

MARITIME

SHIP RECYCLING: NAVIGATING A COMPLEX REGULATORY LANDSCAPE

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ABBREVIATIONS

CSR	Corporate social responsibility	MEPC	Marine Environment Protection Committee
DASR	Document of Authorization Ship Recycling	mm	Millimetre
EEA	European Economic Area	MOM	Minutes of Meeting
EPRP	Emergency Preparedness and Response Plan	NGO	Non-governmental organization
ESG	Environmental, social and governance	OECD	Organization for Economic Cooperation and Development
ESM	Environmentally sound management	OSH	Occupational safety and health
EU	European Union	PFOS	Perfluorooctanesulfonic acid
EUR	Euro	PPE	Personal protective equipment
GA	General Arrangement	POP	Persistent organic pollutant
GT	Gross tonnes	QMS	Quality management system
HBCDD	Hexabromocyclododecane	RfRC	Ready for Recycling Certificate
HKC	The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships	RO	Recognized Organization
IHM	Inventory of Hazardous Materials	SoC	Statement of Compliance
IMO	International Maritime Organization	SRF	Ship Recycling Facility
ILO	International Labour Organization	SRFP	Ship Recycling Facility Plan
ISO	International Organization for Standardization	SRR	Ship Recycling Regulation
IRRC	International Ready for Recycling Certificate	SRP	Ship Recycling Plan
		WSR	Waste Shipment Regulation

1 INTRODUCTION

Ships are designed, engineered, built, operated, maintained and recycled. The end-of-life value of large vessels correlates highly with the price of steel. For many practical reasons, the entire world fleet has, until recently, been fated for recycling in the following major recycling states: Pakistan, India, Bangladesh and, to a lesser extent, China and Turkey.

In light of recent regulatory developments and stricter enforcement of national maritime laws, shipowners are compelled to make informed decisions regarding recycling. Consequently, they must now consider several factors other than just sale price. Ignoring these factors can lead to significant reputational risks.

International regulations governing recycling are defined in the IMO Hong Kong Convention (HKC). This convention is yet to be ratified by all state signatories and has therefore not yet entered into force. The most relevant regulations in force today are the UN Basel Convention (Basel) regarding transboundary transport of hazardous waste, including its Ban Amendment, as well as the EU Ship Recycling Regulation (EU SRR) and the EU Waste Shipment Regulation (EU WSR). The EU WSR can be seen as the Basel Convention transposed into EU / European Economic Area (EEA) law.

How can stakeholders establish a robust strategy for direct or indirect involvement in recycling? One that not only considers regulatory compliance and operational perspective, but also investment decisions and corporate social responsibility (CSR) or environmental, social and governance (ESG) perspective.

Historically, shipowners have not been required to ensure sustainable shipping, recycling and management of their own waste. From this perspective, the “polluter pays” principle has not yet taken root in the maritime business. Where the business of ship recycling is concerned, regulatory changes herald a new era in advancing this principle.

Inadequate strategies and practices for ship recycling can lead to criminal liabilities, reputational damage, loss of investors and reduced access to finance. In the face of such severe risk, how can shipowners be supported to navigate their way to compliance?

To answer this, DNV GL has created a guidance paper to support shipowners’ recycling decisions, in particular for yards that are not featured on the [European List](#). Facilities on the European List have undergone a more thorough verification process than facilities not listed. Currently, there is no comparable service in the market which to the same extent enables shipowners to have the confidence that these unlisted yards are meeting basic regulatory compliance.

Furthermore, DNV GL cannot see that any of the present assurance services in the market can replace a proper, individual case-by-case assessment of yards that are not on the European List. The HKC has not entered into force, and the Statement of Compliance is not anchored in national law.

Shipowners should be aware of two areas in particular: The first is related to scope. Although the HKC requires that the downstream waste management facilities are authorized by national authorities, there is no assessment of the operation of the downstream management facilities. This might be satisfactory from a strict regulatory perspective. However, if a wider CSR and ESG perspective is taken, it might merit more discussion.

The second is related to the verification methodology of the ship recycling facilities. To our knowledge, there are no defined, established or internationally accepted certification schemes in place. There are no clearly defined, transparent and available methodologies for the verification itself, whether it’s a document review or a site inspection. Furthermore, there are no consistent, transparent requirements for maintenance of the resulting Statement of Compliance during its validity period.

This paper aims to give a better basis for decisions in connection with the recycling of vessels. It is designed to compensate for the absence of reliable evidence of compliance outside EU schemes, until transparent, documentable, robust and reliable certification schemes are also established outside the EU’s jurisdiction.

2 SELECTING A RECYCLING STRATEGY

Stricter international, regional and national requirements for recycling vessels are gradually being adopted and implemented. Breaches may be sanctioned as criminal offences in the corresponding local law. The present international regulatory regime in place mainly consists of the Basel Convention, the Ban Amendment, the EU Ship Recycling Regulation (SRR) and the European Regulation on Shipments of Waste, which set out rules governing the movement of waste. Vessels destined for recycling represent waste in the eyes of these international instruments. The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC) is the main maritime regulatory instrument on ship recycling. Even though the industry frequently refers to compliance with this convention, it has not entered into force, and there are currently no approved recycling facilities under this scheme.

To make sense of this complex regulatory setting, where risks, including legal and reputational, are high when not managed properly, shipowners have to make informed decisions about recycling. These must be based on a carefully considered strategy to secure a ship recycling process in line with recognized regulations and standards. Such a strategy must set out in clear terms the ambition and cost needed to achieve these goals. A recycling process actually in line with international standards such as the HKC and EU regulations is undoubtedly more expensive than traditional practices. This must be planned for well in advance, including depreciation models that reflect the asset value obtained for responsible recycling. It is also suggested that recycling clauses in long-term chartering agreements should be evaluated and, if necessary, renegotiated to ensure that the recycling is in line with recent regulatory developments. Another important aspect of the recycling strategy is whether the recycling process is followed up internally by the shipowner or outsourced to a third party.

2.1 MAIN OPTIONS FOR SELECTING A RECYCLING DESTINATION

2.1.1 Vessels subject to EU recycling regulations

EU-flagged vessels can only be recycled at a facility featured on the [European List of ship recycling facilities](#). To be included in the European List, any ship recycling facility must comply with several safety and environmental requirements irrespective of its location.

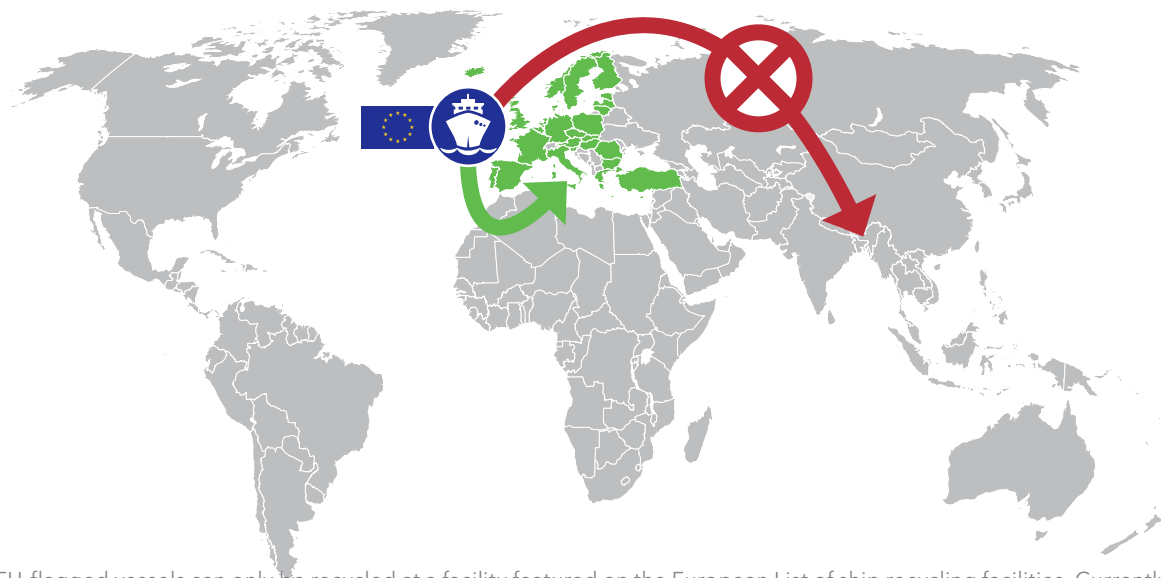
For facilities located in the EU, it is the national authorities of the member states who indicate to the EU Commission which facilities located on their territory are compliant.

The European List was first established on 19 December 2016 and last updated on 22 January 2020. It now contains 41 yards, including 34 facilities located in 12 EU member states and in Norway, six facilities in Turkey and one facility in the USA. The list is continuously updated. It is expected that all ship types can be recycled in EU-listed yards. Several yards on the European List do not have any length restrictions; some yards can accommodate ships up to 100 metres wide and the depth limitation is 17 metres. Additionally, one of the dry docks can accommodate 1.2 million DWT with a length of 556 metres and a width of 93 metres.

Ship recycling facilities located in third countries and intending to recycle ships flying a flag of a member state shall apply to the Commission for inclusion in the European List.

Applications from ship recycling facilities located in third countries are thoroughly reviewed and site inspections conducted to check their credentials. The Commission then decides on their inclusion in the European List. By April 2020, 37 applications had been received from third countries (four from China, two from the USA, 11 from Turkey and 20 from India), and reviews of applications are ongoing.

For further information on this process, please refer to section 3.1.



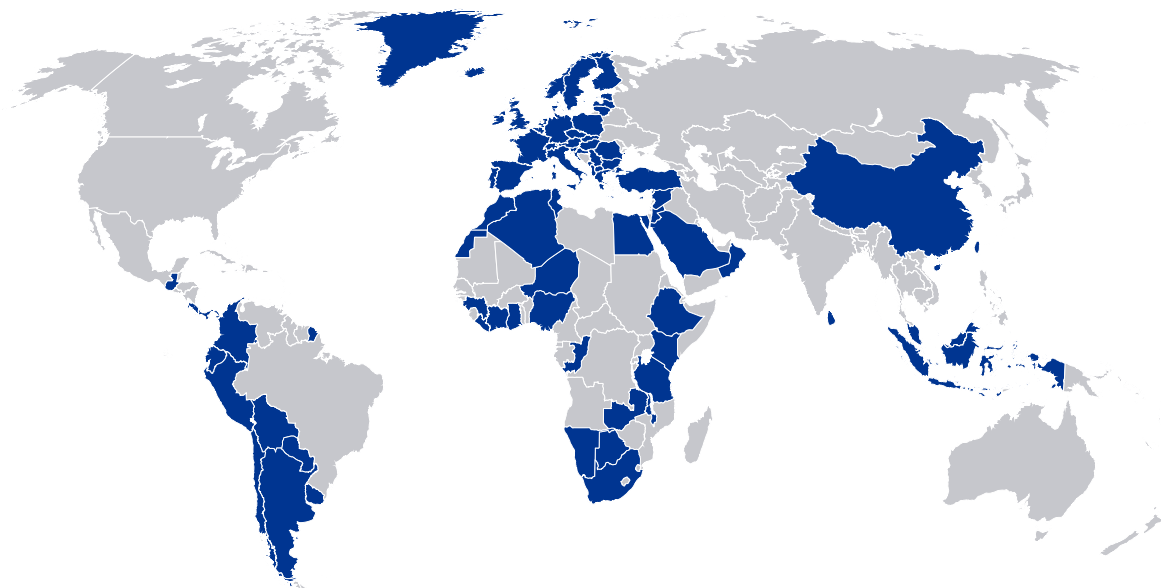
EU-flagged vessels can only be recycled at a facility featured on the European List of ship recycling facilities. Currently, there are no EU-approved recycling facilities in Bangladesh; however, Turkey has several EU-approved recycling facilities.

2.1.2 Vessels subject to Basel Ban Amendment or European Regulation on Shipments of Waste

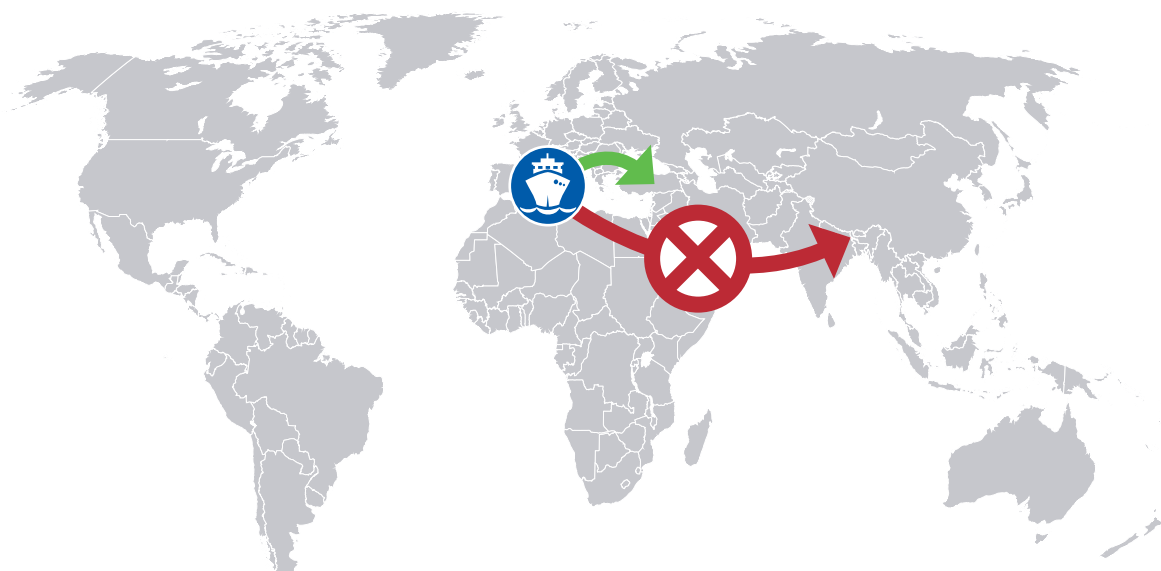
Generally, vessels going for dismantling are classified as hazardous waste since they contain hazardous substances. Vessels falling under the provisions of the Basel Ban Amendment or the European Regulation on Shipments of Waste must be recycled in a facility in an OECD country. This applies if the vessel was geographically in European Economic Area (EEA) waters or in waters of a party to the Basel Ban Amendment when the decision to recycle the vessel was taken. It may also apply if a transit state has ratified the Basel Ban Amendment. A recent court case argued that a decision was taken as negotiations to vessels' scrap values were held and that valuable equipment and spares were removed. Additionally, the court argued that the crews were under orders to ensure that the ships had as little fuel and oils on board as possible when arriving at their destinations.

Recycling facilities in OECD countries include, but are not necessarily limited to, facilities in the EEA, USA and Turkey.

Several facilities located in the EEA and in Turkey are included in the European List of ship recycling facilities. Ship recycling facilities in these countries are generally known to already comply with a number of stringent safety and environmental requirements, making their inclusion in the European List more straightforward than may be the case for facilities in other parts of the world. For further information on these facilities, please refer to 3.2.



Countries that have ratified the [Basel Ban Amendment](#)

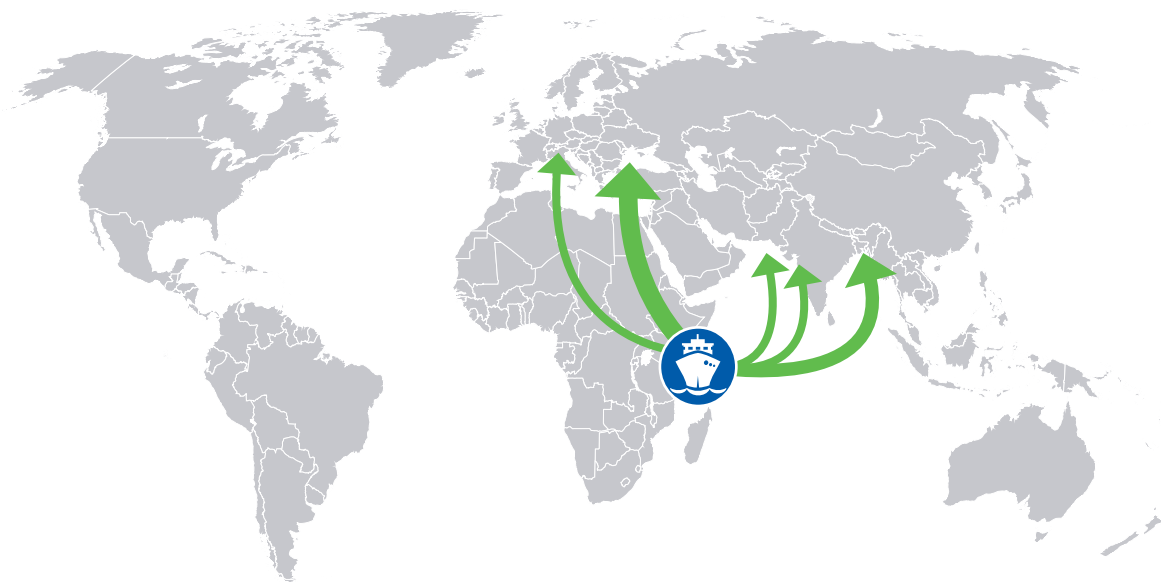


Vessels falling under the provisions of the [Basel Ban Amendment](#) or the European Regulation on Shipments of Waste must be recycled in a facility in an OECD country.

2.1.3 Other vessels

Vessels not subject to the EU SRR (EU-flagged), Basel Ban Amendment or EU Waste Shipment Rules (WSR) may be recycled in other countries as well as OECD countries and facilities featured on the European List. For these vessels, recycling in Alang-Sosiya in India, Chattogram (formerly Chittagong) in Bangladesh and Gadani in Pakistan are options. Ship recycling facilities in these countries have traditionally been found to lack consideration for workers' safety, workers' rights and prevention of adverse effects on the environment. Several players in these countries have over the last decade made tremendous efforts to improve standards and meet increasing expectations. Although many recycling facilities still have some ways to go, the development for some recyclers are very positive, in particular when considering the starting point of their improvement efforts.

The shipping and recycling industry frequently refers to yards with Statements of Compliance with the HKC. However, as it has not entered into force, there are currently no approved recycling facilities under this convention.



Vessels not subject to the EU Ship Recycling Regulation (EU-flagged), Basel Ban Amendment or EU Waste Shipment Rules may be recycled in other countries as well as OECD countries and facilities featured on the European List.

Statements of Compliance are issued to various recycling facilities throughout the world by various certification bodies. It is important to be aware that the lack of clear requirements in the convention, combined with recommendations in the guidelines, create room for interpretations, differing acceptance criteria and varying practices. It can also be noted that the IMO guidelines are drafted as guidelines or recommendations. They are not formally binding even when the convention enters into force. They set out requirements that "should" be complied with. However, it must be assumed that they will be given much weight in the interpretation of the requirements.

It is important to note that a Statement of Compliance is solely voluntary and not anchored in national law.

Until the HKC enters into force, there are therefore no international instruments that represent a basis for enforcement of the recycling requirements in individual countries. As a starting point, the parties to the convention must implement the convention obligations in their national laws. Bangladesh has developed the Bangladesh Ship Recycling Act, 2018, and India has developed ship recycling regulations such as the Ship Breaking Code 2013 and, more recently, the Ships Recycling Bill, 2019. Pakistan has not yet developed national law.

It must be noted that the actual implementation of national law may vary from one country to another. Even where national laws are established, well-functioning national administrations possessing the technical and administrative capabilities necessary to enforce the requirements applicable in their territory are required. If a certain standard from international regulations shall be met on a national level, each state party relevant to the respective regulation should take the necessary action to ensure compliance.

The HKC assumes that requirements for downstream waste management are met where authorizations by local public authorities have been issued. This means that the operational requirements, set out in the authorization, are not monitored for compliance under the HKC. Hence, safe and environmentally sound downstream waste management is not evaluated under the HKC.

There are many recycling facilities with varying practices; hence, it is highly recommended that shipowners tightly follow up on recycling activities to ensure they are conducted according to the agreed standard.

For further details regarding the Statement of Compliance for the HKC and its limitations, please refer to section 3.3.

2.2 LEGAL RISKS

The legal framework is rather fragmented. Whereas the Basel Convention is an international framework adhered to by a limited number of states, the European Regulation on Shipments of Waste and the EU SRR are regional frameworks, albeit with global ambitions. The European regulations involve port state control, and the details of sanctions are left to the individual member states.

Ships are commonly sold to cash buyers who reflag the ship. The buyers may have a financial incentive to recycle the vessel in India, Bangladesh or Pakistan. When reflagging a vessel, it must be considered whether other legal requirements apply. As an example, if a European shipowner chooses to reflag a ship to a non-EU flag with the intention to recycle the ship, the EU SRR will not apply, but the European Regulation on Shipments of Waste may apply. The Basel Ban Amendment may apply if the decision to recycle the vessel was taken in waters of a party to the Basel Ban Amendment.

The issuance of certificates, statements and reports necessary for the voyage to take place, fully or partially, may represent a contribution to a criminal act. In this context, it is important to note that an owner's sale of vessels destined for recycling to cash buyers and other middlemen, or the transit of the vessel through a short lay-up or trading period, does not necessarily release the owner or certification bodies involved from criminal liability. Neither does a change of class or flag.

In a recent court case from the District Court of Rotterdam, a Dutch company was fined for breach of the EU WSR. In 2012, the Dutch company sent out four vessels from the ports of Hamburg and Rotterdam. The vessels were laden with cargo and arguably on a commercial service. However, the vessels later ended up for recycling in Turkey, India and Bangladesh. The court argued that a decision to sell the vessels for recycling was taken in EEA waters, as negotiations to the vessels' recycling value were held before the vessels in question left Hamburg and Rotterdam, and that valuable equipment and spares were removed. Additionally, the court argued that the crew were under orders to ensure that the ships had as little fuel and oils on board as possible when arriving at their destinations. The local court in the Netherlands found that in addition to the breach of the EU WSR, the company and its two directors had also violated the applicable criminal law. The penalties imposed, while significant, were stated by the presiding judge taking into account that this was the first case of its kind.

In 2017, an attempt was made to illegally export a vessel from Norway to Pakistan, in breach of the Norwegian Waste Shipment Regulation. The illegal export was revealed when the ship suffered an engine failure and started to drift outside the west coast. Inspectors from the Norwegian Maritime Authority detained the ship due to its condition. The case has so far resulted in fines for false statements to the public authorities and violation of the Pollution Control Act based on the risk of pollution caused by the voyage, but the case is ongoing.

The general direction seems to be towards a more restrictive regime for the recycling of ships, with more comprehensive regulations and stricter enforcement from the individual states.

2.3 REPUTATIONAL AND FINANCIAL RISKS

Although fully compliant with legal requirements, a shipowner may be subject to reputational and financial risks if the ship recycling process is not in line with recognized regulations and standards.

Stakeholders in the industry are becoming more aware of the challenges arising from the present regulatory situation. Stakeholders include not only shipowners and operators, but also other stakeholders globally, such as recycling yards, cargo owners, insurers, finance institutions, the media and public opinion.

Over the last few years, some institutional investors have been black-listing companies due to their recycling practices. Some banks are using criteria, such as the Responsible Ship Recycling Standards and lately also the Poseidon Principles, a global framework for responsible ship finance, when evaluating borrowers.

Some law firms have implemented clear policies not to support transactions that lead to breaches.

In recent years, we have also seen more public debate regarding recycling practices, also involving business interests, for instance through the Ship Recycling Transparency Initiative (SRTI) and the Clean Cargo Group. It is assumed that cargo owners working towards more sustainable production do not want to be associated with non-sustainable ship recycling practices. It is expected that some cargo owners may demand transparency from their carriers, which is not unreasonable to ask.

2.4 LACK OF TRANSPARENCY

Transparency from authorities governing shipowners and ship recyclers in the ship recycling industry has been almost non-existent. Minor development towards more transparency may be seen on the horizon. It would be expected that ship recyclers promoting safe and environmentally sound recycling could publish their key facts and figures on the working conditions of their employees, on their profit, environmental monitoring results, accident statistics, etc.

Furthermore, transparency would be boosted if authorities or agents acting on their behalf make reports behind compliance statements available to the public.

The lack of transparency in the industry may assist in hiding unfavourable practices, but simultaneously it removes the possibility for the public to see the significant improvements made by some recyclers.

Although incredible efforts have been made by a few recycling facilities in some of these countries, there is still a long way to go before a level playing field is established which favours not only compliance with formal requirements, but also the joint ambition behind the regulatory framework: to continuously move towards safer and more environmentally sound ship recycling.



3 RECYCLING DESTINATIONS

3.1 RECYCLING FACILITIES ON THE EUROPEAN LIST

To join the European List, recycling yards must comply with defined safety and environmental criteria. The EU approach is dominated by the application of a centralized verification process, carried out by the EU Commission itself or someone acting on its behalf. Several steps are required before a recycling facility can be included in the European List.

The minimum requirement for filing an application is that a site inspection is carried out by an independent verifier at the facility concerned. If it is deemed to comply, a certificate showing compliance with the EU Ship Recycling Regulation is issued.

Once the application has been submitted, the EU Commission's assessment goes through two steps. The first is a document review of the application, usually carried out by contractors on behalf of the EU Commission. The purpose is to carry out a gap analysis, where the facts deemed documented are checked against the EU criteria. The second element is the site inspection. This is carried out when the documentation is deemed sufficient for a meaningful inspection.

The Ship Recycling Regulation (SRR) requires the ship recycling facility to ensure the waste management facility, which receives the waste extracted from the vessels, has been authorized by national competent authorities to operate without endangering human health, in an environmentally sound manner.

This requirement mirrors the IMO guidelines for safe and environmentally sound ship recycling, issued under the HKC. In addition, the EU SRR requires ship recycling facilities outside of the EEA to demonstrate that the waste management facilities follow human health and environmental protection standards broadly equivalent to applicable international and EU standards.

Based on the assessments, when a facility has been found to meet the requirements of the EU SRR, a proposal for inclusion is prepared by the EU Commission, subject to voting by the EU member states.

The facilities are included in the list for a period of five years. There are no reporting or verification activities during this period, with the exception of a "mid-term review" to confirm continued compliance. Listed facilities can be removed from the European List if they cease to comply. The facilities on the list have an obligation to inform the EU Commission in case there are changes to the information provided during the application process.

The EU SRR contains provisions allowing the EU Commission to carry out on-site inspections after the inclusion of yards in the European List. To our knowledge, no unscheduled inspections have been carried out since the European List was established.

Shipowners may decide to obtain a higher level of confidence, operating with an "above-compliance" policy, than what follows from the European List, such as by own supervision on-site during the recycling process.

Please be aware that Turkey applies the principles of notification and prior informed consent as provided in the Basel Convention.



3.2 OECD

OECD facilities may be featured on the European List and they may hold a Certificate of Compliance with the EU SRR or a Statement of Compliance with the HKC, issued by various independent certification bodies.

Please be aware that a Certificate of Compliance with the EU SRR, issued by an independent verifier, is only the first of many steps involved before a recycling facility can be included in the European List. Hence, due diligence should be exercised from the CSR/ESG perspective before relying on any EU SRR certificates issued by an independent verifier.

The HKC has not entered into force, and there are no HKC-approved recycling facilities in the world today, although several recycling facilities hold a Statement of Compliance with the HKC. Please refer to 3.3 below for further information.

Similar to recycling facilities on the European List, shipowners may decide to obtain a higher level of confidence that the recycling facility follows the agreed ship recycling requirements stipulated in the contract by, for instance, supervision on-site during the recycling process.

3.3 OTHER COUNTRIES

Several ship recycling yards hold a Statement of Compliance with the HKC, and some yards also hold a Certificate of Compliance with EU Ship Recycling Regulation by an independent verifier. Although significant improvements have been made over the last few years, due diligence should still be exercised when selecting yards holding Statements of Compliance with the HKC and certificates for the EU Ship Recycling Regulation, for reasons explained below and in sections 2.3 and 3.1.

The HKC has been ratified by India, but not by Bangladesh and Pakistan. In 2019, India adopted the Ship Recycling Bill, which transposes the HKC into national law. This is an important step in developing the ship recycling industry further, but it must be implemented in full before the impact can be evaluated.

Ship recycling facilities are authorized by national authorities in accordance with current national regulations. Today, ship recycling facilities in these three countries operate with varying standards, differing both between and within the countries. This is related to the implementation and enforcement of national law.

In these regulatory systems, assurance products such as a Statement of Compliance from the HKC have been issued by independent assurance providers contracted to the yards. The HKC Statement of Compliance products are not based on legal rights or obligations under the convention (as no such exist yet, pending its entry into force), but rather on a service provided by some stakeholders.



It is assumed that the HKC Statement of Compliance is issued based on the methodology described in the convention and its guidelines. No recycling yards have made their assessment reports publicly available, which is noteworthy as this is presumed to be the basis for the Statement of Compliance.

The HKC requires that ship recycling facilities are “authorized” by national “competent authorities” or “organizations recognized” by such authorities. The basis for the authorization(s) concerned or the methodology applied for the purpose of the authorization process is described only at a high level. It is limited to “verification of documentation required by this convention” and a site inspection. Hence, it is difficult to know what a Statement of Compliance includes.

For all practical purposes, the reference to documentation must be interpreted as a reference to the Ship Recycling Facility Plan. This plan shall, according to the convention and for most practical purposes, provide detailed descriptions of the governance and operation of the facility.

For the site inspection, there are no requirements regarding scope or methodology in the convention. However, directions for the authorization are given in the [IMO Resolution MEPC.211\(63\) - 2012 Guidelines for the authorization of ship recycling facilities](#).

The authorization period is limited upwards to five years. It follows from the convention that the national competent authority shall establish “the terms for which the authorization will be issued, withdrawn, suspended, amended and renewed”.

The facility has an obligation to report circumstances that may affect the validity of the authorization. Furthermore, a basis for retention audits or unscheduled audits should be established.

There might be reasons to claim that for the authorization requirements to be met, the authority concerned must meet minimum impartiality and integrity requirements. The double roles of some of the authorities concerned, for instance landlord and authorizing authority, are questionable from this perspective.

To conclude, under the HKC, significant variations in the enforcement and national frameworks may be expected, and to date there are no HKC-approved recycling facilities. For downstream waste management, the operational requirements set out in the authorization are not monitored for compliance in this scheme.

DNV GL encourages shipowners to follow up more thoroughly as specified in section 4 if this is their preferred strategy.



4 SHIP RECYCLING PROCESS IN LINE WITH RECOGNIZED REGULATIONS AND STANDARDS

Based on experience, DNV GL has established a brief guidance which addresses specific areas of concern identified by DNV GL in connection with the recycling of vessels. The main area of application of this guidance is the recycling of vessels at recycling yards which are not included in the European List. Shipowners may of course decide to obtain a higher level of confidence than what follows from the European List.

DNV GL often receives questions from shipowners concerning what is good enough and what standards are acceptable. The recycling execution process is a series of steps from arrival to completion, each with its own critical tasks and procedures with high risks of serious accidents and environmental impact at every stage. In order for a shipowner to understand what these critical steps are, this part of the guidance advises on what procedures a yard should have implemented and verified in order to assure an acceptable standard of execution.

A shipowner should, before selling a ship for recycling, assess the yard(s) in order to verify that the yard operates in a safe and environmentally friendly manner, assuring that their reputation is not compromised. A shipowner may conduct the assessment with their own resources or ask a third party to carry out an assessment, in order to verify that the ship recycling facility operates in compliance with the HKC requirements.

The Hong Kong Convention (HKC) requires a ship recycling facility to develop a Ship Recycling Facility Plan (SRFP). Further guidance is provided in the MEPC.210(63) guideline. The SRFP should be in the form of a structured plan, where procedures are written consecutively as useful, easy-to-read, step-by-step instructions. The steps involved shall be procedurally written and provide guidance to the persons executing the work. Details must be provided for the steps, such as what is to be done, who will do it and by when it needs to be done.

In the following, DNV GL has outlined the process for the Inventory of Hazardous Materials (IHM) and provided suggestions for what a shipowner should look for in an SRFP to be more confident in evaluating if a ship recycling facility operates in line with recognized regulations and standards.

4.1 IHM

For non-EU-flagged vessels, it varies if the ship recyclers require an IHM Parts 1, 2 and 3. In most cases, where the IHM is prepared, it is in accordance with the HKC and its guidelines.

The three parts of the IHM are:

Part I: Materials contained in ship structure or equipment

Part II: Operationally generated wastes

Part III: Stores

As the HKC is not in force, it is not required to have the IHM approved for non-EU-flagged vessels. The ship recycling facility will prepare the ship recycling plan (SRP), based on the IHM, in cooperation with the shipowner as required. When the HKC enters into force, it will be required to have a final survey and a Ready for Recycling Certificate issued prior to recycling.

The IHM is exhaustive and identifies the predefined hazardous materials that are contained in a ship's structure or equipment, their location and approximate quantities. While the HKC lists 13 substances, 15 substances are listed in the EU SRR.

By experience, the quality of IHMs varies. Some IHMs rely only on documents with no samples and some IHMs rely on samples but only for substances listed in Annex I (asbestos, PCBs, TBTs and ozone-depleting substances plus PFOS [EU requirement]), while other IHMs include samples for both Annexes I and II (heavy metals [lead, mercury, hexavalent chromium, cadmium], brominated flame retardants [PBB, PBDE, HBCDD (EU requirement)], SCCP, PCN and radioactive materials).

4.2 VESSEL ACCEPTANCE


The acceptance of a ship for recycling is contractually fulfilled by the signing of the commercial agreement between the shipowner and the ship recycling facility (SRF). The facility shall have a procedure in place which covers acceptance criteria for the purchasing of a vessel for recycling. It is recommended that shipowners ensure the SRFP's procedure describes the process of vessel acceptance. This includes:

- Process descriptions (see process points below)
- Vessel acceptance flow chart
- Vessel acceptance criteria (including checklist with necessary documents and permits, IHM, etc.)
- Acceptance documentation, filed in an implemented document control system by vessel

Preferably, the acceptance procedure shall be part of an ISO-certified company quality management system (QMS), subject to management review and continuous improvement. Also, the vessel acceptance procedure shall be instructed in the SRFP. The SRF shall also have a corresponding training programme in place for all employees.

The procedure shall follow national legislations and regulations. In states where there is no ship recycling approval authority, the regulations should be followed in practice.

Both the shipowner and the recycling facility have responsibilities in the acceptance procedure, legally bound by international agreements. Where no such international agreements exist, an identical practice shall be followed.



The process	
1	The facility must be able to document to the shipowner that it is authorized to recycle ships, for instance by providing a licence from a competent authority.
2	The facility shall only accept ships for recycling that are compliant with the HKC, the Basel Convention and national requirements.
3	The shipowner shall notify the vessel's flag state administration in writing of the intention to recycle the vessel, including provision of the IHM and all ship relevant information.
4	The shipowner shall provide the SRF with all documentation necessary to compile the SRP, including valid regulatory and statutory certificates, the IHM, main dimensions, tonnage, GA plan, tank plan, capacities, loading conditions, etc.
5	The SRF must ensure that they can accommodate the ship's dimensions.
6	The facility shall carry out an initial survey of the vessel, verifying the IHM and mapping the ship, its inventory and equipment in order to plan safety measures and a dismantling methodology as a basis for the SRP. The surveys shall be carried out by qualified personnel, i.e. personnel trained for hazardous materials, including asbestos, and safety, including gas-freeing and safe-for-entry permits. The SRF shall be able to demonstrate to shipowners and regulatory bodies that the surveyors have completed the necessary training.
7	Before the agreement, the facility shall provide the vessel's flag state with an SRP, approved by the facility's competent authority as required under national law.
8	The shipowner shall provide the SRF with all necessary certificates from the classification society and flag state, including stability and loading conditions, proving that the vessel is seaworthy and safe for the crossing water on its final voyage. This may also include a towing certificate, final voyage certificate or other exemptions.
9	The SRP may be subject to approval by the administration in the recycling state. After a final survey the Ready for Recycling Certificate (IRRC) can be issued.
10	After the final survey by qualified personnel has been documented and the IHM verified, the vessel can be accepted by the SRF.

All documentation and agreements shall be filed in a document control system, in the vessel's file.

It is advised to spot-check the vessel acceptance chapter to make sure it is consistent with descriptions in other parts of the SRFP, such as roles and responsibilities and training.

4.3 VESSEL ARRIVAL

The SRF shall have a procedure in place for the vessel arrival process, with step-by-step instructions, check-lists and document lists. The procedure shall be instructed in the SRFP and preferably be part of a corporate QMS. The SRF should have carried out a risk assessment of their landing operations. The SRF shall also have a corresponding training programme in place for all employees.

When the vessel arrives at the SRF, it shall have all valid certificates of safety and seaworthiness from regulatory and statutory bodies pertaining to the transit, and an export certificate. The SRF may have an agency to manage the arrival process.

Upon arrival at the SRF, normally the ship will anchor outside the recycling zone and be boarded for inspections by authorities, including:

- Immigration
- Customs
- Harbour police
- Radiation control
- National public health inspectors
- Port authority

In addition, the SRF carries out pre-landing surveys assuring:

- The vessel is safe to land and that all loose equipment has been secured or removed.
- Spaces requiring gas-freeing due to the arrival inspection have been checked and marked as safe-for-entry.
- Emergency evacuation marking shall be in place.
- The IHM has been verified, by a competent authority, and hazardous materials have been marked.
- Disinfection and/or de-ratting has been performed.

After the vessel has been cleared and the documentation signed and filed, the port authority, normally the harbour master, will issue a landing or docking permit. Depending on the recycling method, the SRF needs to prepare their facilities and infrastructure for receiving the vessel.

In case of mooring alongside, the mooring arrangement shall be planned, calculated and documented. In case of dry-docking, a docking plan shall be in place. Evacuation plans with escape signage on board shall be in place.

In case of the landing method in the intertidal zone, the following shall be in place:

- A workshop with the management and supervisors in order to plan the landing with regards to safety and practical matters. A MOM shall be distributed.
- The vessel's grounding point shall be predicted, assuring it will stop close enough to the shoreline.
- The vessel's landing speed shall be decided, to create the lowest bow wave that is, however, sufficient to drive the vessel high enough up the intertidal zone.
- Equipment shall be readied, including the pulling chain, gangways, emergency boat, fire hoses, life vests, first aid and oil boom.
- The intertidal zone, shoreline and adjacent secondary impermeable zone shall be cleared of debris, parts and sections already under dismantling that may be hit by the bow wave.
- Warning and no-entry signage shall be posted at safe distance from the shoreline, in the full length of the SRF.
- Weather forecast is to be checked.
- Neighbouring facilities shall be warned in writing, and confirm the warning with a receipt.
- The upcoming landing shall be advised and discussed with all workers at the SRF and at the neighbouring facilities, in toolbox talks.
- The supervisors at the SRF and the neighbouring facilities shall ensure that the landing area has been evacuated prior to landing.
- Immediately after landing, the oil boom shall be deployed, and the intertidal zone or sea surveyed for any spills. Emergency response equipment shall be in place.
- The crew shall immediately be taken off the vessel either by gangway or by basket.
- The engines and all the vessel's power systems, both fuel- and electrically powered, shall be permanently shut down and secured against fire and short-circuiting.
- Prior to the start of dismantling, the vessel shall be inspected by qualified supervisors, where all power systems shall be declared and confirmed dead. This shall be done by checklist according to the SRP, and signed off by an authorized person.

4.4 CLEANING AND REMOVAL OF HAZARDOUS MATERIALS

Substances that can spill into the environment are divided into four main categories:

1. Hydrocarbons:

- Fuel oil: from fuel storage tanks, including sediments and sludge from machinery, piping, day tanks, settling tanks and sludge tanks. For tankers, cargo holds shall be cleaned when the vessel arrives at the SRF.
- Lubrication oil from holding tanks, header tanks machinery and piping
- Hydraulic oils from storage tanks, header tanks, piping and ship equipment
- Dirty bilge water

2. Hazardous liquids: for example firefighting foam

3. Sediments: accumulated in ballast tanks, bilges and voids, that may contain polluting substances, potential invasive species and debris

4. Debris: from the entire vessel, such as traces of insulation, loose parts, bits and pieces from accommodation linings and coverings, plastic, paper, levelling compound, small fittings, paint chips, dirt and grime

Independent of the recycling method, the SRF shall assure that no spill is discharged into the environment, including the sea, the soil, the intertidal zone or the air, where it cannot be contained or flushed into a drain line.

The SRF shall have a procedure in place for gas-freeing, including safe-for-entry and safe-for-hot-work instructions, with written permits, signage regimes and identified, qualified and certified responsible personnel and equipment. The procedures shall be clearly instructed in the SRFP.

The SRFP shall describe in detail how the vessel is cleaned, how spill is contained and prevented from entering the environment, how accidental spill is recovered and how the environment is regularly cleaned – especially intertidal zones and shorelines.

The instructions shall include, in detail:

- ☐ Roles and responsibilities
- ☐ Cleanliness criteria, inspection regime, checklists
- ☐ Tools and equipment (spades, buckets, rags, bags, etc.)
- ☐ Blocking of pipes and machinery inlets and outlets; in case of intertidal landing, the lifting of oily machinery and parts from the vessel to the impermeable cutting zone across the intertidal zone without dripping or parts falling off blocks during the traverse
- ☐ Methods and chemicals used (high pressure water, chemicals, sand, etc.)
- ☐ Records of block cleanliness with photographic evidence and ready-for-cutting permits from supervisors and authorities if applicable
- ☐ Cleaning up spills and drips from engine space floors when dismantling piping and equipment
- ☐ Training of personnel
- ☐ Cleaning regime of the facility, including the intertidal zone and the shoreline, with schedule and reporting

The SRFP must describe how to safely remove, handle and/or clean the hazardous materials that have been identified on ships (either in the IHM or by sampling at the facility). The workers must be sufficiently trained in handling hazardous waste, and it is recommended that the duration of the courses is checked. A one or two-hour course is not deemed enough training for asbestos removal. It is recommended that shipowners cross-check training certificates with the current workforce on-site, including subcontractor qualifications.

The procedures should give detailed and practical information to the workers. Procedures for the hazardous materials listed in the HKC must be available. Additionally, it would be expected that a facility addresses other hazardous materials, at least those that is expected on board ships, regulated by the Stockholm Convention, such as PFOS and HBCDD. The Stockholm Convention is ratified by all major recycling states and is applicable.

The Stockholm Convention requests parties to protect citizens and the environment from persistent organic pollutants (POPs) through activities stipulated in the articles of the treaty. In order to assist parties implementing the requirements from the Stockholm and Basel Conventions on wastes containing POPs, general guidelines were adopted under the Basel Convention on the environmentally sound management of wastes consisting of, containing or contaminated with persistent organic pollutants (see UNEP/CHW.13/6/Add.1/Rev.1).

The guidelines address questions relating to the identification, analysis, handling and disposal of wastes containing POPs. These guidelines suggest a definition of low POP content values for POPs listed in the Stockholm Convention and indicate that wastes with a POP content above these values should be disposed of in such a way that the POP content is destroyed or irreversibly transformed, in accordance with the methods described in the guidelines.

4.5 CUTTING

The SRP shall follow the guidelines of the HKC (MEPC.196 [62]) and be truly ship-specific and precise. SRP templates are sometimes purchased from external consultants, where the cutting plan and cutting methodology are generic and not even ship-type relevant. This is not sufficient. Also, be aware that generic procedures, typically from external providers, in the SRP may be a different set of procedures than in the facility's SRFP. Sometimes the SRFP is also from an external consultant, so different consultants have been used for the SRP and the SRFP. The ship-specific methods in the SRP shall follow and be harmonized to the SRFP.

The SRF shall have an implemented procedure for steel cutting. The procedure shall be instructed in the SRFP and preferably be part of a corporate QMS.

Cutting is divided into three phases:

1. **Primary cutting:** dividing the hull and superstructure into blocks corresponding to the lifting capacity of the main cranes. The cutting is carried out in dock, alongside or in the intertidal zone depending on the recycling method. Sometimes a block is allowed to fall onto the exposed double bottom; the corresponding safety precautions must be instructed in the SRFP.
2. **Secondary cutting:** the main blocks are lifted or transported to a secondary cutting zone, preferably featuring an impermeable (concrete) floor with drainage, preventing substances to enter soil or sea. The blocks are cut down into smaller panels and beams; cast iron is separated into pieces as commercially fit for the iron and steel sector
3. **Tertiary cutting:** secondary cut steel is further separated as determined by steel buyers.

Metals are segregated between ferrous and non-ferrous.

The SRP shall include a primary cutting plan, which may be high level but clearly show the main sequence of cutting. Depending on the method, this may be "cascading" – typical for intertidal landing – or top-down, which works the length of the vessel, typical when dismantling alongside or in dock.

Advanced facilities use 3D digital modelling to plan the cutting, where weight and the centre of gravity are accurately determined for commercial use and for secure lifting. Some facilities make hand sketches with manual calculations as the cutting proceeds day by day, and some facilities do not document each cut at all. They decide on each primary cut verbally on a day-to-day basis, based on experience, typically in agreement with the ship supervisor, the safety officer and the head cutter in morning meetings in the field. Procedures must be instructed in the SRFP and be the actual implemented procedures carried out on-site.

Normally, a vessel is cut down to the double bottom:

- In its full length in the case of the alongside and dock methods. Typically referred to as the "canoe", this is usually pulled up on an impermeable slipway, above a drain line, and cut from bow and aft, pulling the canoe above the drain line at each cut.
- Cascading, in the case of the intertidal landing method:
 - At the SRF featuring a concrete slipway with drain line: the vessel is cut step by step from top to bottom, fore to aft; as the vessel lightens, it can be pulled above the drain line in order to start cutting the double bottom, allowing residue in the double bottom tanks to be flushed down the drain line. This method shall be described in detail in the SRFP.
 - At the SRF where the cutting of the double bottom is carried out in the intertidal zone, on permeable ground with high tides: at high tide, the cut double bottom is subject to potential water ingress and with that the washing of residue out to the sea. The SRF shall in its SRFP describe in detail how water ingress into cut double bottom tanks at high tide is prevented. This includes the closing of openings in double bottom floors and the blocking of cut pipes exposed to the sea. Double bottom tanks on older vessels were used for fuel oil, and ballast tanks may contain sediments. An SRF ensuring that the tide-flooded tanks are perfectly clean is not good enough, as the necessary cleanliness cannot always be guaranteed.

Cutting procedures shall ensure that:

- ☐ The vessel's stability, heel and trim are maintained.
- ☐ Blocks do not bounce when cut loose, due to displaced forces and tension progressively building up during the cutting, causing the block to jump after the final cut and potentially injuring the cutter and others nearby.
- ☐ Pertaining to b), that blocks are pre-strung by lifting slings and crane, before cutting commences.
- ☐ All personnel on the vessel are trained and aware of the scope of work of the day, by way of daily morning and toolbox talks held by the supervisor.
- ☐ All primary cutting into blocks is closely supervised by the responsible ship and safety officers.
- ☐ Slag and paint chips do not fall on unmade ground, including intertidal zones, this particularly when cutting the bottom outer skin from inside out in the intertidal zone, on permeable ground. The SRF shall document the methods of slag collection.
- ☐ No primary cut block is dropped or left on unmade ground, including the intertidal zone, and no secondary cutting is carried out on said ground.
- ☐ Cutting torches and gas systems are regularly inspected and operated only in good condition. There are repair and maintenance workshops at the facility and replacement torches are readily available at cutters' request.
- ☐ Cutters and helpers are trained and re-trained.
- ☐ The procedures are written with the participation of and input from the users, i.e. cutters and supervisors.
- ☐ The procedures are subject to continuous improvement based on lessons learned.
- ☐ Description's of erection and standards of fall barriers, rails, ladders, gangways and temporary scaffolding are available

4.6 OPERATIONAL PROCEDURES (RECORDS AND MONITORING)

In order to demonstrate the safe and environmentally sound recycling of vessels, the SRF shall have written procedures for all activities. The procedures shall instruct the employees on the processes at the facility as to how these are implemented and practiced. The procedures shall be written in the SRFP and preferably be part of a corporate QMS.

The facility shall be able to prove and document that it is in control of its operations, including a management, monitoring and document control system.

The procedures shall include, with corresponding checklists and form templates:

- ☐ Certificates and authorizations of maintenance and renewal, control of new regulations and requirements
- ☐ Organization chart, roles and responsibilities
- ☐ Environmental monitoring
- ☐ Employee records, human resources management
- ☐ Worker health and safety, terms and conditions, welfare, medical monitoring, health services
- ☐ Training and incentives
- ☐ Progress reporting
- ☐ Protection of the environment, especially the intertidal zone
- ☐ Waste management, hazardous and non-hazardous, including downstream
- ☐ Emergency Preparedness and Response Plan (EPRP)
- ☐ Safety regime, including PPE, safe for entry, safe for hot work, inspection regime, working at heights, confined spaces
- ☐ Risk assessments
- ☐ Maintenance and traceability of motorized, heavy and lifting equipment
- ☐ Recycling methodology, including cutting procedures
- ☐ Housekeeping, cleaning of intertidal zone and shoreline, cleaning of facilities including showers, toilets etc.
- ☐ Fire safety
- ☐ Security
- ☐ Canteen and kitchen operations, sanitation, food handling, drinking water according to national public health standards
- ☐ Incident monitoring and reporting, near miss handling, suggestion box, continuous improvement
- ☐ Document control
- ☐ Procedures for developing and maintaining the QMS, the SRFP, the SRP and the EPRP



4.7 WASTE MANAGEMENT

The facility must ensure that it has adequate storing capacity of waste and hazardous waste. Hazardous waste or waste containing polluting substances must be stored to prevent any release of those materials into the environment.

The shipowner should check to what degree the facility executes additional sampling. In many cases, most materials and equipment, loose or fixed, are removed and sold. This may be problematic if these materials are not sampled to ensure that the materials are free from hazardous waste.

The facility should have a procedure explaining what type of materials and equipment can be resold or not resold, considering the provisions of the Stockholm and Basel Conventions and the Minamata Convention on Mercury¹. All conventions are applicable to the major ship recycling states.

The quality of the IHM varies. Some IHMs rely only on documents without samples and some IHMs rely on samples but only for substances listed in Annex I, while other IHMs include samples for both Annexes I and II. This means that the ship recycling facility must have additional measures to identify hazardous materials other than those possibly listed in the IHM.

The IHM provides information on hazardous materials on board the vessel. From the “polluter pays” principle, the shipowner is responsible for safe and environmentally sound waste management. From a CSR/ESG perspective, specific considerations must be made regarding the adequacy of the downstream waste management facilities and workers’ rights.

The regulatory ship recycling framework in force (and the HKC) are supplemented by the UN Stockholm Convention on persistent organic pollutants (Stockholm, 2001). It addresses, inter alia, requirements for the handling of some hazardous chemicals once they have been extracted from the vessel or unit that is being recycled.

	Basel	Hong Kong	Stockholm
India	✓	✓	✓
Bangladesh	✓	✗	✓
Pakistan	✓	✗	✓
Turkey	✓	✓	✓

Although a country has ratified an international instrument like the Stockholm Convention, it may not have been fully implemented. It is important to ensure that persistent organic pollutants (POPs) are disposed at a waste management facility that can destroy or irreversibly transform POPs.

¹ The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury. The convention draws attention to a global and ubiquitous metal that, while naturally occurring, has broad uses in everyday objects and is released to the atmosphere, soil and water from a variety of sources. Controlling the anthropogenic releases of mercury throughout its life cycle has been a key factor in shaping the obligations under the convention.



4.8 ENVIRONMENTAL MONITORING

The IMO guidelines for safe and environmentally sound ship recycling specify that the facility establish a monitoring program for the surrounding soil, sediment, water, air and noise/vibrations. The purpose of the monitoring programme is to establish the state of the environment surrounding the ship dismantling facility and should be set up to address possible changes in the environment due to anthropogenic sources.

A monitoring programme is expected to be based on knowledge of the hazardous materials and emissions resulting from the ship recycling activities. The shipowner should first check that the sampling procedures comply with well-established standards for the sampling and analysis of relevant environmental parameters. The ISO has developed several standards that are specific to the media sampled (soil, sediments, water or air) and contain detailed procedures for the sampling technique, type of sampling equipment, calibration of instruments, etc.

Secondly, the shipowner should check that accredited laboratories are used for the analysis of relevant parameters with appropriate detection levels.

Thirdly, the shipowner should check if the results of the sampling have been compared to a specific standard for soil, sediment, water and air. Existing national and regional standards can be used for comparison purposes.

4.9 HUMAN RESOURCES AND CSR

The requirements of some important ILO conventions are also implemented in the above-mentioned requirements by reference. The main ship recycling states have only adhered to parts of this framework.

The situation is as follows:

	ILO conventions		
	Fundamental	Governance	Technical
India	6 of 8	3 of 4	38 of 178
Bangladesh	7 of 8	2 of 4	26 of 178
Pakistan	8 of 8	2 of 4	26 of 178
Turkey	8 of 8	3 of 4	48 of 178

As many recycling states have only partially implemented ILO conventions, workers' rights are not necessarily adhered to. From a CSR/ESG perspective, minimum wage, working hours, overtime payment, insurance in connection with injury, and housing/dormitory must be considered.

Shipowners also need to consider that the states recycling their ships may have differing levels of corruption and transparency compared to they primarily operate. It is important that shipowners identify such differences and take suitable mitigating actions in line with corporate policy, the interests of their stakeholders and the global community.

4.9.1 PPE

PPE and protective clothing should comply with standards set by the competent authority, recognized by national or international bodies and provided without cost to the workers. It is recommended that the shipowner checks:

- ❑ Overalls shall provide high visibility, be flame retardant and made from tear-proof material where required.
- ❑ The hardhat must have an adjustable cradle inside to support the helmet on the wearer's head. The helmet should have a chin strap. The hardhat must be replaced before the expiry date and if it is damaged.
- ❑ Clear or coloured goggles, a screen or a face shield must be worn when there is likely exposure to eye or face injury from airborne dust or flying particles, dangerous substances, harmful heat, and in particular during torch cutting or other hazardous work.
- ❑ Gloves should give protection from the particular hazard of the work being carried out and must be appropriate to that type of work. For example, heat-resistant gloves for torch cutting, and rubber, synthetic or PVC gloves for handling acids, alkalis, various types of oils, solvents and chemicals.
- ❑ Appropriate safety footwear, such as shoes and boots, should have firm, slip-resistant soles and reinforced toecaps.
- ❑ Respiratory protective equipment, suitable for the particular job, must be used. The selection of correct equipment is essential. A torch cutter and nearby exposed workers and helpers require a mask that protects against fumes; hence, a dust mask is not sufficient. The respiratory protection provided to workers is expected to have been decided based on an assessment identifying the nature of hazards and the exposure (detailed in the ILO's "Safety and health in shipbreaking: Guidelines for Asian countries and Turkey").
- ❑ Workers exposed to high levels of noise must be provided with ear protection.
- ❑ Safety harnesses with independently secured lifelines should be worn where protection against falls cannot be provided by other appropriate means, and life vests and life preservers where there is a danger of falling into water.

4.9.2 Monitoring of workers' health

The SRFP shall describe how the facility monitors workers' health. It is recommended that the shipowner conduct spot checks, such as ask for laboratory analysis results.

The workers should be subject to health monitoring, for instance in line with the ILO's "Technical and ethical guidelines for workers' health surveillance" and as prescribed by national laws and regulations, based on a risk assessment of potential exposure. Specifically designed biological tests are available to detect any signs of organic disorders or potentially harmful exposures and should be an integral part of the medical examination. Biological monitoring tests (e.g. tests for lead, cadmium, mercury and carbon monoxide in blood, and for cadmium, fluoride and mercury in urine) are useful in workers' health surveillance and can be used for the individual or collective monitoring of exposed workers.

4.9.3 Employment and social insurance

An SRF must ensure that workers have employment contracts and are covered by a scheme for workers' compensation and social protection. The facility must ensure that they provide coverage, such as benefits in case of injury, sickness, temporary or permanent disability through workers' compensation in the event of occupational accidents and diseases, and compensation for survivors in the event of work-related death, to all workers, irrespective of their employment status.

It is suggested that a shipowner ask for evidence, such as workers' contracts and receipt of insurance payment, and check what the insurance covers.

4.9.4 Working hours and wages

Any occupational health and safety (OHS) scheme should provide for reasonable working hours which should not exceed the number prescribed by national laws and regulations. Working hours should be arranged so as to provide adequate periods of rest, including short breaks during working hours, sufficient breaks for meals, daily or nightly rest and weekly rest.

It is recommended that shipowners cross-check working hours with relevant national legislation. Furthermore, it is suggested that shipowners cross-check the wages with national requirements, particularly the provisions for minimum wage and overtime pay.



4.9.5 Child labour

All major recycling states have not ratified The Worst Forms of Child Labour Convention, 1999 (No. 182). Hence, a shipowner should ask for evidence that children are not working on-site.

4.10 DORMITORY

Many recycling facilities offer dormitories for the workers. Such dormitories shall provide the habitants with a clean and hygienic environment, in acceptable comfort.

It is recommended to check that the dormitory is:

- ☐ Subject to a daily cleaning regime, by designated cleaners. Special attention should be awarded to mould, grime and insects. The cleaners shall have proper equipment, including washing chemicals/soaps, buckets, mops, rags, disinfectants and insect spray.
- ☐ Properly ventilated and shaded to avoid dampness and excessive heat.
- ☐ Fitted with proper lighting.
- ☐ Arranged with proper shower and toilet facilities, the latter with a sink with fresh water and soap for hygiene.
- ☐ Dormitories with cooking facilities should be arranged and maintained according to national public health requirements.
- ☐ Drinking water shall be sanitized and stored according to national public health requirements and sampled accordingly. Drinking water storage tanks should be flushed out and chlorinated at least every third month.
- ☐ Each dormitory should have enough space between beds, and a cabinet for each occupant.

A good reference is the [workers' housing factsheet No.6](#) from the ILO.

4.11 MEDICAL SERVICES (HOSPITAL, DOCTORS, ETC.)

Medical services should be readily available, locally. Recycling is ranked as a high-risk industry; hence, first aid facilities only are insufficient. There needs to be a hospital in the community, with full surgical capability of handling multiple, major injuries at once. Correspondingly, the hospital shall have enough ambulance capacity to transport multiple injuries from an SRF to a surgical hospital after a serious accident. With multiple injuries is estimated three to four major casualties in one incident.

Some facilities claim to have their own ambulances. It is highly recommended that shipowners check the suitability of the ambulance. For instance, a van fitted with a bunk, a first aid kit, unauthorized emergency blue lights and an oxygen apparatus is not a proper ambulance. Such ambulances are typically looked after by a driver with first aid training. The lack of sanitation and unqualified operation of such ambulances can make matters worse. A paramedic is required, and even a mobile medical unit is insufficient if the hospital is too far away and traffic is congested or dangerous, on bad roads.

For regular medical services, the SRF shall have an agreement with a doctor and/or nurse, including periodic health checks and case consultations.

4.12 FIREFIGHTING (INFRASTRUCTURE, LOCAL, ETC.)

The facility shall have an implemented procedure and the necessary equipment to prevent and mitigate fire on the vessel and on-site. The risk of fire is high at a recycling facility, especially due to gas cutting. It is recommended that shipowners check that the SRF has procedures for:

Fire prevention

- ☐ Certified safety inspectors
- ☐ Regular training and toolbox talks
- ☐ Safe-for-hot-work procedure, with fire watch and signage
- ☐ Removal of combustible materials from the vessel, before cutting
- ☐ Cleaning of oily tanks and removal of oils from piping and machinery
- ☐ Fire training, awareness training and mock drills for all employees
- ☐ Assurance of dead electrical systems before start of dismantling
- ☐ Enough ventilation on board
- ☐ Procedure for inspection and maintenance of gas plants, bottles and torches
- ☐ Procedure for housekeeping
- ☐ Keeping accessways clear
- ☐ Dedicated smoking areas

Fire mitigation measures

- ☐ Main fire line with pressurized hydrants and hoses, redundant fire pumps, daily testing
- ☐ Loose firefighting extinguishers or sand buckets, traceable with renewal dates (on board and on shore) implemented in a register and marked on-site and on the site map
- ☐ Evacuation signage on vessel
- ☐ Fire alarms on vessel and on shore
- ☐ Firefighting equipment in way of gas plants and bottles storage

Fire emergency response in the PRP

- ☐ Procedure for warning and sounding the alarm
- ☐ Internal emergency contact numbers
- ☐ On-duty fire watch
- ☐ Marked and signed assembly stations
- ☐ Emergency numbers to the local fire brigade
- ☐ Emergency equipment room with fire suits and breathing apparatuses



The EPRP must be a document written by professionals as an efficient and useful emergency document with clear instructions and emergency numbers. Clear instructions must be available for typical accidents that may occur, including falling from heights and rescue from confined space. It is recommended that shipowners assess if these elements are clearly instructed and that the EPRP is written for workers.

At facilities recycling rigs in intertidal zones, a shipowner should carefully assess the firefighting possibilities far from shore. When the rig arrives, it will normally ground at a significant distance from the facility plot and can only be pulled closer to the shoreline when lightened. In such cases, the SRF shall provide high-pressure firefighting hoses adjacent to the rig, such as on barges, and a readily available means of evacuation by emergency boat.

Some facilities may rely on an own fire truck, which sometimes in reality is a regular truck fitted with a water cannon, operated by personnel only with basic training. This is not enough in case of a larger fire. The SRF should cooperate with a municipal fire station, with fully equipped fire engines, professional firemen and smoke divers. Facilities should ideally carry out mock drills with the local fire brigade annually.

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