# 1. Assignment – Ship dismantling and recycling

***You are the IA working group and are you asked to develop the first steps of the IA.***

***Please assume that you are carrying out the IA work in 2010.***

**Problem definition**

1. What is/are the problem(s)?
2. What causes this problem?
3. What type of problem are we dealing with (market and/ or regulatory failure, discrepancy with fundamental goals)?

Consider using a problem tree to distinguish causes, effects and the central problem

1. Establish the basic elements of your baseline scenario
   1. Legal developments
   2. Economic developments
   3. Stakeholders
   4. Impacts

**Objectives**

1. What is the desired state of affairs? What does one seek to achieve?

Try to formulate the objectives with reference to the problem(s) and to broader policy orientations (eg. treaty, policy principles, etc.)

Make sure that the objectives are directly related to the identified problems!

**Policy Options**

1. Define at least three possible policy options to tackle the problem.
2. Present each option and set out the advantages and disadvantages of each option (keeping in mind the objectives).
3. Assess the effectiveness of each policy option

# 2. Summary

* The EU Waste Shipment Regulation requires that EU flagged ships can only be dismantled in OECD countries.
* The Waste regulation is poorly implemented because more than 90% of EU ships are dismantled in Asia (Bangladesh, Pakistan, India and China) after reflagging to a non EU-flag.
* The recycling methods in Asia mainly involve “beaching”, a dismantling method which comes at a high human health and environmental cost.
* The 2009 International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong Convention), seeks address the environmental, occupational health and safety risks related to Ship recycling. The Convention regulates ships (eg. inventory of hazardous materials, certificates, ship recycling plan, etc.) and ship recycling facilities (eg. authorized facilities, improved management of hazardous materials, etc.).
* The Hong Kong Convention is not yet ratified and enters into force when states covering 40% of the World’s merchant fleet and the states covering 40% of dismantling capacity, ratify the Convention (Bangladesh, Pakistan, India and China cover 95% of the dismantling capacity). The Convention is not expected to enter into force before 2020.
* EU member states have committed to ratification but none have done so yet.

# 3. Context

According to the current legislation (the Waste Shipment Regulation), the EU flagged ships which are going for dismantling are hazardous waste and can only be dismantled within the OECD. This legislation is almost systematically circumvented by EU flagged ships. Currently, most EU controlled ships are indeed dismantled in Asia (India, Pakistan and Bangladesh), usually through "beaching" method and with significant environmental and health impacts.

This widespread non-compliance is firstly linked with the lack of recycling capacity available within the OECD in particular for the largest ships. Developing capacity within the OECD has not been feasible in particular because of the lack of economic viability. The non-compliance is also partially driven by the interest of shipowners to avoid the costs of environmentally and socially acceptable dismantling in OECD facilities, and partially by the ease with which the legislation can be avoided: EU shipowners can with limited effort maximise the profit from selling their old vessels by choosing a non-EU jurisdiction for their vessels at the end of the life of the ships.

The Commission adopted a Communication proposing an EU strategy on ship dismantling in 2008. This strategy proposed measures to improve ship dismantling conditions as soon as possible, including in the interim period before the entry into force of the Hong Kong Convention: i.e. preparing the establishment of measures on key elements of the Convention, encouraging voluntary industry action, providing technical assistance and support to developing countries and better enforcing the current legislation. The Commission also announced that it would look at the feasibility of developing a certification and audit scheme for ship recycling facilities worldwide, and establishing a mandatory international funding system for clean ship dismantling.

The Hong Kong Convention, when it comes into force, will require Parties to the Convention (including EU Member States) to dismantle their large commercial ships only in countries that are Party to the Convention. This will include Asian countries, whose ship dismantling facilities will need to meet internationally accepted standards (higher than the current standards). These facilities will have to treat the ships coming from non-Parties to the Convention in a similar manner as ships flying the flags of the Parties to the Convention.

The Convention was adopted in 2009 but needs to be ratified by a sufficient number of large flag and recycling states in order to enter into force and start producing effects. This is not expected to happen before 2020 at the earliest.

# 4. Consultation of interested parties

Most stakeholders clearly supported a prompt ratification of the Hong Kong Convention by the EU Member States in order to fulfil, to a large extent, its entry into force of provisions related to flag States whilst encouraging ratification by other States. Many stakeholders are in favour of early implementation of the Convention by the EU since they consider that waiting for entry into force of the Convention is unacceptable when ship breaking workers continue to be killed or injured at work and considerable environmental damage occurs. Some consider that the EU should not impose additional requirements that go beyond the Convention.

The main positive consequence of early implementation would be the improvement of ship recycling operations with respect to worker health and safety and environmental protection. Many stakeholders take the view that a harmonised transposition at EU level will ensure a more level playing field and reduce administrative burdens for ship owners and recycling facilities in the EU. Early transposition could also encourage the development of more ship recycling facilities. It is suggested that the Commission should promote ratification among the Member States and use its political influence to encourage recycling States to take similar action so that sufficient global ship recycling capacity is maintained.

The most significant negative consequence of early implementation identified by the stakeholders is the risk of reflagging of EU ships during their operational life to an "open register", or the reflagging of ships nearing the end of their life to non-EU countries in order to avoid complying with regional measures. Reflagging would result in a reduction of the size of the EU fleet and the EU's influence with regard to maritime issues. Another risk is that implementation would be too rapid and there would not be enough recycling capacity available for EU flagged ships in view of the phasing out of ***single hull tankers*** (2017). Finally, some stakeholders point out that since early implementation at EU level could make ratification by Member States apparently redundant and therefore discourage them to ratify the Convention thus postponing its entry into force.

# 5. Issues and international context

## 5.1 Large commercial European ships end up in substandard dismantling facilities outside the OECD leading to negative health and environmental impacts

The dismantling of ships is at present sustainable from a narrow economic point of view, but the costs for human health and the environment are high. It is fair to say that with regard to end-of-life ships the polluter pays principle is usually not applied. Ship owners generally make a profit from selling their obsolete ships to ship dismantling facilities or intermediate buyers, and they can maximise this profit when selling to facilities which do not follow the strictest health and safety and environmental standards.

Ship dismantling is, in principle, a very positive activity leading to reuse and recycling of large amounts of valuable resources (steel, other scrap metal and equipment in particular). But ships also contain large amount of hazardous materials such as asbestos, PCB, heavy metals, oil, mercury, ozone depleting substances (ODS) which, if not handled, removed and disposed of in a safe and environmentally sound manner (ESM) lead to significant detrimental effects on both human health and the environment.

Most ship dismantling takes place nowadays in South Asia, on tidal beaches and under unacceptable conditions from the point of view of safety and environmental protection. This has not always be the same. Looking back, the demolition of (European) vessels has moved from the Europe and Japan during the 60's and 70's to Asian countries such as Taiwan and South Korea in the 80's where dismantling took place along piers in connection with ship building activities. As the economy grew in South Korea and Taiwan, labour costs increased making ship dismantling less attractive in these countries.

During the 1980's the method of "beaching" became the most frequent method used for demolition since expensive infrastructures like piers, sufficient depth of the harbour, cranes etc. could be replaced by a mud flat, portable equipment and a huge labour force. The South-East Asian countries are nowadays dominating the dismantling industry. Today, 95% of ship dismantling takes place in five countries (Bangladesh, China, India, Pakistan and Turkey). In these countries ship dismantling provides for employment opportunities, and resources such as scrap metals which are important in particular for the construction sector (Pakistan, Bangladesh, India) and for ship building (China). The current practices have however significant costs in the short and in the long term for human health and the environment.

*Ship dismantling provides for hundreds of jobs but with important short term and long term impacts.*

The number of jobs associated with ship dismantling depends upon the dismantling practices. It is pretty limited in the countries which uses the slipway; docking or afloat method. In countries using the beaching method, such as Bangladesh, India and Pakistan the level of mechanisation and the labour costs are low and this industry offers thousands of jobs.

But in these countries, ship dismantling involves high risks for human health both at the time of dismantling (deaths, injuries) and in the long term (asbestosis for example). This is primarily due to dangerous working practices (lack of training and of protective equipment, insufficient precautions against explosions and falling hazards...) and to the hazardous materials on board old ships.

Safety and health conditions in many South Asian facilities are known to be critical but official records are rarely kept, accidents and incidents are underreported and access to facilities by third party is often restricted. Unlike in India where the regional government has started to organise safety training for workers, no systematic accident precautions are at present visible in Bangladesh.

Child labour is still a reality in Bangladesh, as children represent a cheaper work force that is easy to control and unlikely to defend its rights, and even more unlikely to organize into trade unions.

*Ships contains large amount of hazardous materials which are not treated in an environmentally sound manner thus creating negative impacts*

According to estimates from the World Bank, more than 80 000 tons of asbestos, 256 000 tons of PCB, 224 000 tons of Ozone Depleting Substances (ODS) and around 74 000 tons of heavy metals are expected to be sent in ships for dismantling to Bangladesh and Pakistan over 2010-2030. Since there are no formal waste disposal sites in these countries, the waste mainly remain in the facilities and pollutes the water, the beach sediments, the soil of the seashore and coastal habitats. A small part is sold in equipments (PCB or ODS) or sent to rerolling mills (paints).

The dismantling of ships in South Asia takes place on sandy beaches without concrete covering or any other containment other than the hull of the ship itself. One of the traditional "cleaning" methods is the drilling of holes into the beached ship through which sea water can wash out oil-contaminated tanks at high tide. End-of-life ships are rarely pre-cleaned before their arrival.

*Insufficient dismantling capacity within the OECD*

According to the Waste Shipment Regulation, end of life ships are hazardous waste and should be dismantled in the OECD only.

Several stakeholders mentioned the lack of sufficient dismantling capacity (shipowners, Member States) as one of the main reasons leading to a lack of implementation of the current legislation and, consequently, as one of the main issues to resolve in any possible legislation. A majority of ship owners indeed prefers to have ships dismantled where the revenue from selling the ships is higher, thus making the establishment of a business case in the EU extremely difficult.

The dismantling capacity within the EU is therefore not able to accommodate the whole range and the total volume of the commercial EU flagged ships.

A significant recycling capacity exist outside the OECD in China, India, Pakistan and Bangladesh.

Responsible European shipowners have invested in safe and sound recycling facilities located in China and applying EU standards. The current existing capacity available in China (2,83 millions LDT in 2009 ) is already largely sufficient to treat all EU flagged ships by 2030 (the maximum yearly volume in the period 2012-2030 will be of 1,88 million LDT) and a new facility with a capacity of 1 million LDT will shortly start its activities.

*An unfair competition in favour of poor quality dismantling*

The current situation of the ship recycling market is characterised by fierce competition between the major recycling states Bangladesh, India and (to a lesser extent) Pakistan. According to the prices paid in 2009, the most competitive country is Bangladesh (299 $/LDT) followed by India (273$/LDT ) and Pakistan (271$/LDT ).

Other competitors with higher technical standards are only able to occupy market niches for special types of ships like small ships and government vessels including warships (EU and Turkey) or the fleet of committed shipowners (Turkey and China). Facilities in China, Turkey and the EU are considered to be compliant already with the standards set up in the Hong Kong Convention. Limited investment will be needed in India where facilities have improved after the Supreme Court had decided to turn some key requirements of the, at the time draft, Hong Kong Convention into domestic law. As highlighted in the study from the World Bank, significant investments in infrastructure, training and protective equipments would however be necessary in Pakistan and Bangladesh.

Contrary to other type of waste, shipowners are paid for getting their ships recycled. From a shipowner's point of view, ship recycling is beneficial and depend mainly upon the price offered by the ship recycling facility or by an intermediate (the "cash buyer").

Shipowners decide at what point in time a ship will be sent for dismantling based on an economic comparison between the costs (maintenance, renewal of certificates..) and benefits (freigh rates) of maintaining an ageing ship in operating conditions and the benefits of sending it for dismantling.

The choice of the dismantling location is then influenced, in particular, by the price a facility can offer to the intermediary "cashbuyer"or to the ship owner. This price in turn depends on:

* Labour costs: operators in South Asia employ many unskilled labourers at extremely low wages of about 2,5 dollar per day.
* Costs of infrastructure for worker's safety and environmental protection which are linked with the dismantling methods employed as well as the existence and the level of implementation of national and international regulations regarding workplace safety and environmental impacts.

**Table 1: Dismantling locations of large EU flagged commercial ships in terms of percentage of total recycling in 2009**

|  |  |  |
| --- | --- | --- |
| Dismantling location for EU flagged - ships | Main dismantling method | Dismantling fraction of total |
| India, Pakistan, Bangladesh | Beaching | 69,81% |
| China | Afloat | 22,75% |
| OECD non EU | Landing, afloat | 6,36% |
| EU | slipway, docking | 0,85% |
| Other | | 0,23% |
| Total | | 100,00% |

There is thus a strong economic incentive for ship owners who are not willing to act responsibly to choose recycling facilities with a particularly poor social and environmental standard. Other countries like China, Turkey and several EU Member States with capacity for ship dismantling in dry docks, at piers and on hard slipways only account for a smaller fraction of the market as they are typically priced out of the market.

*The possibility to change flag.*

Every ship has to be registered under a flag. The flag state, as defined by the United Nations Convention on the Law of the Sea, has overall responsibility for the implementation and enforcement of international maritime regulations for all ships granted the right to fly its flag. Changing flag, which can be done with very limited effort in time and expenditure, allows the shipowners to change the legal regime for the ship.

The large majority of stakeholders (shipowners, Member States, environmental NGOs...) commented on the difficulty for enforcing legislation given the ease with which owners can change flags.

Change of flag prior to dismantling is already a reality since EU flagged ships represented 17,6 % of the active fleet but only 8 % of the ships at the time of dismantling in 2009 and 15,1 % in 2008. Certain flags offer specific short term/single voyage registration for around 10 000 dollars (for a Panamax ships this would represent 1 $/LDT) which is a negligible cost compared with prices offered by the recycling facilities.

## 5.2 International and national policy approaches

The Hong Kong Convention was adopted in May 2009 but is not expected enter into force and to start producing effects before 2020. The Hong Kong Convention needs to be ratified by both major flags states and recycling states which will take longer.

The Hong Kong Convention requires ships flying the flag of a Party ("Party ships") to be dismantled only in authorized recycling facilities located in another Party to the Convention ("Party facilities"). Party facilities would be allow to treat also non-Party ships provided that they treat them similarly to Party ships (clause of "no more favourable treatment").

To be authorized, facilities will have to comply with the detailed requirements of the Convention regarding safety, the protection of human health and the environment and they will have to be subject to a site inspection from the authorities. The Hong Kong Convention does not contain requirements which would explicitly rule out the "beaching" method which has been controversial because of its environmental and health impacts. Ships will have to minimize and document (Inventory of Hazardous Materials) the amount of hazardous waste present on board. Based on this inventory and on its authorization, the ship recycling facility will develop a ship-specific document (Ship Recycling Plan) to describe how this particular ship will be dismantled and how the hazardous waste will be managed in the facility. The shipowner will have to inform in writing its flag state about the intention to recycle the ships and then to provide the Inventory of Hazardous Materials (IHM) and the Ship Recycling Plan (SRP) to its flag state. The latter will conduct a final survey on board the ship to verify that the IHM is complete, that the SRP properly reflect the IHM and about the maintenance of safe working conditions for workers and, finally, that the ship recycling facility is authorized. The ship recycling facility will inform its authorities of the start and the completion of the recycling. The authorities will inform back the flag state of the completion of the dismantling.

The Hong Kong Convention is adapted to the specificities of shipping since it relies on the system of international surveys and certification for ships during their life cycle, on port state controls. Moreover, it contains an obligation for shipowner to inform in writing and in advance their flag state of their intention to recycle their ships, thus resolving the current problem of identifying when a ship turns into waste.

Facilities located in Parties to the Hong Kong Convention will have to treat similarly ships flying the flag of Parties to the Convention and ship not flying the flat of Parties thus limiting the incentive of changing flags only in order to benefit from a more favourable legal regime. As long as the 5 major ship recycling states which represent more than 90 % of the dismantling activity are Parties to the Convention, there will be major improvements compared to the current situation. One possible problem would be faced if one or two recycling countries decides not to join the Hong Kong Convention. In this case, there will continue to be two markets competing which each other: one with substandard facilities offering better prices for shipowners and another one compliant with the Convention. And since changing flag is legal, easy and negligible, one can expect that some shipowners would continue to change flags in order to circumvent the legislation.

The main elements of the Hong Kong Convention entail the following administrative requirements:

For all ships

(1) Establishing Inventory of Hazardous Materials (IHM)

(2) Issuing and checking of certificates based on the IHM

(3) Port state control of certificates for ships calling EU ports

(4) Flag-state control for EU Member State flags

Preparation for recycling

(5) Checking of IHM certificates for ships calling European ports.

(6) Update of the IHM's

(7) Issuing and checking of the Ready to recycle certificates

(8) Issuing and checking of ship recycling plans from recycling facilities

(9) Costs (loss of net revenue) for selling a ship for recycling at a facility with a certain   
 minimum HSE standard

Recycling facilities

(10) Preparation and issuing of ship recycling facility management plan and emergency   
 preparedness and response plans for ship recycling facilities

(11) Authorisation of ship recycling facilities