling deficit can be listed as follows:

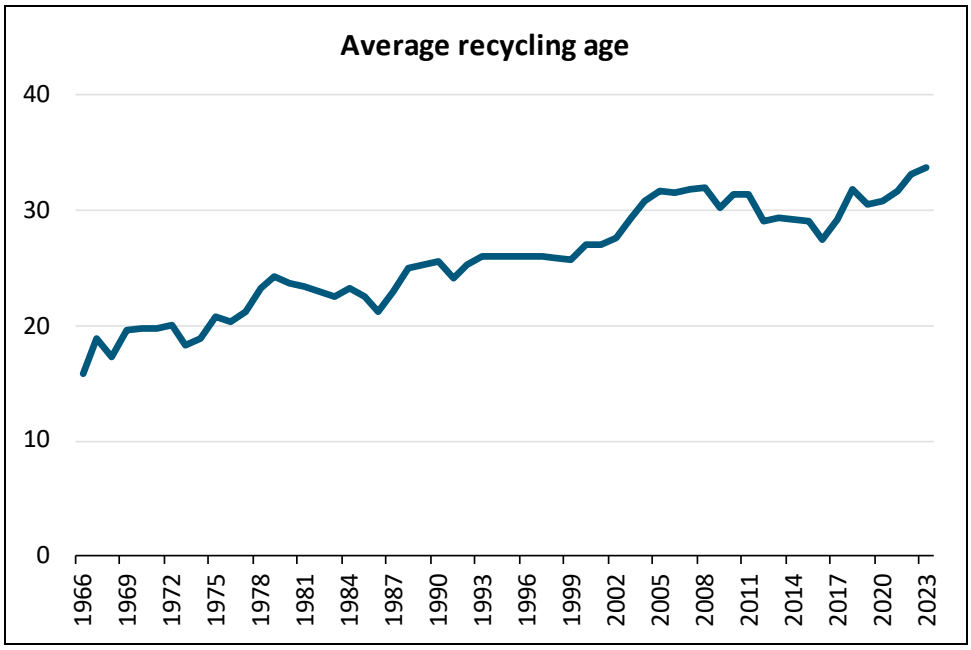
- **Fleet age and age at recycling.**

  One of the main issues is the increasing age of the fleet, which means that there is a lag between the expected and achieved recycling in any one year. This results in a backlog which begins to build up.



Graph 3: Average Age of Fleet (BIMCO)

The following graph shows the average age of a ship when it is being sent to recycling:



Graph 4: Average Recycling age (BIMCO)

The increased age of ships being recycled means that they are effectively "overdue recycling" hence the build-up of a backlog of ships to be recycled. Indeed, we can see that in the past five years, the recycling age has increased by a year every year.

To emphasise the importance and relevance of these two related indicators, we can see that both graphs show a dip around 2012 when we were at peak historical recycling.

- **Historic newbuilding vs present recycling**

  To maintain equilibrium (or steady growth), and to ensure that we forecast sufficient available recycling capacity, we need to recycle the number of ships built at a time in the past that represents the average age of ships going for recycling. Therefore, we have assessed the data to put together a more accurate picture of required ship recycling capacity. The base of our examination and statistical calculations uses a recycling age of 30 years old. This means that, in effect, every year we need to scrap the GT of ships built 30 years ago.

  Our data foundation starts with ships built in 1966.

  Shipbuilding data generally shows a steady fleet growth with some boom periods. The data does not change dramatically from year to year, so the future is relatively easy to predict. Fleet growth year-on-year has varied from -1% to 12%.

  Ship recycling, on the contrary, shows enormous volatility from year to year. In the study period, recycling varies from 35,000 GT a year (in 1966) to 39 million GT (in 2012) – a statistical growth of over 1000 times in 46 years. Other noticeable variations are 1985 (25M GT recycled), 1990 (3M GT recycled), 1999 (20M GT recycled) and 2005 (5M GT recycled). These numbers are statistically varying by thousands of percent over periods of five to ten years.

In the last two years, ship recycling (due to good market conditions in most shipping segments) has struggled to meet 9 million GT. Especially, containerships were kept longer into trade rather than sold for recycling. On a yearly basis the future is impossible to predict from historical scrapping patterns.

Although markets, rates and other factors generally trigger ship recycling, we can estimate what capacity is needed and what the backlog might be by working out, under various scenarios, how many ships must be scrapped due to the historic newbuilding.

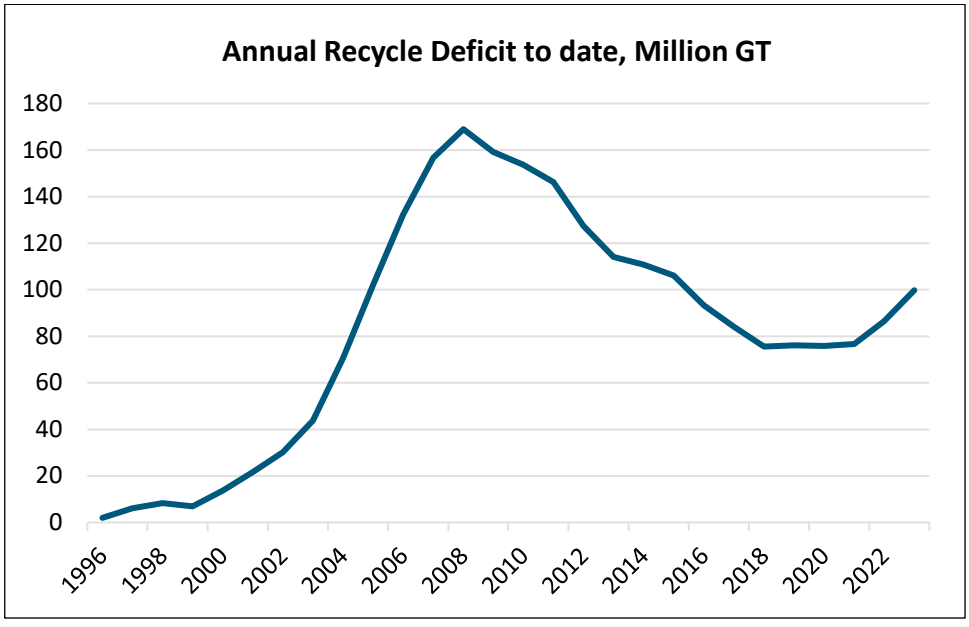
We can look at the need for recycling due to newbuild pressure under certain future models. We have chosen three:

- Business as per the past two years (9 million GT per annum)
- Best-ever year (39 million GT per annum)
- Ideal scenario.

The first two represent worst and best-case scenarios based on scrapping rates for the past 15 years.

The third model develops statistically from looking at the different patterns of shortfalls in the first two scenarios and then provides a simple, sustainable model pattern of capacity with a sensible annual increase in ship recycling such that future demands are met. This ideal scenario also tries to avoid excessive over capacity at any time, which would lead to a boom-and-bust cycle for the recycling facilities.

- **The present cumulative deficit**



Graph 5: GT of ships built 30 years ago vs GT of ships scrapped in the year shown. The line is a cumulative figure over time, so the deficit is shown on the y axis, not by the area under the graph. Therefore, ideally the line should trend to zero – no backlog.

Firstly, we can see that the immediate backlog at this moment, compared to the historical high in 2008, is not too large, despite the relatively low levels of recycling in recent years.

However, this is causing the line to trend rapidly upwards, and this is before the formerly mentioned huge increase in shipbuilding kicks in. It should be noted for reference that historically the peak recycling was 39 million GT and peak newbuilding just over 100 million GT.

The figure shows that the backlog rose quickly until around 2008, but then with the high recycling volumes in 2008 to 2018 the backlog decreased. From 2018 to 2020 the amount of recycling matched the amount of newbuilding 30 years before and thus the situation was stable.

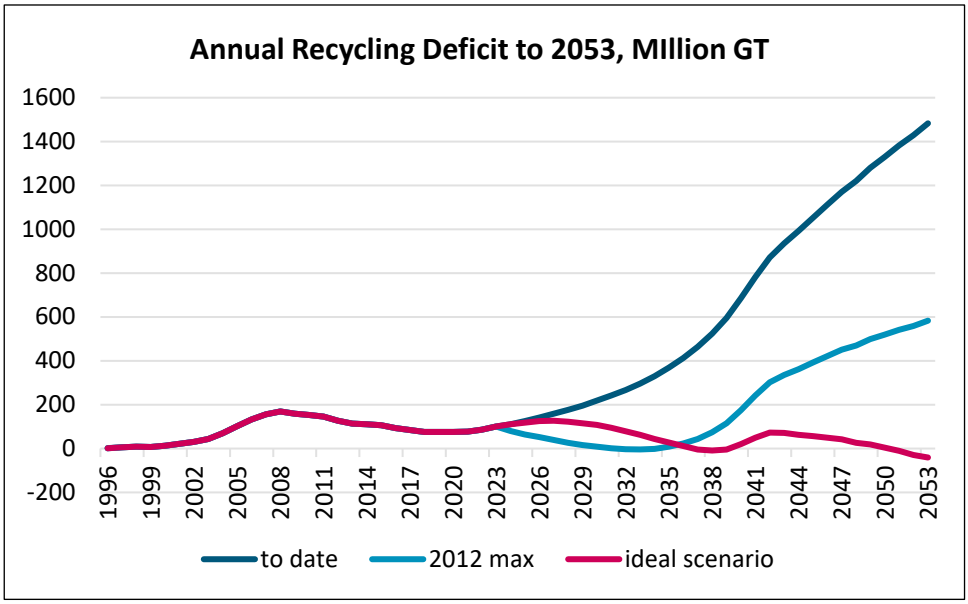
From 2020, due to both the increase in newbuilding and the reduction in recycling, the backlog started to grow again.

In the past, due to a lack of enforceable international standards, the shipping and ship recycling industry would have been able to handle the extra demand. However, the recycling volumes achieved in 2012 were without the need to show compliance with the HKC. In the past, any facility could set up business, and existing facilities could simply scale up their activities with little fear of being non-compliant. The 2012 maximum recycling figures also include China and a sizeable amount from Pakistan, which means they are even more difficult to achieve since China no longer recycles and Pakistan does very little.

The impact of legislation and compliance, means that ship recycling capacity cannot be increased as easily as experienced during the period from 2009 to 2018.

The newbuilding boom and future scenarios

Using the three scenarios above produces the following range of potential results for the possible lack of capacity to year 2053:



Graph 6: Dark blue is present recycling rate; light blue is consistently at highest rate ever achieved (39M GT); pink is the ideal scenario which trends to zero, as required.

The dark blue line shows how the shipping boom, with today's low scrapping rates leads to an unknown situation for the shipping industry. The light blue line shows that at the absolute historic high, the existing backlog can be controlled for a while, but this is not possible when the boom in newbuilding from 2020 and onwards kicks in.

The present recycling capacity needs to be increased. At the present recycling rate, the result in the next five years will be a total deficit of almost 200 million GT. This is five times the maximum ever recycled in a year.

To align the capacity to the demand and the accumulated deficit, almost all facilities in South Asia will need to be:

- Fully operational and HKC compliant.
- Able to match historical maximum ship recycling capacity figures, and at the same time.
- Able to make up for the former recycling capacity in China.

When the newbuilding boom is added to this already hard to reach scenario, there will be a need for additional recycling capacity in the near future. The 39 million historical max recycling GT will not be enough.

The capacity problem, therefore, is not just a short term one. It is so serious that it is expected to last at least ten years. Also, after the predicted boom of 2041 to 2044 (due to the 2011 to 2014 shipbuilding boom), many of those facilities will struggle to operate owing to the reduced level of demand during the period 2044 - 2050 (drop in newbuilding from 100M to 60M GT).

Furthermore, there needs to be a plan to accommodate for increases in the global fleet size which seems to grow relentlessly. To predict out to 2053, we have applied a steady 3.5% fleet increase, corresponding with ship production figures. This means that we will again achieve the 100M GT per year figure for production in 2045.

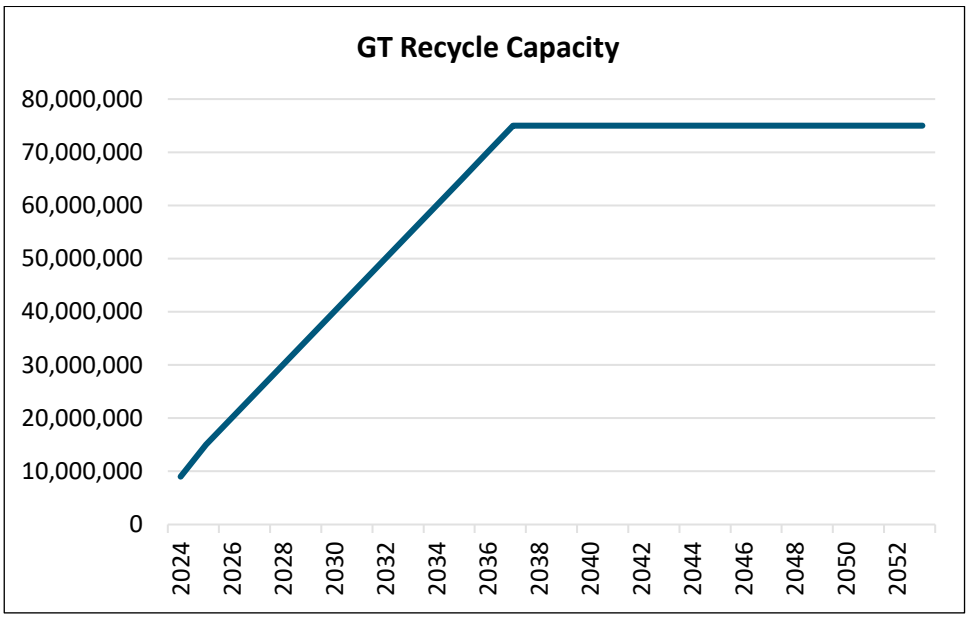
The ideal scenario

The ideal scenario mentioned in the graph above represents a complex balancing act and is based on a steady growth of the world fleet, compliance with the HKC, and incorporates the full contribution of Pakistan's recycling capacity. It assumes that recycling cannot ramp up overnight to, for example, 39 million GT due to the present market forces, the lack of international ship recycling in China, and the need for HKC compliance.

As shown on graph 6 above, the ideal scenario can start to bring down the deficit immediately; based on a significant increase in recycling capacity and, even then, when the newbuilding boom kicks in in less than ten years the deficit will start growing.

The scenario requires a recycling capacity of 9 million GT to be HKC-compliant next year. This does not seem unreasonable. It then requires the capacity of the compliant recycling industry to grow

by just over 5 million GT per year until a maximum capacity of 75 million tonnes per year is achieved in 2037. These are clearly challenging figures, but not impossible.



Graph 7: Ideal ship recycling capacity growth

4 Recommendations

4.1 Developing a robust international system of certification

The HKC and its guidelines provide a thorough regulatory framework and extensive information. However, after all the improvements of recent years, we still see varying standards and performance in the facilities, all of which have been issued with the same 'Statements of Compliance' from organisations of varying reputation and thoroughness. Normally international member representative bodies come together to ensure this does not happen.

The reporting mechanisms within the HKC, such as Article 9, 'Detection of Violations', permits party states to advise other parties about inadequacies, with a copy to the IMO. This allows investigations to take place so that solutions can be found. This is particularly important with different governments all trying to achieve compliance within their yards but seeing different levels of achievement with the same 'Statement of Compliance'. The HKC and its guidance now give a clearer picture of what might be expected.

As a reminder Table 1 provides an overview of the dominant features at various levels of compliance. These four levels show a scale of characteristics ranging from non-compliant with the HKC to standards that are beyond the requirements of the HKC.

4.2 Developing clear roles and responsibilities within and between government departments

The governments of all three South Asian countries are aware of the difficulties in properly authorising facilities. Experience with the EU SRR implementation has shown that the priorities of separate government departments are different and may even potentially conflict. The HKC requires all governments to develop clear roles and responsibilities within and between government departments and ensure that the top priorities of each department can be met within this framework.

4.3 Developing a mature and experienced workforce

Competence and depth of experience in the workforce are key to success. Training has dramatically improved, which has led to core improvements in efficiencies since managers and foremen widely follow the HKC and its guidelines. Developments in the facilities have led to an overall reduction in the workforce, but an increase in specialisations – leading to greater efficiency per capita. However, there is still room for further improvement in safety, environmental performance, and efficiency, so the importance of investing in people for an experienced workforce must not be discounted.

4.4 Developing global HKC compliant capacity

At the time of writing, there is less than one year before ship recycling facilities in party states must be compliant. This is not enough time for all the facilities presently capable of operations to achieve compliance. The size of this problem in the short term is difficult to predict, but compliant capacity must be rapidly expanded, and not just in South Asia.

4.5 Size and capacity of ship recycling facilities

There is a predicted long-term growth in the size of ships needing to be recycled, especially volumetric type ships such as container ships which cannot achieve shallow enough arrival draughts. Deeper draughts will be an increasingly large share of the market. So those facilities interested in this market will need to make the necessary plans to cope with the increase in number and size of ships, both at the level of individual facilities and government.

4.6 Developing land-based infrastructure and downstream waste management

It is critical to achieve long-term investment in roads, hospitals, accommodation, etc, not just to help achieve compliance but for business efficiency, and for the benefit of the local community. Downstream waste management facilities come under the purview of the BC and providing these facilities should benefit the communities as a whole. The ship recycling industry provides work and taxes; these need to be supported by both private and government investment. All such facilities can be used by other industries as well and are in short supply in the facility areas.

4.7 Increased coordination between IMO, BC and other parties regarding hazardous material management

IMO, BC and other UN agencies and stakeholders have specialist knowledge regarding hazardous materials in their field. This knowledge should be coordinated between the expert organisations for a more universal approach to the management of hazardous materials and to avoid potential conflict between different requirements.

ANNEX 1

Existing Legislation

Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC)The IMO adopted the HKC in 2009. The Convention is now finally set to enter into force on 26 June 2025, two years after Liberia and Bangladesh deposited their instruments of accession with the IMO Secretary-General. On 30 November 2023, Pakistan also became a party to the HKC meaning all major ship recycling states have now committed to the Convention.

The HKC takes a life-cycle approach and is aimed at ensuring that ships, when being recycled do not pose any unnecessary risks to human health, safety and to the environment.

Its regulations cover: the design, construction, operation and preparation of ships, to facilitate safe and environmentally sound recycling without compromising the safety and operational efficiency of ships; the operation of ship recycling facilities in a safe and environmentally sound manner; and the establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.

Once in force, ship recycling facilities will be expected to prepare a Ship Recycling Facility Plan in accordance with published guidelines[18]; and national authorities will be required to take measures to ensure that facilities under their jurisdiction comply with the HKC[19]. Effectively, this means that governments will be responsible for authorising their own facilities once the HKC enters into force, as is the case for all land-based industries. Relevant guidelines made available through other UN bodies, such as UNEP, the ILO and the BC, should, when properly implemented and enforced, ensure that the entire process is adequately covered, from ship building to the recycling of waste oils or final disposal of hazardous waste streams.

EU Ship Recycling Regulation (EU SRR)

The EU Ship Recycling Regulation entered into force in December 2013. It applies to ships of at least 500 GT flying the flag of an EU member state, and to ships visiting the EU flying the flag of a non-EU member state. The EU SRR is mostly aligned with the HKC but, most notably, it requires the establishment of a list of approved ship recycling facilities (the “EU List”).

EU member states flagged ships can only be recycled at a facility on the EU List. Such facilities are required to meet design, construction and operation requirements of the EU.

Facilities located inside the EU are nominated by their respective EU member states to be included on the EU List.

Facilities located in third countries (ie, non-EU member states) are expected to follow requirements and procedures published by the EC in a Technical Guidance Note[20]. These facilities will need to be approved to get on the EU List. In addition, by applying for inclusion on the EU List,

facilities located in third countries accept that they will be subject to on-site inspections by the EC, or agents acting on its behalf.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (BC)

The BC is the internationally accepted legislation that deals with transporting waste from one country to another. One of the problems with waste is that often people want to dispose of it as cheaply and as easily as possible. The BC is intended as an agreement between nations to control the disposal of waste by restricting its movement.

The BC entered into force on 5 May 1992 and is one of the three pollutant conventions which share a secretariat in Switzerland and work very closely together. The other two are the Rotterdam Convention on controlling various hazardous substances, such as asbestos, and the Stockholm Convention that controls or bans Persistent Organic Pollutants (POPs).

Allied to the BC is the "Basel Ban" amendment. This is an addition to the BC that seeks to put further controls on waste movements, including wastes going for recycling, and in particular seeks to ban the export of hazardous waste from a list of countries listed in Annex VII (OECD countries, the EU and Liechtenstein) to any country not listed in that annex. Bangladesh, India, and Pakistan are non-OECD countries[21].

The Basel Ban entered into force globally in late 2019 but was already enforced in Europe by the European Waste Shipment Regulation (Regulation No.1013/2006). 104 parties have now ratified the Ban amendment, which does not include Bangladesh, India or Pakistan, and the Ban only applies to those states that have ratified it. Therefore, India can export hazardous waste directly to Pakistan for two reasons; the first, it is a trade between non-OECD countries, and secondly because neither state has ratified the Basel Ban. However, hazardous waste cannot be shipped between the EU and Bangladesh because the EU member states have ratified it[22].

The main element of the BC is the concept of "prior informed consent." This means that all countries handling or transiting the waste must provide their tacit consent – or not – before the shipments can or cannot take place. One key element of this planning is that the item becomes a waste as soon as the decision is taken to discard. This is critically important, as shown from the definition below.

ARTICLE 2
Definitions

For the purposes of this Convention:

1. "Wastes" are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law;

This is where all the arguments related to the application of the BC start: Is a ship waste and, if so, when does it become waste?

The wording above states "intended to be disposed of." This means, under a strict reading, that as soon as the decision is made to recycle, the ship is a waste.

The Basel Ban is designed around tracking waste and intercepting it at border crossings from one country to another. This is not suitable for ships which may cross in and out of territorial waters of many states during a voyage. The exporter/charterer decides where the ship is going and why but is also allowed to order a new destination on a different course.

Since it was clear that the BC was not suitable legislation for ships, in 2004 the BC invited IMO to "… consider the establishment in its regulations of mandatory requirements … to ensure the environmentally sound management of ship dismantling"[23]. This led to the HKC.

All parties worked together to ensure that the HKC was complementary to the BC, but in a manner that was enforceable. Therefore, prior informed consent (PIC) had to be included in the HKC.

Now that the HKC will enter into force, the spotlight is on how the two conventions will co-exist. This is further complicated by the intentions of the EC to rewrite the EU SRR and the European Waste Shipment Regulation at the same time. Additionally, the EC Directive on Environmental Crime[24], which entered into force on 20 May 2024, highlights "recycling of ships … not in compliance with Article 6(2) of the EU Ship Recycling Regulation" as its first new offence.

In 2002, the BC "Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships"[25] was adopted by COP6. Subsequently, the IMO adopted extensive guidance to support the HKC of which one of the most important is MEPC.210(63) "2012 Guidelines for Safe and Environmentally Sound Ship Recycling"[26].

It is important to the debate about the equivalency of the conventions to examine the differences between the two. A paragraph-by-paragraph analysis of both sets of guidelines follows in this appendix. The conclusion is that there are significant overlaps and similarities in the guidelines. Each has a slightly different emphasis and thus complementary additional details, but the intention and reality of equivalence is demonstrated.

Of critical importance regarding the Basel Ban, is that there is the potential for a bilateral agreement between non-OECD countries and OECD countries such that waste may be shipped between them. Therefore, the Basel Ban should not prohibit ships from Japan, UK, US, etc., being scrapped in South Asia (non-OECD), providing there is a further bilateral agreement signed and the ship does not intend to call at other ports during the voyage, ie, it must be direct.

A comparison between the Basel Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships and IMO Resolution MEPC.210(63)

This section that follows provides a detailed analysis of the Basel Technical guidelines (BTG) compared to the IMO ship recycling guidelines, to help decide if the IMO guidance is complete and reflects the contents of the BC.

For ease of use, the BTG has been entered first since it is the least familiar to the shipping industry. Further, we have described all the chapters in the left-hand column of the table, so the reader can see what is where in summary and find it to read in detail. However, much of the text are not technical requirements, but instead a description of circumstances. For brevity, when considering IMO and commenting, we exclude all the discussions which do not lead directly to technical requirements unless they are controversial or disagreed with by the IMO.

In summary, the framework of the IMO guidance covers all the items in the BTG. The BTG is more a discussion document and, as such, the IMO guidance gives a better list of requirements. Although it does not include the detail that the BTG does, any competent person implementing the IMO guidelines will be aware of the extra detail in the BTG.

In 2002, the BTG was a groundbreaking document in terms of representing the main characteristics and problems with recycling facilities in one concise and well laid out document. However, more than 20 years on, these issues are well known and widely reported. New solutions to many of the issues have been provided in attempts to comply with the HKC and its guidance. The BTG is therefore an excellent document for its time but is now largely superseded.

It is relevant to say that the authors of this report used the BTG as one of their primary reference documents for many years (alongside those from the ILO and the US). It was only after the IMO guidelines were developed, assisted by UNEP and ILO, that the BTG started to become superseded. The authors particularly liked the elements of relative cost and recommended timescales for upgrading facilities.

Conclusion

A properly implemented procedure based on IMO guidelines will cover BTG items, although the BTG does list some interesting additional detail, albeit in an informational way rather than as requirements.

The BTG shows how far the high end of the industry has moved on. It is noted that the IMO guidelines are also almost 15 years old. With all the technical solutions displayed in South Asia since 2011, it might seem an ideal time to revisit the IMO guidelines to draw further on the local expertise now being used. At the same time, the BC secretariat is to ensure that their technical guidelines on waste management (eg treatment of used oils) are adequately implemented through the national legislation in those States that are a party to the BC.

Basel Convention Technical Guidelines	IMO MEPC.210(63) March 2012	Comment
Executive Summary		
Background		
The BTG assumes ship dismantling is "insufficient" and wants to improve the environmental impact.	Preamble, 1. Introduction, 1.1 Objectives of the guidelines. Guidelines provide "recommendations" for implementation of the HKC.	IMO does not consider background. It is a neutral start for technical requirements. Neither document is legally binding, but a facility that does not comply materially with the recommendations could not be recommended as compliant with the HKC.
The guidelines		
Focuses on environmentally sound dismantlement of waste. Assumes safety is poor. Does not deal in depth with occupational H&S – notes ILO is doing that. Does not examine legal questions regarding export of ships as waste.	1.2 Approach of the guidelines The guidelines focus on the Ship Recycling Facility Plan. This covers environmental and health, safety and welfare of the facility.	IMO concentrates on hazardous materials present in the ship and takes a more holistic approach. The IMO guidelines cover env, safety and health and/or HKC refers to the relevant BC and ILO conventions /GI.
Application of the guidelines		
Focuses on gaps between current practice and model facility. Gives overview of elements for ESM.	None. The BTG has a different approach. Both approaches are valid and acceptable for the intention of each document. They are complementary.	There are clear legal aspects of allowing unacceptable facilities to operate whilst filling gap to compliance.
Preparations on the ship		
Discuses IHM, precleaning, securing, removal of equipment.	3.2.3 Acceptability of ships 3.2.4 Ship Recycling Plan development (ship specific) 3.2.5 Vessel arrival management.	Alongside other IMO guidelines, these subjects are dealt with very thoroughly. The BTG is less clear and does not have the same level of detail (especially for the IHM).
Ship dismantling facility – model facility		
Discusses key functionalities; containment, workstations, hazmat removal, temporary storage, secure areas, proximity to disposal areas, conceptual layout, EMP and EMS.	3.2.1 Facility information 3.2.2 Permits licenses and certification 3.2.6 Ship recycling methodology 3.3 Worker safety and health compliance approach 3.4 Environmental compliance approach.	IMO concentrates on procedural elements rather than physical detail, but it does give relevant recommendations on what the design should achieve.
Environmental management plan		

EIA for aspects and goals giving EMP as an all-encompassing document covering all environmental issues at a macro scale. Matches ISO 14001 closely.	3.1 Facility management 3.1.1 Company information; 3.1.1.5 management systems IMO quotes ISO 14001 and OHSAS 18001 as examples and throughout the text there are references to EMS strategies. IMO does not follow ISO 14001 type structure but certainly reflects such strategies. IMO does not use EIA.	The BTG states it does not include safety. The BTG matches ISO14001 closely and so allies with ISO30001. IMO assumes some form of EMS / SMS and provides requirements for within those systems. An EIA would be useful but is outside the remit of requirements for legal compliance.
Implementation of best practices – closing the gap		
Upgrading and stepwise approach. Also has regulatory approach, enforcement infrastructure, authorisation, monitoring, and enforcement of non-compliant facilities.	IMO is there to set recommendations for compliance. Clear that upgrading facilities would be needed for compliance. The regulatory approach, enforcement etc is set by the convention and is normal to be dealt with separately. IMO does have section 3.2.2 for permits, licenses and certification.	The BTG guide is useful and interesting, but it creates an unexplained liability for non-compliant facilities.
Introduction		
2.1 Objectives		
To enable ESM of facilities.	1.1 Objectives "…provide stakeholders with recommendations for safe and environmentally sound recycling of ships…"	The two objectives are self-explanatory. IMO has a wider scope. It is slightly surprising that the BTG does not mention downstream waste management or Prior Informed Consent (PIC), if only to contextualise them.
2.2 Background		
"Established marine legislative infrastructure does not take into account final stages of a ships life." Ship recycling complies with principles of sustainability, but practices do not. Many insufficiencies. The BTG claims to contain "*measures*."	Correct at time of writing. The HKC was finished and available in 2009. It met its entry into force criteria in 2023.	It is probably this claim for measures, that led to the development of ISO 30000.
2.3 Stakeholders		
UNEP: Export outstanding, ship dismantling only. Safety: ILO. IMO: Overall coord and responsible for monitoring issues in design, operation, preparation. ILO: Standards of operation, shore-based industry. Compendium of best practice. London Convention: Disposal at sea. Shipping industry: ICS founded IWPSR in Feb 1999.	IMO uses stakeholder concept differently. The BTG uses it in terms of who is responsible for areas of the greater picture. IMO uses it as those people with an interest in areas of the Convention. Both uses are correct within the scope of what the documents are trying to achieve. IMO allows anyone to self-declare as a stakeholder, but also recognises four main stakeholders; the recycling state, the recycling facility, the shipowner, and the flag state.	IMO focuses on safety and environment, hence the title. MEPC 41 April 2001 established a CG which was intended to represent all the major stakeholders through their representation at IMO.
2.4 Scope of these guidelines		

Recommendations in context of environmental concern. Full and partial dismantling.	"Scope" is not used in the IMO guidelines since it is legally defined in the Convention.	Both documents are written as would be expected in this area.
2.5 Methodology		
Layout of the guidelines.	IMO does not describe its layout beyond the preamble and index.	Inessential.
Principles of Environmentally Sound Management of Ship-Dismantling		
3.1 Concept of the Basel Convention		
Hazardous waste reduced to a minimum and dealt with where produced. Transboundary movement only with PIC. Movement Documents. Else illegal.	The HKC seeks to legislate for end of life, control trans boundary movement and recognise concepts of waste as related to shipping. It attempts to restore the balance and show equivalence with core concepts of Basel Convention.	There are fundamental disconnects between the background philosophies of the organisations. IMO is designed to facilitate trade and therefore movement. The BC is designed to restrict waste movement. Both approaches are correct in context. This is a significant reason why the HKC was written.
3.2 Environmentally sound management		
Definition. Includes availability of adequate disposal facilities. Transboundary movement minimised. Waste hierarchy.	Disposal facilities are not detailed in the HKC or its guidance. Downstream waste management is similarly conspicuously sparse in detail.	BC definitions are now built upon by EiF of the Basel Ban.
3.3 Specific challenges for ship dismantling in relation to ESM		
Extraction, sorting, transport, disposal. Ship size, access, containment, recycling, removal, disposal, training. Environmental concerns – location and operation. Typical releases.	Rather than paint pictures of the issues, IMO provides a comprehensive list of areas with recommendations where these issues should be solved: 3.2 Facility operation, 3.3 Worker safety and health approach and 3.4 Environmental compliance approach.	Insufficient guidance on paint burning in both documents.
3.4 Existing practices and standards		
Comparison between industrialised standards and local standards. Four critical factors: Abundant low-cost willing labour, insufficient legislature, market for dated items, large inter tidal zone. General descriptions. Individual descriptions of major ship recycling countries.	IMO does not seek to explain these items.	The BTG provides useful and interesting information.
Good practice in environmental control procedures at ship-dismantling facilities		
4.1 The process of ship decommissioning for disposal		

Potential for releases. Decommissioning and sale. Dismantling process. Sorting for reuse, recycling and disposal. Steps in the process of decommissioning for disposal.	3.4.2 Management of hazardous materials. 3.2.3 Acceptability of ships, 3.2.5 Vessel arrival management. 3.2.6 Ship recycling methodology, 3.2.4 SRP development. 3.4.2.4 removal, handling and remediation, 3.4.2.5 Storage and labelling after removal, 3.4.2.6 Treatment, transportation and disposal. 3.2.6 Ship recycling methodology, 3.2.4 SRP development.	The BTG has a large section with important headline items: • IHM • Precleaning • Liquids • Securing • Removal of equipment • Removal of hazmats / pollutants • Dismantling • Storage, recycling, and disposal. All covered in detail by IMO guidance.
4.2 Identification of potential contaminants and prevention of releases		
Identifies that there is no purpose-made international legislative framework, but gives useful information but no hard requirements for: • Metals (and cutting) • Anodes • Lead • Mercury • Oil and fuel • Bilge and ballast water • Paints and coatings • Asbestos • PCBs • Other waste sources.	HKC provides a purpose made international legislative framework, however for specific international legislation for many of the items listed, there are still many detailed international agreements missing. For example, practice and requirements for cutting of metal with coatings tends to be vague or goal based with little specifics about what must be achieved – in environmental legislation, burning paint and releasing fumes to atmosphere tends to be reduced rather than controlled. In a further example, asbestos is still only legally banned in a minority of countries.	The BTG provides good background information for implementation of IMO. There is a large amount of useful coordinative work that both bodies could undertake to achieve better international understanding and implementation of environmental and safe handling of these materials.
4.3 Monitoring		
If well-defined regulations exist, monitoring may be limited to verifying compliance to these regulations. Else a strategy needs to be defined for: • Releases to ground and sediment • Releases to water • Releases to air • Noise / vibrations.	3.4.1 Environmental monitoring. Similarly, well defined, internationally agreed regulations do not exist in many areas so IMO must rely on local requirements (as, inherently does the BTG). Both give recommendations for what should be expected.	The BTG provides good background information for implementation of IMO. The development of internationally agreed norms should be encouraged.
4.4 Setting standards/limits		
Control of exposure to hazardous waste. Reference levels – ambition levels for exposure reduction. Exposure assessment. Exposure control strategy. Levels of control.	3.3.1 Worker health and safety, 3.3.3 job hazard assessment, 3.3.4 Prevention of adverse effects to human health, 3.3.4.11 Worker exposure and medical monitoring. This is a very difficult area for international legislation since most countries have different levels which they seek to protect.	Interestingly this is specifically H&S which the BC said they would not do and would leave to the ILO. Again, all three bodies (IMO, BC and ILO) could undertake further specific work on these subjects.
4.5 Incidents, accidents and contingency preparedness		

CPP – Contingency Preparedness Plan Emergency response Response to injuries Response to spills Reporting	3.3.5 Emergency preparedness and response plan (EPRP). 3.3.6 Fire and explosion prevention, detection and response. 3.4.4 Prevention of adverse effects to the environment. (spill prevention, storm water pollution prevention, incidents and spills reporting procedures.	From the author's perspective, one of the most important recent improvements in a modern plan is "near miss reporting." None of the three (IMO, BC, ILO) mention this; this is a big omission under modern approaches to OHS. Otherwise, again, useful info in the BTG.
Good practice in design, construction and operation of ship-dismantling facilities		
5.1 Principles	Principles are not recommendations.	These BTG principles are good, and were no doubt used to develop the recommendations in the IMO guidance. It may be useful to include principles in an update to IMO guidelines, but that is a stylistic issue.
A discussion on types and zones. Principle hazards.	Useful information that was used in the development of the HKC and is present in various IMO guidance, but not covered in this guidance in detail since not pertinent.	Mainly repetition of well understood items.
5.2 Recurrence and prevention of principal hazards		
Recurrence of predominant waste hazards. Physical or operational issues of major hazards with cost ranking.	Useful information that was used in the development of the HKC and is present in various IMO guidance, but not covered in this guidance in detail since not pertinent.	Good, if basic, detail from the BTG.
5.3 Design & construction		
Important considerations for zones and hazards.	Useful information that was used in the development of the HKC and is present in various IMO guidance, but not covered in this guidance in detail since not pertinent.	Good, if well-known and recognised, information from the BTG. This sort of information is not obvious in the requirements of IMO, but it would be inherent in fulfilling the recommendations.
5.4 Operation		
"This section focuses on the practical aspects of operation" It makes recommendations for each zone of the recycling facility, with relevant hazards.	3.2 Facility operation.	Different approaches from different documents. Both are complementary.
Achieving environmentally sound management practices (ESM)		
6.1 Differing techniques and methodologies (feasibility)		
Stepwise upgrading and low-cost level approach.	IMO requires full compliance.	
6.2 Building/improving environmentally sound management of ship-dismantling facilities		

Number of legal, institutional and technical conditions needed to meet ESM, including: • Regulatory and enforcement infrastructure • Authorisation of sites • Monitoring of performance • Enforcement capability • Training and awareness. Activities needed: Identification and quantification of waste; identification of best practice to avoid or minimise waste generation. Recommendation to use an EMS to obtain ESM. Overview of EMS, EIA, WMP, CPP, MP.	HKC. 3.2.2 Permits, licences, and certification.	BTG information is good and interesting, but not relevant to IMO. IMO and BC can both set up an international regime but allow for local implementation. Authorisation of sites and local infrastructure are known challenges.
6.3 Reporting (to the authorities) and verification		
Relevant authorities for reporting: Ship specific (IHM, hot work, enclosed spaces, dismantling plan). Facility (approved, HSE trained and aware, emergency response). Waste Handling (approved procedures, enforcement structure). Records (accidents, spills, monitoring results, waste management).	3.2.7 Reporting on completion. 3.2.3 Acceptability of ships. 2.2 Permits licences and certification. 3.4 Environmental compliance approach. 3.4.4.4 Incidents and spills reporting procedures.	The IMO is a little vague on exact requirements since, of course, it will change from country to country. Properly implemented by a local expert the IMO requirements will suffice, but there is room for more information and more specific.
Gap analysis and recommendations		
7.1 The gap		
This section provides signposts to where the goals have been identified elsewhere in the document.	IMO requires compliance.	
7.2 Planning compliance		
Requirements for planning, particularly schedule: "…non-compliant facilities should be phased out in a time perspective of 10 years". Lays out immediate, 5-year and 10-year compliance requirements.	Non-compliant facilities will not be allowed.	The BTG is not clear how "non-compliant" activities are allowable during these 10 years.
7.3 ESM-compliance		
More recommendations for immediate, medium, and long-term compliance planning and implementation.	IMO requires compliance.	

ANNEX 2

India Interview One

R.L. Kalthia Ship Breaking Private Limited

Kalthia is a leading and possibly the oldest ship recycling firm in Alang, having reportedly started recycling the first ship in Alang in 1983. The yard is utilised by major European and Japanese shipowners.

On 29 January 2024, we spoke with Mr Chintan Kalthia about his yard and his history in ship recycling.

Chintan grew up in the ship recycling industry, witnessing firsthand how practices have evolved over the years. In the early 2000s, significant changes began to take place. Prior to this, operations were less structured, with the yard running from 06:00 hrs until midnight, and with lesser safety protocols in place. Ships were dismantled quickly, often starting within a day of arrival without detailed procedures of thorough cleaning or complete oil removal. Today, rigorous safety and environmental standards require a minimum of 30 to 35 days of preparation before hot work can commence. While this has reduced the yard's annual steel output from 70,000 tonnes to 35,000 tonnes, these changes have enhanced safety, environmental stewardship, and compliance with global standards, reflecting the increased commitment to responsible practices by ship recycling facilities in Alang.

The first changes came about through ISO standards, not just ISO 9001 (Quality Management Systems) and ISO 14001 (Environmental Management Systems) but, around this time (2005), the sector-specific ISO 30000 for ship recycling facilities was developed and released.

Many of the improvements have come about through the involvement of shipowners and classification societies. Very noticeable in this has been the role of Japan – its government, shipowners and the classification society ClassNK. The Norwegian government has played a prominent role in Bangladesh in SENSREC projects. Shipowners from Norway, Japan amongst others have also played a prominent role in encouraging responsible Ship Recycling Facilities like Kalthia.

In practical terms simple changes such as training and the introduction of proper PPE has saved many accidents.

Simple awareness was key to many things. Chintan went to a Tradewinds Ship Recycling conference in Singapore in 2012 and was greatly encouraged and motivated by the standards and techniques being talked about. He also noted a need to have more recyclers participate in such forums from the sub-continent. It was at this conference that Chintan first met some of the people who would help his yard as they were actively looking to be involved in Alang at the same time. For six months things were a bit slow but then the pace started to accelerate as people worked towards HKC compliance.

People shared ideas and new procedures. The yard would try them for a month and then report the good and bad aspects. Then the correct changes would be made. This went on for at least 18 months. There was some considerable hesitation and thus reluctance in the greater Alang community to much of this work, with people at times discouraging Kalthia to bring in improvement as it was at a substantial cost, but Chintan was enjoying the challenge and found that every improvement was a personal achievement. Again, the shipowners were particularly useful in helping provide this perception of value. Now, most recycling facilities are trying to further improve their standards.

The HKC and its guidelines have been uniquely helpful. The Ship Recycling Facility Plan (SRFP) has been particularly good – it is seen as "the bible" and helps in the understanding of every corner of the yard and its operations. The SRFP lays down the routine practices which are similar for 85-90% of all ships and leads to a uniform approach across the yard. The ship-specific Ship Recycling Plan (SRP) can lay out any different procedures. This all helps ship recycling facilities in Alang.

There were many problems on the way, but now Alang is seeing the benefit. Most workers in Alang are migrants and finding properly trained labour was once a significant hurdle. Today, thanks to extensive training and increased awareness, a skilled labour pool is readily available. Aligned training modules ensure that both employers and employees clearly understand the tasks at hand and the best methods for execution. This has led to a reduction in the workforce. In the 1990s, up to 220 workers might be employed in the facility; now the numbers are no more than 150 at any time. This is also due to less ships, particularly at the time of writing.

Implementing these changes and improvements has been a gradual process. The initial phases were particularly challenging, often causing significant disruptions for three to four years. However, the effort paid off when Kalthia received its full HKC compliance certificate from ClassNK in 2015. The market is noticing these improvements. Owners prefer facilities with ClassNK certificates over other third parties.

The years 2015 to 2018 were particularly good since Kalthia was ahead of the quality curve. However, other facilities wanted part of this market, and they went for certifications from other organizations which at times were not recognised at the same level by some of the shipowners. These facilities then competed for ships that required HKC certified facilities even though the practices and facilities differed in terms of experience and standards.

Chintan advocates for greater involvement from informed shipowners, urging them to take an active role in selecting recycling facilities and providing a list of their approved ship recycling facilities to cash buyers. Too often, sellers prioritise the highest price over compliance. A regular customer at Kalthia insists on full control over the recycling process, while another maintains up to seven people on-site in Alang. These are the types of owners Chintan values and actively seeks out.

There are still challenges. Local medical facilities and downstream waste management need improvements which are in the process of being implemented. Some ships still do not have a detailed Inventory of Hazardous Materials (IHM) provided by shipowners, and very few arrive with

parts II and III properly completed. (Note: at the time of writing this report, the HKC is not in force yet).

Chintan believes that organizations, such as BIMCO, have already played a significant role in keeping shipowners informed and must continue to do so. Shipowners are encouraged to come to Alang and ask any questions they would like so as to understand the differences and how the HKC will change things.

Ship recycling inherently involves risks – whether safety-related, environmental, or commercial. The new generation of recycling facilities in Alang is diligently working to better manage these risks. Kalthia has received substantial support from a small group of shipowners but would appreciate more ship owners to positively participate. More shipowners must engage in managing these risks to ensure they secure their berths, especially if a capacity crunch occurs in the future.

All photos from website: ***https://www.kalthiashipbreaking.com/infrastructure-facility/***

India Interview Two

Shree Ram Group Ship Recycling

Shree Ram Group is one of the preeminent ship recycling conglomerates in Alang, India.

Founded in 1992 by Shri Mukesh Balabhai Patel, the company now has four plots. Shree Ram pioneered modern ship recycling from the mid-2000s, and this paid off in 2016 with a significant ongoing European shipowner project – the first major investment by European shipowners to collaborate in recycling large numbers of ships with Alang facilities.

We talked with Chetan Patel (Director) and his nephew Jemish Donda (Management Representative) in January 2024 about how the facility had changed and how they saw the future.

Shree Ram first took formal, certifiable approaches to improve ship recycling in 2004 by applying for ISO quality management standards. By 2008 they had the normal suite of ISO 9001, ISO 14001 and OHSAS 18001 (health and safety management, now replaced by ISO 45001).

Shree Ram was first introduced to the HKC in 2010 by the Japanese government and, after spending 7 days in Yokohama, realised they wanted to be part of the ClassNK HKC compliance scheme; with additional support from GSR Services GmbH they were the first facility in Alang to receive a ClassNK HKC statement of compliance in 2015.

This clearly gave one major European shipowner the confidence to take their ambitious ship replacement programme to Alang and Shree Ram. This owner was aware of the risks and the potential for reputational damage to their brand and embarked on an independent audit and monitoring scheme, from Lloyd's Register and led by one of the authors of this report at the time, which went beyond HKC compliance.

The eventual aim was to improve the facility to EU SRR standards for application to the EU List, and thus priorities included extensive impermeable floors, a 300T crane, and a policy of "no blocks in the sea". Major improvements were made to basic welfare, including being the first facility in Alang to pay overtime, double overtime, and paid holidays. Shree Ram was the second Indian facility to apply to the EU and the first to be found in compliance with the EC Technical Guidance.

Unfortunately, for Alang as a whole, Shree Ram takes note that the EU still has three outstanding items: Downstream waste management, local medical facilities, and BC compliance for export from OECD countries (Europe) to non-OECD countries (India).

So, although the facility itself was recommended as suitable for the EU List by the EC's auditors in May 2020, the outstanding items were outside Shree Ram's control. The application has been delayed whilst they are solved, although there are now signs that this may be the case and the facility is hoping for an announcement from the EC "soon."

With all the improvements at Shree Ram, and with the long-term work with selected shipowners, the facility is in a situation where it can place demands on the cash buyers or brokers. Shree Ram do not operate in a traditional open market but instead use in house experts or formal agreements for a certain sort of customer from the broker; they must be high end who want safe

and environmentally sound recycling. The market in Alang – the supply of ships, the demand for steel, and the supply of facilities with different capabilities – is presently kept in balance. There are a similar number of high-end ships as there are high-end facilities and Shree Ram does not need to enter the mainstream cash buyer market. This was illustrated by the decision of the Indian government to scrap the ex-UK and Indian navy aircraft carrier "INS VIRAAT" at Shree Ram.

Shree Ram believe that Alang is presently working on various degrees of compliance. Most facilities continue to work at "Level 1". Many of the better facilities operate at what Shree Ram describe as "Level 7 or 8" but very few operate at the level of Shree Ram which they describe as "Level 10".

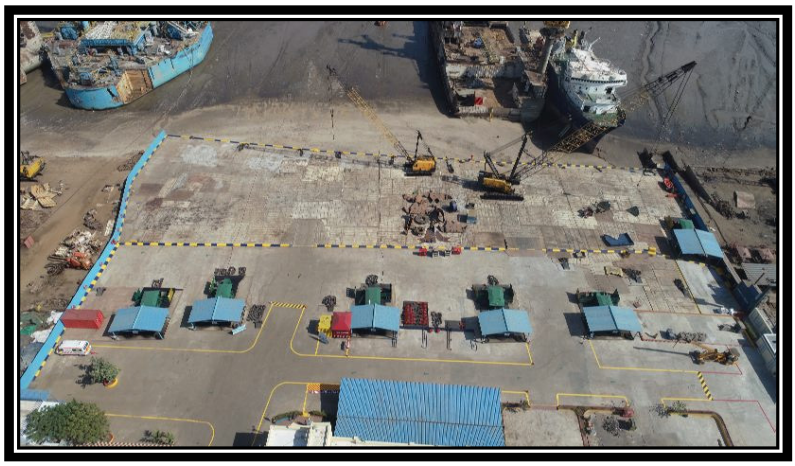
Most ship recycling experts will recognise this sort of informal ranking and will know which independent certifiers issue certificates against which level. A simplified example of the degrees of compliance, based on four levels, can be found in section 1 of this report.

It is not known what part HKC statements of compliance will play in India's implementation of the Convention, but many believe that "Level 1" facilities will attain authorisation from the National Authorities. This will need to happen if India is to meet its production targets, as noticed earlier.

Shree Ram also believe they will be able to dismantle the larger ships when they become available. They have experience in offshore dismantling which involved a lightship tonnage of 26,000 tonnes, 90 metres wide and a draught – the big issue – of 9.5m. They have an in-house team of Naval Architects and are confident they can take 30,000 tonne lightship container ships.

With all the upgrades to the facility over the years and all the visits and contributions from external experts, we asked "what was the best feature of the facility?" The answer was not what we expected, but it was, with hindsight, the best answer: "Experience."

Alongside everything else, Shree Ram has invested in its people. For the most part they have had the same supervisors and teams since 2008. Top management are on site every morning to start work. Much of the workforce is immigrant labour, as with all Alang, but they are long-term migrants. There is a dormitory on site for up to 500 people and welfare facilities are provided; Shree Ram clearly seek to train and retain their workforce.



All photos off company website: https://www.shreeramgroup.in/

About

Marprof Environmental Ltd.

Marprof Environmental Ltd. was formed in 2018. With combined marine consultancy experience amounting to over half a century, both Partners specialise in ship recycling legislation and providing practical solutions – for shipbuilders, shipowners, recycling facilities, flag states and the legislators themselves.

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BIMCO

Facilitating trade is at the very heart of BIMCO's business, and since 1905, BIMCO has helped members keep world trade moving. BIMCO makes it our business to help our members with theirs. BIMCO members cover 62% of the world's tonnage and consist of local, global, small, and large companies. BIMCO is an organisation and global shipping community of over 2,000 members in 130 countries. From offices in Houston, London, Copenhagen, Athens, Brussels, Singapore and Shanghai BIMCO aim to help build a resilient industry in a sustainable future whilst protecting world trade. BIMCO does this by finding practical solutions for its members to help them manage risk in a changing world. BIMCO - the practical voice of shipping.

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[1] https://shipbreakingplatform.org/

[2] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:330:0001:0020:EN:PDF

[3] https://maritime-executive.com/article/india-aims-to-double-its-shipbreaking-capacity-by-2024

[4] https://www3.weforum.org/docs/WEF_Net_Zero_Tracker_2023_STEEL.pdf

[5] https://www.sciencedirect.com/science/article/pii/S0264127521005852

[6] https://www.tide-forecast.com/locations/Bhavnagar-India/tides/latest

[7] https://www.thedailystar.net/weekend-read/news/sitakundas-curse-industrial-accidents-3273976

[8] https://www.imo.org/en/MediaCentre/PressBriefings/pages/23-SENSREC-Phase-III.aspx

[9] https://en.wikipedia.org/wiki/Ministry_of_Industries_(Bangladesh)

[10] https://shipbreakingplatform.org/wp-content/uploads/2024/04/SAQU-37.pdf

[11] https://www.un.org/en/about-us/universal-declaration-of-human-rights#:~:text=Article%2023,equal%20pay%20for%20equal%20work.

[12] https://wwwcdn.imo.org/localresources/en/OurWork/PartnershipsProjects/Documents/Ship%20recycling/WP2b%20Design%20Options%20for%20the%20Environmentally%20Sound%20Management%20of%20Hazardous%20Waste%20in%20Chittagong.pdf

[13] https://www.sciencedirect.com/science/article/pii/S294973612300057X#:~:text=2.1.-,India,creation%20of%20150%20thousand%20jobs

[14] https://www.scmp.com/week-asia/health-environment/article/2170256/two-years-pakistans-gadani-ship-breaking-disaster-why

[15] https://www.finance.gov.pk/publications/Fiscal_Risk_Statement_FY2023_24.pdf

[16] https://shipbreakingplatform.org/platform-publishes-south-asia-quarterly-update-37/

[17] https://www.industriall-union.org/shipbreaking-unions-plan-for-entry-into-force-of-hong-kong-convention

[18] https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/MEPCDocuments/MEPC.210(63).pdf

[19] https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/211(63).pdf

[20] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016XC0412%2801%29

[21] https://www.oecd.org/en/about/members-partners.html

[22] https://www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx

[23] MEPC 54/3/8, Jan 2006

[24] https://environment.ec.europa.eu/law-and-governance/compliance-assurance/environmental-crime-directive_en#:~:text=The%20new%20Environmental%20Crime%20Directive,the%202008%20Environmental%20Crime%20Directive.

[25] https://www.basel.int/Implementation/ShipDismantling/TechnicalGuidelines/tabid/2767/Default.aspx

[26] https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/MEPCDocuments/MEPC.210(63).pdf