Financial mechanisms to ensure responsible ship recycling

A research paper prepared for the NGO Shipbreaking Platform

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ECONOMIC RESEARCH

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NGO SHIPBREAKING PLATFORM

Why Do We Need a Financial Mechanism?
Foreword by the NGO Shipbreaking Platform

More than 200 end-of-life vessels flying the flags of EU member states or being owned by European shipowners have been sent for breaking to South Asia in 2012. These ships were run ashore on tidal beaches in India, Bangladesh and Pakistan where poor and unskilled migrant workers break them down manually. The vessels contain toxics such as asbestos, PCBs and heavy metals and little care is given to worker safety and environmental protection. The hazardous wastes sicken the workers and ravage coastal ecosystems. The beaches cannot support heavy lifting equipment, while the lack of safety gear and emergency response equipment and precautionary measures lead to regular fires and explosions. As a consequence, accidents injure or kill hundreds of workers every year. The global shipbreaking crisis is even likely to deteriorate, as more and more ships are sent for breaking due to overcapacities in the shipping sector and the phasing-out of single-hull oil tankers.

The current methods of shipbreaking are in violation of international labour standards as well as of hazardous waste management laws, as neither the importing states in South Asia nor the exporters and flag states of end-of-life vessels ensure that the recycling of ships is accomplished in an environmentally sound and safe way.

For these reasons, the practice of breaking European-owned and -flagged ships in developing countries remains a serious challenge for policy-makers in the European Union. In 2007, the Commission acknowledged the human and environmental costs of shipbreaking and proclaimed that a “radical change” was needed. In its Green Paper “On Better Ship Dismantling”, it stressed that investments to improve standards should not be made at public expense, but that “the polluter pays and producer responsibility require that owners take full responsibility for proper disposal”. It concluded that a mandatory ship recycling fund should be operated by the IMO or at a regional level.

When the Commission finally proposed a Regulation on Ship Recycling in March 2012, the NGO Shipbreaking Platform and its members were dismayed by the unexpected twist in the Commission’s policy deciding not to seek better enforcement of the Basel Convention, but instead to facilitate the export of end-of-life vessels to countries outside the OECD. Moreover, the proposal did not include a financial mechanism for clean ship recycling, although this had been identified as an efficient measure to achieve speedy improvements on the ground.

The Platform is pleased to see that more and more Members of the European Parliament and EU member states are supportive of a financial mechanism in order to achieve the “radical change” the Commission had declared a political priority.

A mandatory financial mechanism is deemed to be a vital component in order to achieve the following important objectives:

1. **to internalize the costs** for proper ship recycling and the management of hazardous wastes;
2. **to discourage the reflagging** of end-of-life vessels to avoid European regulations;
3. to implement an **individual shipowner responsibility scheme** which encourages the shipping industry to **procure green ship design and pre-clean** ships during operational use.

1. Internalizing Costs

The Polluter-Pays Principle or cost internalization is at the core of environmental policies on waste management of the European Union, Organisation for Economic Cooperation and Development (OECD) and the United Nations Environment Programme (UNEP). A financial mechanism will put this principle into effect, impel shipowners to make a choice for responsible recycling and encourage the development of clean and safe ship recycling facilities also within the EU. The costs of proper management of hazardous wastes will be borne by those profiting from ships during their lifecycle instead of externalizing them to vulnerable countries.

2. Avoiding reflagging

The effectiveness of a future EU Regulation on Ship Recycling is threatened by the risk of re-flagging European ships to non-EU countries in order to avoid the obligations under the regulation. Even if the EU needs to take further measures to prevent the out-flagging of European-owned ships, a financial mechanism for proper ship recycling covering all ships calling at EU ports will discourage re-flagging shortly before breaking.

3. Promoting Green Design and Pre-Cleaning

The polluter pays principle should not be seen as a “polluter pollutes and then pays to pollute principle”. In this case, the pollution stems from the original decisions to produce ships using toxic materials. Therefore, an effective solution needs a driver to prevent the use of hazardous materials in new ship design or for those ships already made, a driver to have them pre-cleaned during their useful life. While the Hong Kong Convention in its Preamble cites the Substitution Principle, which requires seeking out alternatives in ship design to hazardous substances whenever possible, the Convention contains no actual measures to implement this objective. If financial burdens are decreased for ships containing less hazardous materials and for those that are designed for ease of recycling, incentives are created to drive green design and pre-cleaning. Any financial mechanism must be based on an individual shipowner responsibility scheme. The decision for green design and pre-cleaning rests with the shipowner and not with the recycler. Thus, the pay-out of any fund driving green design needs to benefit the owner on condition that a ship is recycled in an EU-approved yard.

The NGO Shipbreaking Platform strongly promotes the inclusion of a financial mechanism based on these three objectives into the future EU Regulation on Ship Recycling. This study as well as an earlier study prepared for the European Commission propose an array of alternative models and show that such a mechanism is legally allowed, enforceable, and effective.

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The NGO Shipbreaking Platform
Executive Director

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Summary

In March 2012, the European Commission proposed a Regulation on Ship Recycling, which aims to significantly reduce the negative impacts linked to the recycling of EU-flagged ships. The proposal requires all EU-flagged ships to be recycled in a responsible manner at recycling facilities that are certified by the European Union. However, the proposal's effectiveness is seriously undermined by the threat of increased reflagging of EU-flagged ships to avoid the requirements of the regulation. The proposal also lacks a financial mechanism that would ensure that the Polluter-Pays Principle, which is at the core of all policies and studies on waste management of the European Union, is respected.

This study therefore analyses possible financial mechanisms that could be included in the EU Regulation on Ship Recycling to improve its effectiveness in ensuring that ships are recycled in a responsible manner. This analysis has led to the conclusion that a financial mechanism introduced in the European Union would not make sense if it were based on the flag or ownership of a ship. Rather, it should be based on the arrival and/or departure of ships from European ports. If ships are required to participate in a financial mechanism that promotes responsible ship recycling prior to being permitted entry to European ports, EU and non-EU flagged ships would be covered and the mechanism could not be avoided by simply reflagging European ships.

Three options for financial mechanisms are further researched based on a discussion of existing literature, an analysis of the experiences with comparable recycling fund structures in the automobile and electronics sectors, a legal analysis and interviews with a large number of stakeholders in the shipping industry:

- Option 1 is a Ship Recycling Fund, which is filled by a fee on all ships calling at EU ports. The owners of "EU ships", which are recycled at certified recycling facilities, could recover from this fund the additional costs of responsible recycling. Such an option seems feasible as shipowners already pay port fees for port services. It will require an institutional set-up to determine which ships are eligible for support.

- Option 2 is a Ship Recycling Insurance, arranged between the shipowner and an accredited insurance company. Showing a valid insurance certificate could be required of all ships entering European ports. The premiums paid for the Ship Recycling Insurance during the lifetime of the ship, would cover the additional costs of responsible recycling of the ship at the end of its life. The insurance company will only pay-out on proof of responsible recycling at an authorised facility.

- Option 3 is a Ship Recycling Account in combination with a Transitional Fund. Over the course of 20 years, each shipowner makes annual deposits to the Ship Recycling Account (SRA) of the ship, which is managed by a bank or asset manager. The annual SRA Certificate will allow the ship to enter EU ports. Upon proof of responsible recycling, the SRA is paid in cash to the shipowner.
  A temporary surcharge on the deposits of all ships made to their SRA, should be transferred to a Transitional Fund. With these proceeds, the Fund can subsidize the responsible recycling of older ships. Only ships which have made uninterrupted annual deposits (for a minimum number of years) in a Ship Recycling Account from the year the EU Regulation is implemented, and which have entered EU-ports a minimum number of times during this period, are eligible for support.

The legal analysis suggests that there will not be any strong legal objections to any of the three options, as long as they respect the non-discrimination principle as laid down in the WTO/GATT agreements. Placing European Court financial obligations on non-EU companies is not contrary to principles of customary international law, as each State has complete and exclusive sovereignty over its territory.

Directive 2000/59 on port reception facilities introduces in European law a system of fee levying based on the Polluter Pays principle, regardless of the use that each individual ship will make of the reception facilities in the port. This directive could serve as an example for the levying of fees for a ship recycling fund.

Directive 2009/16 lays down the legislation necessary for port authorities of the Member States of the European Union to enforce international obligations and to control ships before and during the entry of a port. This directive could serve as the basis for options 2 and 3.

However, when we compare the three options with each other and with the present EC proposal with regard to institutional costs, effectiveness and efficiency, we can draw some clear conclusions:

In comparison to the EC proposal, Option 1 (the Ship Recycling Fund) has the advantage that it can immediately finance the responsible recycling of existing ships that are currently near end-of-life. The immediate impact on scrapping practices would potentially be large, while the total incremental cost burden on the shipping industry would be bearable.

Option 2 (the Ship Recycling Insurance) and Option 3 (a Ship Recycling Account with a Transitional Fund) will however have more advantages in comparison to the EC proposal:

- Different from the Ship Recycling Fund, they apply the Polluter-Pays Principle, since the shipowners paying insurance premiums or annual deposits to their SRA are also the ones benefiting from the economic use of the ship over its lifetime;
- the mechanism will not only encourage European-flagged ships, but all ships calling at European ports to recycle their ships in a responsible way. The owners of these ships can only enter EU ports if they pay annual recycling premiums or make annual SRA-deposits, while this money will only be available when the ship is recycled responsibly. More ships will therefore be recycled responsibly than under the EC proposal;
- both options also stimulate Individual Producer Responsibility, as the premiums/deposits will decrease when the ship is designed in such a way that responsible recycling is more feasible.

In comparison to the Ship Recycling Fund (see Chapter 3), the Ship Recycling Account in combination with a Transitional Fund have the following advantages:

- although this combined option also includes a fund structure, it is easier to implement, with lower institutional costs, as the fees for the Transitional Fund are not levied by the port authorities, but are collected as surcharges on the annual deposit on the SRA;
- in the long term, it will eliminate the problem associated with determining which ships would be eligible for a subsidy from the Ship Recycling Fund, as each ship will save for the costs of its own responsible recycling through its SRA;
- it will stimulate competition between recycling facilities and will thereby help to bring down the additional costs of responsible ship recycling, which would also be relevant to encourage shipowners which do not visit EU ports to choose responsible recycling.

In comparison to the Ship Recycling Insurance (see Chapter 4), the Ship Recycling Account in combination with a Transitional Fund has some additional advantages:

- it will have a more immediate impact on ship recycling practices, as the Transitional Fund will deal with the responsible recycling of existing, older ships;
- as this is not an insurance, the insurance company does not have to be paid for taking the risk of an uncertain pay-out amount. The annual deposit into the Ship Recycling Account therefore will be lower than the annual insurance premium paid for the Ship Recycling Insurance.
- all deposits paid into the SRA will be available for the last shipowner, upon proof of responsible recycling. If the additional costs of responsible recycling at the end of the ships life are lower than calculated, this will result in a financial benefit for the shipowner. Theoretically, the opposite could occur as well. But with the big strong impetus given by this option to responsible recycling worldwide, it seems very likely that the costs for responsible ship recycling will drop.

The main disadvantage of the Ship Recycling Account in combination with a Transitional Fund is:

- the Transitional Fund will also incur some institutional costs, especially as attention needs to be paid to avoid misuse of subsidies.

As the EC proposal and the other two options have fewer advantages and more disadvantages, we conclude that the Ship Recycling Account in combination with a Transitional Fund is the most preferable option. A more detailed study would be necessary to research in depth the details of this option.

Introduction

Environmentally unsound and unsafe practices for dismantling ships remain a matter of serious concern. At the end of their operating life, most large commercial seagoing vessels in the world are being dismantled in “beaching” facilities in India, Pakistan and Bangladesh using methods with significant environmental and health impacts.

The situation is likely to worsen since large numbers of ships are expected to be sent for dismantling in the coming years as a result of the current overcapacity of the world fleet, which is estimated to remain for at least 5 to 10 years. In addition, the coming peak in ship recycling that will occur around the phasing-out date for single-hull tankers (2015) is expected to essentially benefit the most sub-standard facilities.

In March 2012 the European Commission proposed a Regulation on Ship Recycling, which aims to reduce significantly the negative impacts linked to the recycling of EU-flagged ships, without creating unnecessary economic burdens. The possible effectiveness of this proposal to ensure that the European shipping sector recycles its end-of-life ships in a sustainable way is seriously undermined by the threat of increased reflagging of EU-flagged ships to avoid the requirements of the regulation.

This reflagging loophole is related to another fundamental flaw of the proposed EU Ship Recycling Regulation: the proposal lacks a financial mechanism that would ensure that the Polluter-Pays Principle is respected. The Polluter-Pays Principle is at the core of all policies and studies on waste management of the European Union, Organisation for Economic Cooperation and Development (OECD) and the United Nations Environment Programme (UNEP).

This study is therefore analysing possible financial mechanisms that could be included in the EU Ship Recycling Regulation to better conform to the Polluter-Pays Principle that is embedded in the EU, OECD and UNEP waste management policies. This should make the regulation more effective in ensuring that ships are recycled in a responsible manner. Such a financial mechanism should encourage the development of environmentally sound and safe ship recycling capacity in Europe and elsewhere, and drive shipowners to dismantle their ships at these facilities.

The contents of this report are as follows: Chapter 1 analyses the background of the European Commission proposal on an EU Ship Recycling Regulation, the relevant international conventions and the Impact Assessment paper of the EC Staff.
Chapter 3, Chapter 4 and Chapter 5 identify financial mechanisms that could complement and strengthen the proposal of the European Commission. Questions to be answered include how the mechanism would work, which ships and shipowners can be covered by the mechanism, at what moment of location the mechanism would affect the ship(owner) and what the possible economic implications could be.

Chapter 3 concentrates on ship recycling funds options, discussing previous reports by Milieu/COWI and Ecorys as well as systems that stimulate proper removal and recycling of products in other industrial sectors (cars, electronics). The pros and cons of all alternatives identified are discussed, the legal implications are studied and an assessment of the needed size is made.

Chapter 4 discusses recycling insurance options by analysing related legislation on liability and insurance in the shipping sector and making a comparison with recycling insurance arrangements in the electronics sector. The legal implications of this option are studied as well.

Chapter 5 introduces another option, the ship-based recycling account. This option is analysed and compared with the two other options. A complementary arrangement, a transitional fund, is also discussed.

You can find a summary of the findings and conclusions of this study on the first pages of this report.

Chapter 1 Analysis of the European Commission proposal

1.1 Introduction

This chapter analyses the content and background of the European Commission proposal for a Regulation on Ship Recycling to better understand the weaknesses of the proposal and to identify options to improve its effectiveness. As the EC proposal is based on the Basel Convention and the Hong Kong Convention, these conventions are first discussed briefly (paragraphs 1.2 and 1.3). In paragraph 1.4 the content of the European Commission proposal is briefly summarized, while paragraph 1.5 discusses the consistency of the proposal with the Polluter-Pays Principle.

1.2 Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is the most comprehensive global environmental treaty on hazardous and other wastes. It has 179 member countries (Parties) and aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements and disposal of hazardous and other wastes. The Basel Convention was adopted in March 1989 on the initiative of the United Nations Environment programme (UNEP) and entered into force in May 1992.[1]

The Basel Convention regulates the transboundary movements of hazardous and other wastes applying the “Prior Informed Consent” procedure (shipments made without consent are illegal). Shipments to and from non-Parties are illegal unless there is a special agreement. Each Party is required to introduce appropriate national or domestic legislation to prevent and punish illegal traffic in hazardous and other wastes. Illegal traffic is criminal. The Convention obliges its Parties to ensure that hazardous and other wastes are managed and disposed of in an environmentally sound manner (ESM). To this end, Parties are expected to minimize the quantities that are moved across borders, to treat and dispose of wastes as close as possible to their place of generation and to prevent or minimize the generation of wastes at source. Strong controls must be applied from the moment of generation of a hazardous waste to its storage, transport, treatment, reuse, recycling, recovery and final disposal.[2]

Within the framework of the Basel Convention, a large body of technical guidelines on the management of specific waste streams has been developed. These non-binding instruments have been designed for the use of governments at all levels, as well as other stakeholders, to provide practical guidance and thus facilitate the management of the relevant waste streams.[3] One of the technical guidelines deals with “the environmentally sound management of the full and partial dismantling of ships”.[4]

End-of-life ships comprise of an array of hazardous materials – such as asbestos, PCBs and waste oils – which can have serious implications for the environment and human health if not managed properly. Most ships destined for dismantling are not owned by a company located in the state in which they are to be recycled. Their last voyage to the recycling yard therefore represents a transboundary movement of hazardous waste as defined by the Basel Convention. [5]

The Basel Convention itself prohibits all transboundary movements of hazardous and other wastes from parties to non-parties. In 1995, an Amendment to the Basel Convention ("the Ban Amendment") was adopted, which further restricts international trade. The Ban Amendment prohibits all transboundary movements of hazardous wastes for final disposal and for reuse, recycling or recovery operations from OECD-countries to non-OECD-countries.[6]

At the European Union level, the Ban Amendment has already entered into force, through the Waste Shipment Regulation of June 2006 (see below).[7] But the Ban Amendment has not yet entered into force at the international level, as only 73 Parties have ratified it.[8] At the 10th Basel Conference of the Parties (COP10) in 2011, the ratification process for the Ban Amendment was finally agreed upon. There are currently 17 countries missing for the Ban Amendment to enter into force.

In 1999, the Basel Protocol on Liability and Compensation was adopted to provide for a comprehensive regime for liability as well as adequate and prompt compensation for damage resulting from the transboundary movement of hazardous wastes and other wastes, including incidents occurring because of illegal traffic in those wastes.

The Protocol addresses who is financially responsible in the event of an incident. Each phase of a transboundary movement is considered, from the point at which the wastes are loaded on the means of transport, to their export, international transit, import, and final disposal. [9] This Protocol has not yet entered into force at international level, as only 23 Parties have signed or accepted it. Entry into force is pending on the ratification by 20 Parties.[10]

In the European Union the Waste Shipment Regulation of June 2006 implements the requirements of the Basel Convention. It also implements the so-called Ban Amendment, which prohibits the export of hazardous waste outside the OECD. The Waste Shipment Regulation cities Basel decision VII/26 that "it should be noted that a ship may become waste as defined in Article 2 of the Basel Convention and that at the same time it may be defined as a ship under other international rules". This means that any ship containing hazardous materials and that which is dispatched from an EU port to sail to a recycling facility, according to the EU Waste Shipment Regulation, is only allowed to sail to a recycling facility in an OECD country.[11]

The Basel Protocol on Liability and Compensation is not implemented in the EU, although it has been signed or accepted by a number of member states (Denmark, Finland, France, Hungary, Luxembourg, Sweden and the United Kingdom). [12]

1.3 Hong Kong Convention

Given the global nature of the shipping industry and the practices associated with sending end-of-life ships for recycling, there has been difficulty in applying the provisions of the Basel Convention to ship recycling.[13] The International Maritime Organization (IMO) took up the issue and established a working group. Partly based on the work of this working group, in May 2009, the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships was adopted at an international IMO conference on ship recycling, which was attended by delegates from 63 countries.[14]

The regulations in the Hong Kong Convention are meant to cover:

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

Ships to be sent for recycling will be required to carry an inventory of hazardous materials, which will be specific to each ship. Ships will be required to have an initial survey to verify the inventory of hazardous materials, additional surveys during the life of the ship, and a final survey prior to recycling.

Ship recycling yards will be required to provide a "Ship Recycling Plan", specifying the manner in which each ship will be recycled, depending on its particulars and its inventory. Countries that have ratified the Hong Kong Convention ("Parties") will be required to take effective measures to ensure that ship recycling facilities under their jurisdiction comply with the Convention.

Parties are also required to take effective measures, such as inspections, to ensure that ships entitled to fly its flag or operating under its authority, comply with the requirements set forth in the Convention. Additionally, Parties are required to prohibit any violation of the requirements of the Convention and establish sanctions under its laws, wherever the violation occurs.

The Hong Kong Convention does not follow the Polluter-Pays Principle (see paragraph 1.5) as it does not include any financial mechanism which would ensure internalization of external costs and which would strengthen the effectiveness of the convention.[15]

The Hong Kong Convention has not yet entered into force. As of July 2012, only five countries - including the EU member states France, Italy and the Netherlands - have ratified the Convention.[16] The European Commission expects the Hong Kong Convention, at the earliest, to enter into force in 2015. The new international regime is likely to become fully effective even later, by the end of 2020 at the earliest.[17]

1.4 European Commission Proposal on Ship Recycling

In March 2012 the European Commission published a Proposal for a Regulation of the European Parliament and of the Council on Ship Recycling. The proposal notes that the Waste Shipment Regulation of the European Union (see paragraph 1.2) is not effective in ensuring that EU-flagged ships are dismantled in line with the Hong Kong Convention. A number of reasons are given for this, of which the most important is that the Waste Shipment Regulation is not adapted to the specificities of ships. Identifying when a ship becomes a waste is difficult. Shipowners' decisions to send their ships for recycling are based on economic factors and can be taken when the ship is in international waters. If the shipowner does not declare the intention to dismantle a ship when leaving an EU port, the relevant authorities typically do not intervene. It is also common for a ship to be sold to another operator under the pretence that the ship will continue trading only for it to be transferred to a ship dismantling facility. [18]

To deal with this situation and transpose the Hong Kong Convention into a European Union Regulation, the European Commission has developed the following proposal: [19]

- A system of survey, certification and authorisation is proposed for large commercial seagoing vessels that fly the flag of an EU Member State, covering their whole life cycle from construction to operation and recycling;
- European ships will have to draw up an inventory of the hazardous materials present on board, and apply for an inventory certificate. The amount of hazardous waste on board (including in cargo residues, fuel oil, etc.) must be reduced before the ship is delivered to a recycling facility;
- Ship recycling facilities will have to meet a set of environmental and safety requirements in order to be included on a list of authorised facilities, which can be situated worldwide. European ships will be allowed to be recycled only in facilities on that list;
- The owners of EU-flagged ships must report to national authorities when they intend to send a ship for recycling. The European Commission expects that authorities will be able to identify illegal recycling more easily by comparing the list of ships for which they have issued an inventory certificate with the list of ships that have been recycled in authorized facilities;
- Member States shall ensure that effective, proportionate and dissuasive penalties are applicable to ships that do not comply with this regulation. In particular, where a ship is sent for recycling in a ship recycling facility that is not included in the European list the applicable penalties shall, as a minimum, correspond to the price paid to the shipowner for its ship.
- To deal with the practice that ships are sold to another owner, in order to let the new owner dismantle the ship, the proposal states: “Where a ship is sold and, within less than six months after the selling, is sent for recycling in a facility which is not included in the European list, the penalties shall be:
- jointly imposed to the last and penultimate owner if the ship is still flying the flag of a European Member State;
- only imposed to the penultimate owner if a ship is not flying anymore the flag of a European Member State.
- Ships covered by the proposed *EU Ship Recycling Regulation* are no longer covered by the *EU Waste Shipment Regulation*. [20]

Following the co-decision process, the European Parliament and European Council have been asked to evaluate the European Commission’s proposal. At present, the proposal is awaiting the first reading by the European Parliament.[21]

The following two sections deal with the two main shortcomings of the European Commission proposal: the inconsistency with the Polluter-Pays Principle and the reflagging loophole.

1.5 Consistency of the proposal with the Polluter-Pays Principle

The Polluter-Pays Principle (PPP) was adopted by the Organisation for Economic Co-Operation and Development (OECD) in 1972 as an economic principle for allocating the costs of pollution control: “The principle to be used for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment is the so-called Polluter-Pays Principle. This principle means that the polluter should bear the expenses of carrying out the above-mentioned measures decided by public authorities to ensure that the environment is in an acceptable state. In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption.”

The principle was further developed by OECD Recommendations issued in 1974 and 1989. Between 1994 and 2006, the Polluter-Pays Principle was incorporated by the OECD into the concept of Extended Polluter Responsibility (EPR) which seeks to transfer waste management responsibility from governments (and thus, taxpayers and the society at large) to waste-producing entities. In effect, the EPR concept internalises waste disposal costs into the cost of the product concerned, which theoretically means that the producers will improve the waste profile of their products, thus reducing waste and increasing possibilities for re-use and recycling.[22]

In June 1992, the Polluter-Pays Principle was also included in the famous Rio Declaration on Environment and Development, which was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro. Principle 16 states: "National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution with due regard to public interest and without distorting international trade and investment."[23]

The Polluter-Pays Principle has also developed into one of the pillars of environmental policy of the European Union. It has been successfully invoked to address distortion of competition, to prevent chronic pollution, and finally, to justify the adoption of fiscal measures or strict liability regimes. The procedures for applying the principle were specified in Recommendation 75/436/Euratom, ECSC, EEC of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, which broadly takes up the rules elaborated by the OECD. Subsequent to this recommendation, the Polluter-Pays Principle recurred in all subsequent Environmental Action Programmes and in the EC Guidelines relating to state aids for the protection of the environment.[24]At present, the environmental policy of the European Union firmly "rests on the principles of precaution, prevention, rectifying pollution at source and 'Polluter-Pays'."[25]

As no financial mechanism is introduced in the European Commission proposal for an EU Ship Recycling Regulation, this proposal contradicts one of the pillars of the EU environmental policy: the Polluter-Pays Principle. As there is no justification to exclude the shipping sector from this general principle, this contradiction must be solved. To bring the proposal in line with the Polluter-Pays Principle and to improve the effectiveness of the proposed EU Ship Recycling Regulation in ensuring that ships are recycled by the European shipping sector in a sustainable way, this study analyses possible financial mechanisms that could be included in the EU regulation.

1.6 The reflagging loophole

The EU regulation proposed by the European Commission - if adopted by the Parliament and Council and implemented by the Member States - could be effective in ensuring that EU-flagged ships are dismantled in an authorized facility. One major loophole in the regulation is that it only applies to EU-flagged ships. This leaves the door wide open to use a Flag of Convenience to avoid the regulation.

Already, many shipowners are using Flags of Convenience (FOC), by which ships register to fly the flag of a country other than the country of ownership. The main motivation for such practice has been the reduction of operational costs, as it enables shipowners to avoid restrictive regulatory regimes in their home state by changing registration to an FOC country that has open registry and minimal regulation.[26] According to the International Transport Workers' Federation, there are currently 34 FOC countries. This includes the International Ship Registers of France and Germany and a number of foreign territories belonging to the United Kingdom and the Netherlands.[27]

Reflagging to FOC- and other non-EU-countries already is a common practice among European shipowners. 37% of the international merchant fleet tonnage belongs to EU owners, but only 17% of the international merchant fleet tonnage is flying EU flags, and only 9% of end-of-life vessels are flying an EU flag.[28] As many of the ships that are EU-flagged at the end of their life are already recycled in a responsible way in an OECD-country, the regulation would not change anything in practice.

The Impact Assessment of the European Commission does acknowledge the risk of reflagging 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 the proposed EU regulation. “Changing a flag is cheap, easy and will constitute a serious risk of non-compliance as long as two recycling markets (one compliant and one substandard) are co-existing and competing with each other. [29]

This makes it likely that the proposed EU regulation will reinforce the existing trend among shipowners to register their ships in FOC countries. Reflagging would result in a reduction of the size of the EU fleet, which would reduce the effectiveness of the regulation. While the available authorised dismantling capacity might be sufficient to dismantle all EU-flagged ships, shipowners might still want to avoid the higher dismantling costs at these authorised facilities by reflagging. And by doing so, they would also avoid the additional costs for ship owners of the proposed EU Regulation, as they have to pay for surveys and certificates.

The proposed EU Regulation does address this issue to some extent, as it stipulates that the penultimate shipowner can still be penalized when his ship is recycled at a non-authorized facility within a half year after it is sold to another owner.[30] This would prevent shipowners from selling their ships to a so-called cash buyer in a FOC country, who then sells the ship to a non-authorized facility. But this is only effective when the ship is recycled less than half a year after it is sold. It would not be effective if the ship is recycled more than half a year after it is sold and also not if the ship is registered in a non-EU-country long before it is recycled. Selling the ship more than once to a non-EU owner and false sales contracts could also undermined the effectiveness of this clause.

1.7 Conclusion

To deal with the two main shortcomings of the European Commission proposal - the inconsistency with the Polluter-Pays Principle and the reflagging loophole - a financial mechanism could be introduced into the proposal. This conclusion is also drawn in the draft report on the EC proposal by the rapporteur of the European Parliament, Carl Schlyter.[31]

The objectives of adding a financial mechanism to the EC proposal would be to:

- Create a powerful financial incentive for shipowners and recycling facilities to recycle end-of-life ships responsibly,
- Include maximum application of the Polluter-Pays Principle, such that the incremental cost of responsible dismantling is borne proportionately by economic beneficiaries of the ship’s use over its lifetime,
- Include Individual Producer Responsibility, inducing new ships to be designed and built with responsible dismantling in mind,
- Close the “reflagging loophole” in the current draft EU Regulation, which arises from application based on flag states and/or owner domicile,
- Maximize the impact of new EU-rules and regulations on the global shipping industry’s practices.

The next secondary objectives are taken into account, primarily with the political appeal of the proposal in mind:

- Minimum institutional costs for EU, Member States and industry,
- No distortion of competition between EU and non-EU companies,
- Possible new business & employment opportunities within the EU.

In the next chapters of this report, the options for a possible financial mechanism are explored and evaluated against these objectives. First, Chapter 2 discusses what would be the most appropriate legal ground to base a financial mechanism upon. It is concluded that the arrival and/or departure of ships from a European port is the most appropriate legal ground.

The following chapters discuss three options for a financial mechanism to stimulate responsible ship recycling, all three based upon the arrival and/or departure of ships from a European port:

- Chapter 3 discusses a ship recycling fund;
- Chapter 4 explores a ship recycling insurance; and
- Chapter 5 describes a ship recycling account in combination with a transitional fund.

Chapter 2 The legal ground for a financial mechanism

2.1 Why the choice of the legal ground is important

To ensure maximum effectiveness, it is important to evaluate the possible scope (or legal ground) of an EU regulation on responsible recycling, especially when including a financial mechanism. The legal ground of the proposed EU Ship Recycling Regulation, which covers EU-flagged ships, is not the only possible scope. One of the main shortcomings of the current EC proposal, the reflagging loophole, could possibly be addressed by choosing another legal ground. We could theoretically define five possible scopes or legal grounds for an EU regulation on responsible recycling which includes a financial mechanism. The regulation could cover:

1. EU-flagged ships;
2. EU-owned ships;
3. Ships owned by companies whose parent company is European;
4. Ships sailing from a European port to a recycling facility;
5. Ships entering and leaving European ports.

The advantages and drawbacks of these options will be discussed in the following paragraphs.

2.2 EU-flagged ships

The flag state of a ship has to some extent, legal authority over the ship. It is therefore of interest to see if responsible ship dismantling could be prescribed and enforced by flag states.

Following Article 90 of the United Nations Convention on the Law of the Sea (UNCLOS), every State has the right to sail ships flying its flag on the high seas. Article 91 of UNCLOS says that ships have the nationality of the State whose flag they are entitled to fly. Article 94 of UNCLOS describes the duties of flag states. Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag. Therefore, flag states maintain a register of ships and assume jurisdiction under its internal law over each ship flying its flag and its master, officers and crew in respect of administrative, technical and social matters concerning the ship. Every State shall take such measures for ships flying its flag as are necessary to ensure safety at sea. Laws and measures preventing pollution of the maritime environment and pollution by dumping shall be enforced by flag states on the basis of Articles 216 and 217 of UNCLOS.

Given these international rules for flag states in UNCLOS, it would seem possible to leave the enforcement of an obligation for responsible ship recycling to the flag states concerned. The EC proposal chooses this legal ground, hoping that other flag states would follow the same approach. For two reasons this is not a workable approach:

- Firstly, many flag states do not fulfil their international obligations, notwithstanding the clear formulation of duties of flag states in UNCLOS. There are still many flag states providing so called flags of convenience (FOC), permitting ship owners to register ships which do not meet the requirements of international law.
- Secondly, an EU regulation cannot bind directly non-EU flag states and ships flying under non-EU flags.

The EC proposal would therefore only cover the vessels that are EU-flagged at the end of their life - 9% of all vessels worldwide at present. It is feared that this percentage will decrease further when the EU regulation is introduced, because of reflagging to FOC states. Adding a financial mechanism to the EU regulation would only increase the risk that the number of EU-flagged ships is further reduced.

2.3 EU-owned ships

As 37% of the international merchant fleet tonnage belongs to EU owners[32], it is of great interest to consider eventual possibilities to enforce responsible ship recycling by prescribing it for European owned ships. Companies seated in the EU are submitted to laws and measures of the state where they are established. Companies seated in a Member State of the European Union therefore also fall under the Directives of the European Union implemented in national law and under the directly working Regulations of the European Union. The state where a company is established also has jurisdiction on the company and is therefore capable of acts of enforcement in case the national or European legislation would not be respected. From this point of view it would be useful to legislate on a European level to ensure that European owned ships would fall under the obligation of responsible ship recycling.

But European shipowners could circumvent this obligation fairly easy, by changing the ownership to a non-EU country. Many shipping groups already set up separate subsidiaries to own and manage each ship separately. These subsidiaries are often located in non-EU countries, among others for tax reasons and to avoid certain forms of regulation. If a financial ship recycling mechanism was introduced for European companies owning ships, chances are high that many European shipping groups would transfer their shipowning subsidiaries to other countries outside the EU (if they have not done so yet). Therefore, the effectiveness of the proposed regulation would not improve, with or without a financial mechanism.

2.4 Ships owned by companies whose parent company is European

Assigning the obligation for responsible ship recycling to the European parent companies of shipping groups would look more effective. While transferring shipowning subsidiaries to non-EU-countries is relatively easy, transferring the seat and headquarters of an entire shipping group to a non-EU country is much more difficult and complicated. It is unlikely that many shipping groups would do so just to avoid a financial mechanism linked to the EU Ship Recycling Regulation.

However, practice shows that European law systems recognize the principle of legal personality for companies, separating parent companies as shareholders from subsidiaries they hold. Within this private law system a parent company cannot be automatically held liable for actions of a subsidiary. This so-called ‘corporate veil’ can in the European legal system only be pierced in case of fraud or of a criminal act for which the parent company can be held responsible.

When the European parent company has transferred the ownership of ships to subsidiaries seated in non-EU countries, piercing the ‘corporate veil’ will be even more difficult. Following the rules of International Private Law (IPR), a company with legal personality will be subject to the laws of the country where it is established, apart from activities clearly deployed within the jurisdiction of another country.

This could lead to EU-parent companies transferring the ownership of their ships, especially end-of-life vessels, to non-EU subsidiaries they hold, while leasing back the ship from the subsidiary concerned. Within such a scenario, the parent company could continue to exploit the ship commercially, without EU-legislation on ship recycling being applicable to the ship. As explained above, companies with legal personality are subject to the laws of the state of establishment and not to the laws of the state where their parent company is seated. The selling of a ship to a subsidiary in order to avoid a European obligation of responsible ship recycling would be difficult to prove, even more so if the selling takes place years before the ship is dismantled.

2.5 Ships sailing from a European port to a recycling facility

The present EU Waste Shipment Regulation has - implicitly - chosen the fact that ships are sailing from a European port to a recycling facility as its legal ground. By implementing the Ban Amendment of the Basel Convention and by defining that “a ship may become waste as defined in Article 2 of the Basel Convention”, the EU Waste Shipment Regulation effectively covers any ship which is leaving from an EU port to sail to a recycling facility. A financial mechanism based on this scope would therefore not be more effective than the EU Waste Shipment Regulation, which - according to the Impact Assessment of the European Commission - is hampered strongly by the fact that shipowners often do not report when they will sail to a recycling facility. [33] This legal ground therefore seems difficult to implement and control.

2.6 Ships entering and leaving European ports

The EU regulation could also take the fact that ships are entering and leaving European ports as its legal ground. Following the Articles 56 and 73 of UNCLOS coastal states have jurisdiction in the Exclusive Economic Zone over ships and on ship calling at ports. Harbour states can impose measures and legislation upon ships when these sail in the Exclusive Economic Zone or enter a harbour. A good example of legislation based on the harbour state principle is Council Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port State control. It establishes the obligation for Member States of the European Union to enforce and control several European and international measures and laws.

Ships entering and leaving European ports already have to meet various requirements, to which another (financial) requirement could be added. The number of ships covered in this way, would be much larger than under the present EC proposal. When the additional costs are limited, it is unlikely that this requirement would deter ships from calling at European ports. The financial consequences of avoiding European ports would be much larger for - European and other - shipping groups.

2.7 Conclusion

Based on the analysis above, we conclude that an EU regulation on responsible ship recycling, which includes a financial mechanism, could be best based on the arrival and/or departure of ships from a European port. If a ship could only enter a European port if it participates in a financial mechanism related to ship recycling, more ships could be covered and the mechanism could not be avoided by simply reflagging European ships or transferring the ownership of the ship to a subsidiary outside the EU.

The following chapters therefore discuss three options for a financial mechanism to stimulate responsible ship recycling, all three based upon the arrival and/or departure of ships from a European port:

- Chapter 3 discusses a ship recycling fund;
- Chapter 4 explores a ship recycling insurance; and
- Chapter 5 describes a ship recycling account in combination with a transitional fund.

Chapter 3 Option 1: Ship Recycling Fund

3.1 Introduction

This chapter discusses options for a Ship Recycling Fund. Paragraph 3.2 discusses a study by Ecorys published in 2005, while paragraph 3.3 looks at a study by Milieu & COWI in 2009. Paragraph 3.4 discusses comparable recycling funds in other sectors. Paragraph 3.5 discusses different aspects of this option in more detail and paragraph 3.6 draws conclusions.

3.2 Ecorys study

Greenpeace in February 2005 published the report “The Ship Recycling Fund – Financing environmentally sound scrapping and recycling of sea-going ships”, written by the Dutch consultancy Ecorys. [34] The report presents a proposal to set up a Ship Recycling Fund under the auspices of a UN-organisation, for example the International Maritime Organization (IMO) in cooperation with the International Labor Organization (ILO) and the United Nations Environment Programme (Basel Convention). The main tasks of the Ship Recycling Fund would be:

- Collection of fees;
- Certification of scrapping yards and control of scrapping practices;
- Disbursement of funds for environmentally sound scrapping to scrapping yards;
- Financing R&D on clean and safe scrapping.

The Ship Recycling Fund would disburse funds to guarantee environmentally sound scrapping at scrapping yards. Ecorys estimates the additional costs (in Asia) at 25-50 US$ per LDT, an increase of average shipbreaking costs with 13-33%. By setting these costs off against the expected supply of (larger) merchant vessels on the scrapping market, total funding requirements are estimated at an average of 220-440 million US$ per year. To fund this amount, a fee is proposed to be collected on registration of the IMO number of new built vessels. At current new built levels (25 mln GT per year) the fee would result in a price increase ranging between US$ 8.8 and 17.6 per GT. This ranges from less than 1% to 4% of average construction costs per GT.

Ecorys mentions two disadvantages related to collecting a contribution at the ship registration phase: it will put the owners of new ships in a competitive disadvantage compared to owners of existing ships and contributions are only obtained from new built ships instead of the whole shipping fleet. Since the number of new built ships is much lower than the total number of ships in operation, the (average) level of the charge will be much higher. As an alternative, Ecorys proposes the introduction of a fee during the lifetime, to be collected through the Flag States. The main advantage of this approach would be that all ships contribute to the fund. Based on a global fleet of 521 million GT (in 2001), each ship should be charged 42-84 US$ cents per GT annually.[35]

3.3 Milieu & COWI study

In August 2009 the European Commission published a study by the Belgian consultancies Milieu and COWI on scenarios for an EU Ship Dismantling Fund to close the financial gap between conventional and green dismantling facilities and to provide proper incentive for shipowners to choose a green ship recycling facility. The report aimed at facilitating the Commission's internal discussions and decision making on the feasibility of establishing a revolving EU Ship Dismantling Fund.

Milieu and COWI estimate the extra costs for green recycling compared to conventional recycling to be in a broad range of US$ 25 to 150 per LDT, with US$ 100 per LDT as central estimate. Based on this last figure, the additional recycling costs for EU-flagged ships are estimated at US$ 160 million per year.

To finance these extra costs from a revolving fund, the report analyses three possible financing mechanisms:[36]

- Up front environmental charge for new built vessels, at the registration for an IMO number;
- Recurrent charges on the European shipping industry;
- Charges on all ships calling at EU ports, amounting to around US$ 200 per call or US$ 0.04 per GT.

The first option will only affect new builds and not the existing ships, which contradicts the 'Polluter-Pays' principle and does not allow the fund to grow rapidly. It will also distort competition between EU shipping industry and non-EU flag states to some extent. The second option may lead to an even stronger competition distortion.

In the third option, EU ports could collect a dismantling fee from all ships calling at EU ports, based on the tonnage of the ship. The European ports could transfer the collected charges directly to the Ship Dismantling Fund, or indirectly via national tax authorities, which already collect (national) fees and charges from the ports.

This option is unlikely to distort competition - even for ports at the periphery of the EU - as there are only few alternatives to EU ports when goods need to be delivered to the EU. The estimated charge (US$ 0.01 to 0.06 per GT) is also low in comparison to the normal port fee paid by shipowners for port services (7-10%). The report therefore concludes that the third option, recurrent charges on ships calling at EU ports, probably is the most feasible option. The possibility of being able to differentiate the contribution depending on the hazardous contents of the ship should be analysed further.

The report also analyses three disbursement mechanisms:

- Compensation for "EU ships", when they use environmentally sound recycling facilities;
- Subsidizing environmentally sound recycling facilities (EU or non-EU) which are in conformity with EU standards;
- Framework agreements with a limited number of certified recycling facilities (after a tender) and handing vouchers for the price difference for ships to be scrapped there.

The first option is described as very effective and the availability of sufficient environmentally sound recycling capacity is not seen as a limiting factor. The charge may be earmarked for the ship or group of ships (for instance by flag state) that paid the fee or the disbursement mechanism may be based on a solidarity system, where contributors pay jointly to cover environmentally sound scrapping of the oldest and most environmentally hazardous ships. Due to the timing constraint, the solidarity system is considered to be best.

The second option is seen as less relevant, as the implementation of environmentally sound scrapping technologies requires only limited investments at the ship scrapping facilities. The third option is not discussed further.

The report therefore concludes that the best option is to disburse compensation to shipowners presenting evidence for scrapping their ship at a green facility. The compensation should cover the loss in net revenue from scrapping the ship in environmentally sound facilities compared to conventional scrapping facilities. The compensation should be sufficient to make green dismantling competitive, yet it should not be so high that green facilities would become much more profitable for the world's shipowners than substandard scrapping.

3.4 Funds in other sectors

3.4.1 Car recycling funds

The Dutch automobile sector has introduced a system to increase the re-use and recycling of cars. The system is based on revenue that in principle is levied on the importers and producers of cars in Holland, but which is passed on directly to the client. The system has been fully accepted by the consumer. A fee (disposal contribution) has to be paid on the purchase of the car (on average 0.5% of the car value), which goes directly to a foundation established to manage the fund, control and certify the car recycling industry, subsidise this industry for the removal of non-recyclable materials, and finance R&D on recycling methods. Cars are taken in at no charge. [37]

Some other EU member states have set up similar car recycling funds to meet their obligations under the EU End of Life Vehicles Directive.[38] Also in Japan, a similar car recycling fund exists, funded by a fee which consumers in Japan pay when they purchase a new car.[39]

3.4.2 Recycling of Waste Electrical and Electronic Equipment (WEEE)

In February 2003 the European Union published the EU Directive on Waste Electrical and Electronic Equipment (WEEE), which was replaced in July 2012 by a new directive with the same name.[40] Both directives provide for the creation of collection schemes where consumers return their used e-waste free of charge. The objective of these schemes is to increase the recycling and/or re-use of such products.

The directives ask Member States to ensure that producers provide at least for the financing of the collection, treatment, recovery and environmentally sound disposal of WEEE from private households that has been deposited at collection facilities. But Member States may also encourage producers to finance also the costs incurred for collection of WEEE from private households to collection facilities.

Each producer shall be responsible for financing the operations relating to the waste from his own products. The producer may choose to fulfil this obligation either individually or by joining a collective scheme. Such a collective scheme could provide for differentiated fees based on how easily products and the valuable secondary raw materials that they contain could be recycled. The fees have to be paid by the producer, but can of course be included in the price of the products sold to consumers. [41]

The intention of both EU directives on WEEE is to prevent waste. Therefore each producer is made individually responsible for the costs of recycling the waste from his own products. This so-called Individual Producer Responsibility encourages competition between companies on how to manage the end-of-life phase of their products. This in turn drives innovation, such as in business models, take-back logistics and design changes, to reduce the environmental impact of products at the end of their life.

Individual Producer Responsibility does not imply that each producer needs to have a separate infrastructure for the collection and treatment of its own brand WEEE. Also when producers are individually responsible for the (financing of the) recycling of their products, they have a possibility to work together to manage WEEE in collective or individual recycling systems.[42]

In the transposition of the first Directive (of 2003) in the national legislations of the Member States, this Individual Producer Responsibility is sometimes not mentioned. In 2007 a joint statement of companies and NGOs signalled that in ten member states (Bulgaria, Denmark, Finland, France, Greece, Latvia, Portugal, Slovenia, Spain, United Kingdom) producers are made jointly responsible for the recycling of EEE products. The incentive to encourage producers to improve design is not provided within these national laws.[43] This issue does not seem to be solved by the new Directive (of 2012).

3.5 Elaboration of the Ship Recycling Fund option

In this paragraph a number of aspects of the Ship Recycling Fund are discussed in more detail. These discussions are based on an analysis of relevant legislation, a comparison with the costs and benefits of systems that stimulate proper removal and recycling of products in other industrial sectors (cars, electronics), as well as information gathered from industry sources and key informants in the shipping industry. Among the key informants consulted are maritime industry experts and maritime consultants, recycling associations, brokers, P&I Clubs, responsible ship recyclers and NGO's. Almost all of them have spoken "à titre personnel", implying that our texts are partially based on their inputs but the names of the informants are not mentioned.

3.5.1 What are the basic principles of the Ship Recycling Fund?

All ships accessing EU ports have both a pay-in obligation and a pay-out eligibility, irrespective of flag or owner. Ships calling at EU ports pay a fee, which is collected by the port authorities and transferred to the Ship Recycling Fund. The fund uses the collected funds to pay for eligible ships a certain sum, upon proof of responsible recycling at an authorized facility, to make up for the additional costs of responsible recycling. The fees to be paid by ships calling at EU ports can be adjusted annually. Alternatively, the due could be collected as an annual fee in order to minimize administrative burden and not to discriminate against ships with a high number of calls.

3.5.2 How to define eligibility for support from the Ship Recycling Fund?

Eligibility for pay-out could be based on the historical contribution to the Ship Recycling Fund, as well as the age of a ship. This would be necessary in the initial years, where the oldest ships will not have time to contribute much to the Ship Recycling Fund and so the oldest ships must be "subsidized" by premiums from younger ships.

This would ensure the scheme does not discriminate between EU-owned and non-EU-owned ships, while still applying some kind of Polluter-Pays Principle. In practice, this could be a system that defines a certain amount of recycling support from the fund per LDT, multiplied by the following factors:

- number of EU port calls since the inception of the fund; and
- the age of a ship.

3.5.3 Which ship recycling facilities would be eligible?

As set forth in the Proposal for a Regulation of the European Parliament and of the Council on Ship Recycling, ship recycling facilities will have to meet a set of environmental and safety requirements in order to be included on a list of authorised facilities, which can be situated worldwide. [44] The Ship Recycling Fund should only allow ships to be recycled in authorised facilities according to the list. Proof should be contingent upon certification by internationally recognized, independent bodies, such as the Classification Societies (Lloyd's, DNV, Bureau Veritas, etc.). Further research is necessary to determine the possibilities of enforcement of environmentally sound and safe recycling at non-EU recycling facilities.

3.5.4 How to avoid paying too much for responsible recycling?

As long as the ship recycling companies act according to responsible recycling criteria, they can charge any costs they aim for. However, competition between the ship recycling companies will determine the market price. The recycling company pays for ships to be recycled to the shipowner or brokers/cash buyers. The purchase price for the ship is an enumeration of expected steel revenue, recycling costs (including pre-cleaning) and aimed profit margin.

The financial incentive from the Ship Recycling Fund would make the difference for environmentally sound demolition, which only can be claimed by the recycling company if a ship is responsibly recycled. The financial incentive acts also as fixed funding component for the recycling company, because the pay-out is guaranteed taking the criteria for responsible recycling into account. Steel revenue and costs of recycling remains an estimate (i.e. amount of asbestos increases unexpectedly), so the extra incentive is very much welcomed. The amount of the incremental costs for environmentally sound recycling could be assessed periodically by independent, authorized certification bodies (i.e. Lloyd's, DNV, Bureau Veritas, etc.) and the amount of subsidy could be derived from this assessment.

3.5.5 What would be the disbursement mechanism: paying the shipowner or the recycling company?

The mechanism for disbursement could be payment to the recycling company, upon proof of responsible recycling of the ship at a facility authorised by the European Union. The recycling company is the one who bears the incremental costs of responsible recycling, after buying the ship for dismantling, so the recycling company should also be the one receiving the pay-out. The disbursement can be based on the actual incremental costs of recycling.

3.5.6 What size is needed for the Ship Recycling Fund?

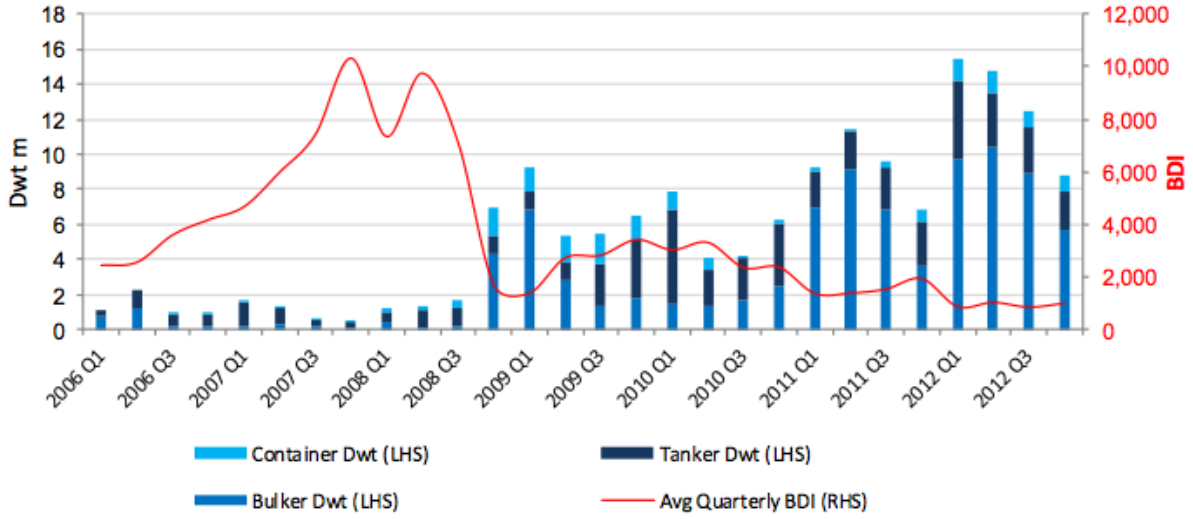
To calculate the Ship Recycling Fund's needed size, the annual pay-outs must be estimated via:

- the number, size and type of ships to be recycled per year (in LDT);
- an estimate of incremental cost of responsible recycling of these ships (per LDT), versus non-responsible methods;
- the average percentage of the incremental costs which are subsidized from the Fund.

The difficulty with calculating the fund's needed size is that reliable data on all parts of the calculation are difficult to find. In a recent UNCTAD report, the age distribution of the world merchant fleet is given by vessel type in DWT. Data is given on an aggregated level and the age distribution of ships is put in buckets (e.g. 0-4 years, 5-9 years, etc.). But no information could be extracted at what age each type of vessel is dismantled.[45] Several reports mention 27 years as the average scrap-age of ships.

Figure 1 does show the annual trends in ship demolition in DWT, but these figures cannot simply be converted in LDT. Detailed information on the number of recycled ships and their weight in LDT is difficult to obtain. Different sources mention different ship scrapping numbers: Robin des Bois reports that 1,020 vessels were scrapped in 2011[46], while Sea2Cradle reports 1,610 vessels for 2011[47]. To make a good calculation of the required size of the Ship Recycling Fund, more research is needed to retrieve reliable data.

Figure 1 Ships sold for demolition 2006-2012 (up to Nov 30, in DWT)



Breamar Seascope, "Demolition Summary", Breamar Seascope Research, London, December 2012.

It is also difficult to make a clear assessment of the incremental cost of responsible ship recycling. Key informants consulted for this report provide a relatively wide range of cost estimates. This indicates a lot of uncertainty and/or difference, depending on the type of ship, where the recycling is to take place and what would qualify as responsible ship recycling. Very rough estimates for the cost differential range from USD 25/LDT (China) to USD 150/LDT (Europe) for ships currently at end-of-life.[48]

The variation in the estimates of incremental costs for responsible recycling is due to several factors, as explained by an anonymous source. When scrappers offer a price for an end-of-life ship, insight in their cost structure is not given. In Bangladesh an average of US$ 1 million is paid for a Panamax ship, which includes the costs of demolition. Since the Government of Bangladesh understands the risks of beaching in combination with cheap labour and poor conditions, they charge the scrappers a considerable fee. The scrapper calculates an extra "risk-charge" for himself too. These recycling costs do not mirror the real recycling costs, which mainly consist of the wages of employees.
The difference between dismantling costs in China (responsible recycling) and Bangladesh is US$ 50 per LDT, according to Sea2Cradle. Since in China all dismantled steel must be melted (so costs for this extra activity are calculated as recycling costs), while in Bangladesh steel is cut and directly sold in the building sector (with hazardous materials like asbestos sticking to it), the cost drivers in Bangladesh and China are not the same. We therefore suggest undertaking a proper responsible recycling cost calculation, based on an investigation of the cost drivers by authorized bodies (like Lloyds, Bureau Veritas, DNV, ABS) at recycling facilities in different countries.

What becomes apparent from this discussion is that the calculation in the report of Milieu/COWI of a fund size of US$ 160 million (see paragraph 2.3), is outdated. This estimate is also used in the recent draft report of the rapporteur of the European Parliament, Carl Schlyter, but this report is based on scrapping data for 2008. [49]

Figure 1 indicates that the total weight of scrapped ships in 2012 will be a factor of 5 higher than in 2008. This big increase in DWT sold for demolition is caused by a steep incline in BDI's, which is an indication for the price of moving the major raw materials by sea due to the economic crisis. Since the crisis is not over yet, the expectation is that in the coming years more ships will be scrapped, even with lower ages (<15 years).[50]

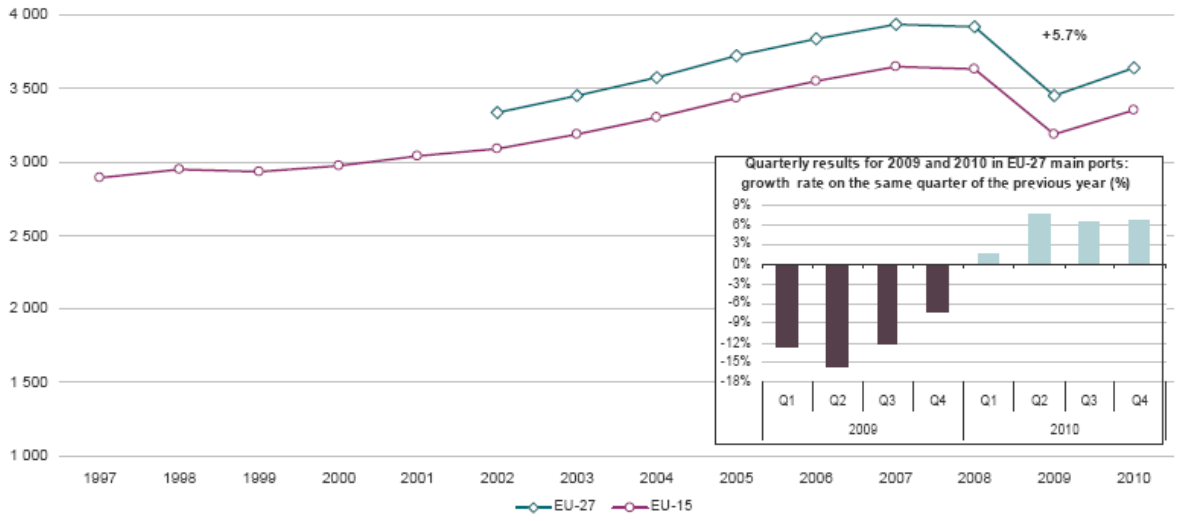
3.5.7 Which fees are needed per ship calling at European ports?

The Ship Recycling Fund will be financed through an additional levy on all port calls within the EU. The assumption is that the levy will be differentiated at least by ship size, in Gross Tonnes (GT). To determine the fees per ship, on a simple GT-basis, estimates are therefore needed for:

- the total annual revenues to be generated for the Ship Recycling Fund (see paragraph 3.5.6);
- the gross weight of seaborne goods handled in all EU ports per annum.

Figure 2 shows that the gross weight of seaborne goods handled in all ports of the EU-27 increased from 3.4 billion GT in 2002 to almost 4.0 billion GT in 2008. After a dip in 2009, the gross weight handled in EU-ports increased to 3.6 billion ton in 2010 again (not in the graph).[51]

Figure 2 Gross weight of seaborne goods handled in all EU ports (million GT)



Source: Eurostat, "Gross weight of seaborne goods handled in all ports (in million tonnes) 1997 2010", Website Eurostat (epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Gross_weight_of_seaborne_goods_handled_in_all_ports_(in_million_tonnes)_1997_2010.PNG&filetimestamp=20120223095112), Viewed in December 2012.

These figures are consistent with the draft report of the rapporteur of the European Parliament on the EC proposal for a regulation on ship recycling, which assumed 4 billion GT to call at EU ports every year. The rapporteur calculated that with a recycling levy of € 0.03 per gross tonne a total amount of € 120 million would be added to the ship recycling fund every year.[52] Further research is needed to determine if this fund size would be sufficient.

3.5.8 How to include Individual Producer Responsibility in this mechanism, to stimulate ship owners to avoid waste by adapting ship designs?

Individual Producer Responsibility can be introduced in this mechanism by differentiating the fund premiums per ship beyond just their GT size, for example based on independent assessments of the actual future recycling costs of the individual vessel, or at least a matrix using type and age of ship. The fee for the Ship Recycling Fund could be differentiated for ship particulars like hazardous content and design, which are key drivers for responsible recycling costs. Existing port fees are already calculated per ship using size and type, and certification systems for assessment of environmental impact of ships (e.g. CO_2 and sulphur emissions) do exist. The proposed EC regulation stipulates that each ship has to be assessed for hazardous materials.

Differentiation of the fees would complicate the scheme, but be a preferable solution in the long term from an Individual Producer Responsibility viewpoint. The level of fees can take into account the inventory of hazardous materials: the lower the amount of hazardous substances on board, the lower the fees for the shipowner. Thereby, the fund becomes a strong incentive for shipowners to procure green ship design and pre-cleaning of vessels during operational use.

3.5.9 Which additional number of ships will be recycled responsibly in comparison to the EC proposal?

The extra number of ships to be responsibly recycled under the current EC proposal will be small, as only 9% of the global fleet is EU-flagged at the end-of-life. As all ships calling at EU ports will be - in principle - eligible for support from the Ship Recycling Fund, the number of ships that will have a strong incentive for responsible recycling will increase. The exact number will depend on the number of ships calling at European ports and the exact set-up of the Fund: if the disbursement is dependent on the number of times the ship has called at an EU port - as we suggested in paragraph 0 - the incentive will only be strong enough for ships which have called at EU ports regularly. Further research is needed to determine the exact number. In the long term, the problem could be solved by asking shipowners to pay an annual fee instead of paying at every port call.

3.5.10 Are there legal objections to any aspect of this mechanism?

The European Union as well as its Member States are members of the WTO and were parties of the WTO agreements, amongst others of the General Agreement on Tariffs and Trade (GATT). The WTO wants to facilitate international trade by annulling or lowering trade barriers. The GATT lays down certain leading principles for the liberalization of the world trade. One of the most important is the principle of non-discrimination. The principle comprises two components: the principle that a country cannot discriminate between its trading partners (the most-favourite-nation principle) and the principal that imported goods and locally produced goods should be treated equally (the principle of national treatment). If a financial mechanism for responsible ship recycling does not discriminate between ships from different flag states or owners, non-compliance with the principle of non-discrimination can be avoided. The levying of fees for a recycling fund would not be contrary to the non-discrimination principle if the system foresees in levying fees independent of the nationality of the owner of a ship or of the flag state of a ship. But, if the disbursement of the fund only concerns EU ship owners, meanwhile the fee is levied from all sorts of ships, EU and non-EU, the fund could be considered as contrary to the non-discrimination principle. WTO/GATT agreements seem to impose a non-EU disbursement mechanism.

The levying of a fee by the harbour authorities in Member states of the European Union should be feasible without discrimination and independent of the flag state of a ship or the country where the owner of a ship is established. The basis of the fee would be the calling of a ship to a port of the European Union.

Furthermore, the European Court of Justice does not seem to consider as illegal, from a point of view of customary international law, the imposing of a financial participation to non-EU based companies. In a judgement of 21 December 2011 the European Court ruled on prejudicial questions regarding the obligation of non-EU aviation companies to pay for the emission of greenhouse gas (Case 366/10) via the inclusion of aviation activities in the scheme for greenhouse gas emission allowance trading.

Following the European Court of Justice, this type of financial obligation laid upon non-EU companies are not contrary to principles of customary international law as the principle that each State has complete and exclusive sovereignty over its airspace, the principle that no State may validly purport to subject any part of the high seas to its sovereignty, and the principle which guarantees freedom to fly over the high seas. Following this case law, it is not to be expected that (levying a fee for) a Ship Recycling Fund would be contrary to customary international law.

3.5.11 Which kind of legislation would be most suited to introduce this mechanism?

Directive 2000/59 on port reception facilities introduces in European law a system of fee levying based on the Polluter Pays principle, to prevent the dumping of ship slops in the sea, while levying a fee from all ships calling at a port, regardless of the use that each individual ship will make of the reception facilities in the port. It could serve as an example for the levying of fees for a ship recycling fund.

The payment of fees under Directive 2000/59 is differentiated: fees may be reduced if the ship's environmental management, design, equipment and operation are such that the master of the ship can demonstrate that it produces reduced quantities of ship-generated waste. A comparable reduction of the ship recycling fee for environmentally cleaner ships could be an incentive to ship owners to invest in ships that contain less hazardous materials.

3.5.12 What will be the institutional costs of the Ship Recycling Fund?

Further research would be needed to assess the institutional costs of the Ship Recycling Fund. It is however clear that a system based on port fees would create a lot of new administrative burdens. Fees raised by port authorities would have to find their way to EU fund either with or without intervention of the treasuries of the member states. A new auditing burden would arise also. The disbursement mechanism would also create significant administrative costs, which need to be assessed carefully.

3.5.13 Will the Ship Recycling Fund result in less ships calling at European ports, especially near the borders of the EU?

For large, ocean-going vessels carrying intercontinental trade, the Ship Recycling Fund will not have a measurable impact on overall vessel calls: the existing port call costs are a small fraction of the total voyage costs, and the incremental Ship Recycling Fund fee will only add a negligible percentage. However, for short-sea trade (both intra-EU and cross-EU-border) using smaller vessels that make a large number of EU port calls per year, it would likely have a much larger economic impact on the shipowner. If one were to collect fees purely on a port call basis, then the smaller ships would be subsidizing the larger ones. Some kind of solution would have to be found to this, e.g. a different (lower fee) structure for short-sea trading vessels, or a “steeper” differentiation curve based on GT. Perhaps even a maximum fee per

ship per annum could apply. It could also be solved by stepping away from the port fee structure, and simply assessing an annual premium per ship, for that ship to be allowed to enter the EU during that year (irrespective of number of port calls). This would have the advantage of also being much simpler and cheaper to administer.

3.6 Conclusions on the Ship Recycling Fund

The main advantage of a Ship Recycling Fund is that it can immediately finance the responsible recycling of existing ships that are currently near end-of-life. The immediate impact on scrapping practices would potentially be large, while the total incremental cost burden on the shipping industry would be bearable.

The disadvantages of the Ship Recycling Fund option are around application of the Polluter-Pays Principle, the mechanism for determining eligibility and avoiding bureaucracy:

- A Ship Recycling Fund will be - at least the first 15-20 years - transferring money from owners of all EU-trading ships to owners of end-of-life ships, which means that the latter will benefit directly while not having contributed financially in a significant way. This is not in line with the Polluter-Pays Principle. Differentiating fees to better integrate the Polluter-Pays Principles, would also be fairly difficult;
- Deciding who is eligible for a pay-out from the Ship Recycling Fund is an additional challenge: if applied to all ships scrapped worldwide that have called at EU ports, a complex mechanism will be needed to ensure it is not abused by non-contributing owners.
- Finally, a Ship Recycling Fund financed through a port fee mechanism would create high administrative costs at the Member State level. To administer the Fund itself, a new permanent bureaucracy at EU level would also be needed.

These significant disadvantages of the Ship Recycling Fund justify a closer look at two alternatives, a Ship Recycling Insurance and a Ship Recycling Account in the next two chapters.

Chapter 4 Option 2: Ship Recycling Insurance

4.1 Introduction

This chapter looks specifically at a Ship Recycling Insurance option, which would ensure that ships are recycled at the end of their life in a responsible manner. Paragraph 4.24.6.2 starts with listing the international conventions on liability and insurance in the shipping sector. Paragraph 4.3 describes insurance requirements introduced by specific states and paragraph 4.4 discusses the most important EU directive in this respect. Paragraph 4.6 discusses options to introduce a Ship Recycling Insurance for ships and paragraph 4.5 looks at recycling insurance arrangements in other sectors.

4.2 IMO conventions on liability

In the framework of the International Maritime Organization, a number of international conventions have been concluded which deal with the liability of ship owners. Several of these conventions also introduced compulsory insurance for the ship owner's liability:[53]

- International Convention on Civil Liability for Oil Pollution Damage (CLC), 1969
- 1992 Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND 1992)
- Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (NUCLEAR), 1971
- Athens Convention relating to the Carriage of Passengers and their Luggage by Sea (PAL), 1974
- Convention on Limitation of Liability for Maritime Claims (LLMC), 1976 (and its 1996 protocol)
- International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS), 1996 (and its 2010 Protocol)
- International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001
- Nairobi International Convention on the Removal of Wrecks, 2007.

To insure ship owners against the liabilities defined in these conventions P&I (protection & indemnity) insurance is offered on the market. This type of insurance is arranged through a limited number of P&I clubs worldwide, each composed of a number of insurance companies. [54]

4.3 Insurance certificates required to enter ports

Certain types of P&I insurance are obligatory when sailing the territorial waters or ports of several countries. Some states (Greece, Australia, Sri Lanka) request evidence of liability insurance for wreck removal (they accept P&I Certificate of Entry) to allow ships to enter their territorial waters. Other states, such as the United States of America (under the Oil Pollution Act 90) and California (under State law, California S.B. 1644) require evidence of financial responsibility (Certificate of Financial Responsibility) for oil pollution.

Compulsory insurance for ships above 400 GT (except for tankers covered by CLC) is prescribed in Australia from 2001. Alaska by its Financial Responsibility Act of June 2000 requires evidence of insurance of oil pollution liability for non-tanker ships over 400 GT for permission to enter its territorial waters. It could be in the form of a P&I Certificate of Entry, bank guarantee, surety, deposit or similar instrument.

From March 2005, Japan has introduced compulsory insurance for non-tanker vessels lager than 100 GT which enter its territorial waters. Those ships must possess original polices of insurance (P&I Certificate of Entry are acceptable) as evidence of financial securities. Taiwan did the same under the Marine Pollution Control Act, which entered into force on 1 July 2005.[55]

4.4 EU Directive on the Insurance of Shipowners for Maritime Claims

While liability insurance already was a requirement for ships to enter the ports of some European member states and other countries (see paragraph 4.3), the EU Directive on the Insurance of Shipowners for Maritime Claims first introduced this requirement for the EU as a whole. This European directive, which entered into force in May 2009, obliges ships sailing under a flag of one of the Member States of the European Union, or ships entering a port under the jurisdiction of one of the Member States of the European Union, to carry a certificate of insurance on board the ship. Based on this directive, Member States may choose to also apply this directive to ships passing through their territorial waters (without entering a port). The directive applies to ships of 300 gross tonnes or more. The obligation for ships to have an insurance, and to carry a certificate of insurance on board, serves three purposes:

- to protect victims of maritime activities;
- to eliminate substandard ships; and
- to re-establish the competition between operators.

The insurance can be with or without deductibles, and should comprise, for example, indemnity insurance of the type currently provided by members of the International Group of P & I Clubs, and other effective forms of insurance (including proved self insurance) and financial security offering similar conditions of cover.

The insurance has to cover, for each ship per incident, the maximum amount for maritime claims subject to limitation under the Convention on Limitation of Liability for Maritime Claims of 1976 as amended in 1996 (see paragraph 4.6.2). The maximum amount differs per ship (e.g. the tonnage of the ship) and per incident (e.g. loss of life). The certificate of insurance must be issued in one of the three languages; English, French or Spanish. Furthermore, it is required that the certificate of insurance provides information on the ship, on the shipowner, on the insurance and on the insurance company.

Not complying to the obligation of having an insurance certificate on board may have serious consequences. The directive obliges the Member States to check the insurance when inspecting the ship. In case the certificate of insurance is not carried on board, the Member State may detain the vessel if safety issues are at stake or the competent authority of a Member State may issue an expulsion order to the ship. This shall be notified to the European Commission and to the other Member States and the flag State concerned. The ship will then be refused entry to any of the ports of the European Union Member States until the shipowner gives notice of the certificate of insurance.[56]

Since January 2012 some European countries (including the Netherlands, Malta, Denmark and Spain) have enforced the EU Directive on the Insurance of Shipowners for Maritime Claims in their national legislation. Other Member States are expected to follow soon.[57]

4.5 Recycling insurance in other sectors

A recycling insurance is also an option to comply with the EU Directive on Waste Electrical and Electronic Equipment (see paragraph 3.4.2): “Member States shall ensure that each producer provides a guarantee when placing a product on the market showing that the management of all WEEE will be financed. The guarantee may take the form of participation by the producer in appropriate schemes for the financing of the management of WEEE, a recycling insurance or a blocked bank account”.[58]

A recycling insurance provides more incentive to producers to limit the waste their products create in the end-of-life phase. A recycling insurance would be compatible with the so-called Individual Producer Responsibility (IPR), which means that producers pay for the recycling of their own products (and not for those of their competitors). This IPR drives innovation, such as in business models, take-back logistics and design changes, to reduce the environmental impact of products at the end of their life.

Another additional advantage is that recycling insurance will cover the recycling costs, even in the event of bankruptcy or default of the producer. And a main advantage for the producer is that it provides a cover for possible higher recycling costs in the future, thus taking away uncertainty from a producer’s balance sheet.[59]

4.6 Ship Recycling insurance

4.6.1 Overview of the proposal

Different from the P&I insurance which is now required by the EU Directive on the Insurance of Shipowners for Maritime Claims (see paragraph 4.4), a recycling insurance does not exist in the shipping sector. As every ship has to be dismantled at the end of its life, this type of insurance would differ from P&I insurance (against claims which can or cannot happen during the life of the ship). It would be a type of “life insurance”, which would cover the additional costs of recycling the ship in a responsible way at the end-of-life. Through annual insurance premiums, the risk of the additional costs of responsible dismantling can be insured.

Per ship type, the insurance company would need to assess the premium to be paid on the basis of the estimated additional costs of responsible ship recycling for this particular ship. The owner would be refunded this additional cost of responsible recycling, after submitting a certificate that the recycling took place at an EU-listed facility.

Similar to other insurance certificates, a certificate which shows that the shipowner has obtained a Ship Recycling Insurance contract for the ship is required as a condition to be allowed entry to an EU port. The European Union would have to identify accredited insurance companies worldwide, whose Ship Recycling Insurance certificates would be accepted. This would ensure that a large percentage of the global fleet - all ships entering EU ports - will obtain such an insurance contract.

4.6.2 Can the terms and conditions under which a recycling insurance is offered, be left to the commercial insurance market?

The fact that this is a life insurance rather than a liability insurance, could make it difficult to leave it completely to the commercial insurance market. Old ships might be refused to be insured or only at very high insurance premiums. In healthcare insurance, this is solved by forcing (by law) the insurers to accept patients with “pre-existing conditions” and then recover the costs of the loss-making policies through the premiums of the entire pool of

policyholders. An “obligation to insure” can be regulated on a national basis for human beings, but it is difficult to see how this could be done on an international level for ships. Collecting and transferring part of the premiums of all ship owners to a transitional fund which covers older ships might therefore be the only option to deal with this problem. This option is discussed in paragraph 5.3.

4.6.3 How to integrate Individual Producer Responsibility in this mechanism?

The Individual Producer Responsibility stimulus is relevant when it comes to newly designed and built ships and the question of pre-cleaning ship already in operation use. The key driver of Individual Producer Responsibility should be a differentiation in the premium paid by new/young ships or pre-cleaned ships for a Ship Recycling Insurance, based on estimates of actual end-of-life responsible dismantling costs: the smaller the amount of hazardous material on board, the lower the premiums for the insurance. Insurance companies will have a commercial incentive to differentiate premiums on this basis, as they guarantee to pay the cost differential between responsible and irresponsible dismantling. Integrating individual producer Responsibility in this mechanism is therefore very well possible: a comparable reduction of the premium for environmentally cleaner ships could be an incentive to shipowners to invest in ships that contain less hazardous materials.

4.6.4 What would be the institutional costs of a Ship Recycling Insurance?

The institutional costs for a Ship Recycling Insurance would likely be lower than for the Ship Recycling Fund, and they will be carried by the insurance industry - who will of course integrate these costs in the calculation of insurance premiums. The competition between commercial insurance companies will keep administrative costs down. Questioning several brokers and P&I Clubs did not indicate that administrative costs would be in any sense inhibitive.

4.6.5 Which additional number of ships will be recycled responsibly in comparison to the EU proposal?

As with the Ship Recycling Fund, this question is difficult to answer without further research. As the Ship Recycling Insurance will be compulsory for all ships calling at EU ports, this mechanism will certainly cover many more ships than the EC proposal, especially in the long term. But without a solution to the fact that older ships will be too expensive to insure, in the shorter term the number of ships that will be recycled in a responsible manner will be smaller than will be the case when a Ship Recycling Fund is introduced. However, a transitional fund as proposed in paragraph 5.3 could deal with this problem.

4.6.6 How will the extra costs compare to the number of extra ships recycled responsibly?

The extra institutional costs of this mechanism will be lower than with the Ship Recycling Fund. And as Individual producer Responsibility is better integrated (both in comparison to the Ship Recycling Fund and to the EC proposal), this mechanism will help to bring the additional costs of responsible recycling (in comparison to non-responsible recycling) down. In comparison to the total lifetime operational costs of a ship, these extra costs will be minimal

4.6.7 Are there legal objections to any aspect of this mechanism?

A Ship Recycling Insurance should respect the non-discrimination principle as laid down in the WTO/GATT agreements. Therefore, it is necessary that the obligation of an insurance should be imposed on all ships calling at EU ports, regardless of the nationality of the owner or the flag they sail under. Given the ruling of the European Court of Justice of 21 December 2011 (see paragraph 3.5.10), customary international law does not seem to form an obstacle for the introduction of a requirement to show a Ship Recycling Insurance certificate when entering a European port.

4.6.8 Which kind of legislation would be most suited to introduce this mechanism?

For the enforcement of international standards for ship safety, pollution prevention and working conditions on board, maritime authorities use an international agreed system of certification of ships. If a ship lacks one or more obligatory certificates, port authorities can refuse the entry into a port or prevent a ship from departing, or oblige the master to effectuate reparations.

Directive 2009/16 lays down the legislation necessary for port authorities of the Member States of the European Union to enforce international obligations and to control ships before and during the entry of a port. The non-discrimination principle obliges Member states to control and enforce in the same way ships from flag states that are and are not parties to the international treaties and agreements concerned. The same system of harbour state control could apply to the requirement of a compulsory insurance for dismantling costs. The lack of a certificate attesting of the insurance of a ship for dismantling costs would then give port authorities in the European Union the right to refuse the entry of such a ship or to prevent the ship from leaving.

To Annex IV of Directive 2009/16 a certificate concerning the insurance for ship recycling could be added and the proposed EU Ship Recycling Regulation could in itself contain provisions that ensure the enforcement via a certificate of insurance controlled by the harbour states of the European Union. For ships that do not have the certificate for a ship recycling insurance, the port authorities could take the measures as described in the Directive, amongst others, the refusal of the ship in all the ports of the EU as long as the ship does not have the insurance required.

The EU Directive 2009/20 on the Insurance of Shipowners for Maritime Claims (see paragraph 4.4) has already made liability insurance compulsory for all ships entering an EU port. Article 5(1) of this directive lays down an obligation for each Member State to ensure that the inspection of a ship in accordance with Directive 2009/16/EC, includes a verification of the certificate of Insurance for Maritime Claims is carried on board. In the same way a ship recycling Regulation could prescribe the obligation for the Member States to verify a certificate of a Ship Recycling Insurance.

Article 5(2) of this directive 2009/20 provides that if the insurance certificate is not carried on board, the competent authority may issue an expulsion order to the ship which shall be notified to the Commission, the other Member States and the flag State concerned. As a result of the issuing of such an expulsion order, every Member State shall refuse entry of this ship into any of its ports until the ship owner notifies the certificate. A comparable provision could be added to the proposed EU Ship Recycling Regulation.

4.6.9 Will this option result in less ships calling at European ports, especially near the borders of the EU?

Overland transport is an order of magnitude more expensive than sea transport, so the cost advantage of sea versus land is very high, even on relatively short distances (especially for bulk and liquid cargoes) i.e. shorter than 1,000 km. Therefore, the ship recycling insurance premium would have to be extremely high before it forces traders to move their goods over land into/out of the EU. Also, international shipping costs are a very small cost of the total supply chain from raw materials to manufactured good at the consumer's disposal. Therefore a small increase in total shipping costs caused by this premium is unlikely to materially affect overall trade patterns and EU imports/exports.

4.7 Conclusions for the Ship Recycling Insurance

In comparison to the EC proposal (paragraph 1.4), the Ship Recycling Insurance option has the following advantages:

- it applies the Polluter-Pays Principle, since the premium-paying shipowners are also the ones benefiting from the economic use of the ship over its lifetime;
- the mechanism will not only cover European-flagged ships, but all ships calling at European ports. The owners of these ships will have a strong incentive to choose responsible ship recycling, as they can only enter EU ports if they pay premiums for a Ship Recycling Insurance, while this insurance will only pay out when the ship is recycled responsibly. Many more ships will therefore be recycled responsibly than under the EC proposal;
- it also stimulates Individual Producer Responsibility, as the Ship Recycling Insurance premiums will go down as the ship is designed in such a way that responsible recycling is more feasible.

In comparison to the Ship Recycling Fund (see Chapter 3), the Ship Recycling Insurance has the following advantages:

- it is a lot simpler to implement, with lower institutional costs;
- it also eliminates the problem associated with determining which ships would be eligible for a subsidy from the Ship Recycling Fund;
- it introduces competition between insurance companies which will stimulate competition between recycling facilities and will thereby help to bring down the additional costs of responsible ship recycling, which would also be relevant to stimulate shipowners which do not visit EU ports to choose responsible recycling.

The main disadvantages of the Ship Recycling Insurance option are:

- it will not have a large, immediate impact on ship recycling practices, as it would be impossible to insure existing, older ships at a reasonable premium (unless a transitional fund as proposed for Option 3 was included)
- another important disadvantage, from the viewpoint of shipowners, is that the premium they are paying will be based on the expectance of the insurance company with regard to the additional costs of responsible recycling at the end of the ship's life. As this end-of-life might be 15 to 20 years away still, the premiums charged by the insurance company might be too high.

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Chapter 5 Option 3: Ship Recycling Account plus Transitional Fund

5.1 Introduction

This chapter describes a third option, the Ship Recycling Account in combination with a Transitional Recycling Fund. This combination is designed to deal with the disadvantages of the Ship Recycling Insurance (Chapter 4), while keeping the advantages,

Paragraph 5.2 discusses the Ship Recycling Account, while in paragraph 5.3 a transitional fund for the recycling of older ships is discussed. Paragraph 5.4 draws conclusions on these two options.

5.2 Ship Recycling Account scheme outline

5.2.1 Overview

In this option each ship has its own Ship Recycling Account (SRA), a savings account to finance the incremental costs of responsible recycling. The SRA is managed by a financial institution (bank or asset manager), on behalf of the shipowner. Upon paying into the SRA, the ship is issued an SRA Certificate with a one-year validity, allowing it to trade at EU ports during this period. SRA Certificates must be renewed annually, to remain valid, by payment of the next SRA annual deposit. Reason for an annual prolongation is that every (couple of) year(s) the minimum deposit for the SRA could be reconsidered based on changing responsible recycling costs and an extra check to control if the SRA-deposit is paid.

Ships wishing to enter EU ports are required to produce a valid certificate proving they have set up a Ship Recycling Account, into which they have made an annual deposit. It applies to all ships, irrespective of the age of the vessel calling at EU ports. The annually renewed Certificate can be replaced by a permanent one, once a “fully funded” SRA is achieved (e.g. after 20 years of deposit payments have been completed).

The purpose of the accelerated scheme is to encourage owners of new and young ships to accumulate a “fully funded” SRA as early as possible in the ship’s life span. This makes the ultimate scrapping age (which varies a lot, based on market conditions) irrelevant to the ultimate strength of the incentive to recycle responsibly. It also ensures that an adequate SRA is built up during the years when it is most likely to be owned by scrupulous, financially solid owners.

At the same time, it reduces the immediate “cost shock” to the already depressed shipping industry in Year 0, compared to what would ensue if a fully funded SRA were required when a ship is built and registered with the IMO. In this way, it also avoids the problem of disproportionately penalizing investors in new ships.

Under this proposal, ships not in possession of a valid SRA Certificate would not be eligible to trade in the EU. This ensures that the measure captures the maximum number of ocean-going vessels in the global fleet. It can easily be enforced by Port Authorities, in the same way as done for currently required certificates such as P&I insurances, seaworthiness, health etc. No additional port fees are included.

Money paid by successive owners of a ship into its SRA belongs to the ship, following it as it changes ownership throughout its lifetime. Therefore, these paid-in deposits are not an operational expense but an off-balance sheet asset of the shipowner. It is therefore a quite transparent component of the ship's re-sale value - which will be reflected in the sale/purchase price, if the ship is sold on to a new owner.

5.2.2 Annual deposit per ship

The annual SRA deposit is based on the estimated total incremental cost of responsible recycling of the specific ship at end-of-life, divided over 20 years - the standard depreciation period for ships. This allows for differentiation of the annual deposits, based on hazardous chemicals on board of the ship, safe recoverability, etc. This will add a strong Polluter Pays element and Individual Producer Responsibility incentive, encouraging new designs that minimize the end-of-life costs. Estimates of the incremental cost can be made - and regularly revised - by competent, internationally recognized and independent bodies (e.g. Lloyds, Bureau Veritas, DNV, ABS) following EU-approved standards and/or formulae.

To give an idea of the annual deposit needed per ship, an estimate for a Panamax bulk carrier is made: in 2012 approximately 600 Panamax ships are scrapped, the average cost difference for responsible and irresponsible recycling is set at US$ 50 per LDT. As the weight of a Panamax ship is about 15,000 LDT, the extra costs for responsible recycling will be US$ 750,000 for the ship. The time set to fully fund the SRA is 20 years, resulting in an annual deposit of US$ 37,500.

By including investment income or interest over the 20 year fund period in the equation, the required net annual payment can be further reduced. Competition between asset managers and banks can reduce the net annual payment shipowners have to make to meet their annual gross deposit requirement.

5.2.3 What would be the institutional costs of this mechanism?

SRAs can be set up and administered by banks and asset managers, following fiduciary rules applicable in this sector. The European Union can accredit the banks and asset managers which offer Ship Recycling Accounts, to ascertain that the SRA certificate is reliable. This would be certainly necessary when a Transitional Fund would be set up, to which part of the annual deposits of the shipowners should be transferred (see paragraph 5.3).

The primary aim of the SRA manager should be to preserve the purchasing power of deposits. Competition between banks and asset managers for SRA business (as part of a wider range of services to the shipping industry), ensures that administrative costs of SRA management is kept to a minimum and that it is handled by an industry already having the needed infrastructure.

5.2.4 Disbursement mechanism

At the end of a ship's life, the contents of the SRA is paid out by the SRA manager to the last shipowner, only on the condition it can prove the ship was recycled at an EU certified recycling facility in compliance with EU standards. Adequate proof is then the production of a statement issued by one of a limited number of recognized "certifiers" authorized to do so (again, most likely Lloyd's, Bureau Veritas, DNV, ABS).

In comparison to the Ship Recycling Insurance, this mechanism gives the shipowner the important advantage that any future decrease in the additional costs of responsible recycling will flow back into his pockets (as the scrap value of the ship rises). In the Ship Recycling Insurance, the insurance companies will increase the premium to be paid with a risk premium, as they have to guarantee the pay-out of a yet unknown amount. In the SRA option, the bank or asset manager which manages the SRA, does not provide this guarantee, which reduces the costs he charges for management. So either the premium/deposit will be lower, or there will be extra money left for the shipowner at the end-of-life of the ship.

5.2.5 Individual Producer Responsibility and Polluter-Pays Principle

Individual Producer Responsibility is introduced in this option by differentiating the fees paid into the SRA based on independent assessments of the recycling costs of the individual vessel. The amount to be saved can be differentiated based on the amount of hazardous material on board and the design of the ship. Again, this would be a key driver for ship owners to procure green ship design and pre-cleaning during the operational use of the ship.

The second main lever of the Ship Recycling Account is making end-of-life ships significantly more valuable to responsible shipowners. A prospective 'last owner' is now buying the ship not only for its scrap value, but also buys an option on the SRA cash following it – which is not available to a non-authorized recycling company. Provided the SRA is valuable enough, market forces will then stimulate investment in responsible ship recycling. Financing for authorized recycling investments and purchase of ships for recycling may also be facilitated, using the (very certain) value of SRAs as security.

This scheme ensures that the costs of responsible recycling are shared by the economic beneficiaries of the ships' use, over its lifetime, which is in line with the Polluter-Pays Principle.

5.2.6 Are there legal objections to any aspect of this mechanism?

The legal system based on a Ship Recycling Account should respect the non-discrimination principle as laid down in the WTO/GATT agreements. The Ship Recycling Account option avoids any trade distortion, as it would apply equally to all shipowners around the world. Financial obligations set by harbour states to non-EU companies do not seem to be contrary to customary international law, given judgment of the European Court of Justice in December 2011 in a case on the application of the emission trading system on greenhouse gas emissions from the aviation sector (see paragraph 3.5.10).

5.2.7 Which kind of legislation would be most suited to introduce this mechanism?

For the legal framework for a Ship Recycling Account, the same remarks apply as for the legislation that would be most suited for a Ship Recycling Insurance (see paragraph 4.6.8).

Directive 2009/16 lays down the legislation necessary for port authorities of the Member States of the European Union to enforce international obligations and to control ships before and during the entry of a port. The non-discrimination principle obliges Member states to control and enforce in the same way ships from flag states that are and are not parties to the international treaties and agreements concerned. The same system of harbour state control could apply to the requirement of a Ship Recycling Account. The lack of a certificate attesting of this SRA would give port authorities in the European Union the right to refuse the entry of a ship or to prevent the ship from leaving.

To Annex IV of Directive 2009/16 a certificate concerning the Ship Recycling Account could be added and the proposed EU Ship Recycling Regulation could in itself contain provisions that ensure the enforcement via an SRA certificate controlled by the harbour states of the European Union.

5.3 Transitional Fund for the Recycling of Older Ships

To be effective, any option needs to address the question of funding the responsible dismantling of older ships, e.g. ships built more than 15 years before the financial mechanism comes into effect. If this is not covered, the mechanism will not have an impact on the number of ships recycled responsibly in the coming 10-15 years. This could be dealt with through a complementary mechanism, the Transitional Fund for the Recycling of Older Ships. A temporary surcharge on the deposits of all ships made to their SRA, should be transferred to this fund. With these proceeds, the fund can subsidize the responsible recycling of older ships - if they are eligible for support.

This complementary mechanism could also be added to Option 2, the Ship Recycling Insurance, but it can more easily be combined with the Ship Recycling Account. That is because older ships would be refused a Ship Recycling Insurance (as the pay-out would be too large for the insurance company), but they will never be refused a Ship Recycling Account (as the pay-out is always equal to the deposits plus investment returns). So older ships could save for responsible recycling during the period in which they are still operational. As the deposits are calculated to pay for the additional costs of responsible recycling after 20 years, this means that a ship is recycled after 5 or 10 years will have already saved 25% or 50% of the additional costs.

For ships that are recycled within the first 20 years after the establishment of the EU Ship Recycling regulation with the SRA option, the built up SRA can be supplemented with a subsidy from the Transitional Fund, upon proof of responsible recycling. This disbursement would bridge (part of) the difference between the value of a ship's SRA at date of recycling, and the additional costs needed for responsible recycling of that ship.

5.3.1 Eligibility of ships for the subsidy

Eligibility of older ships (irrespective of flag or owner domicile) for a subsidy from the Transitional Fund can be determined by uninterrupted annual deposits in an EU-compliant Ship Recycling Account, from the year the EU Regulation is implemented. In other words, upon passing of the EU Regulation, all owners with older ships will need to decide whether or not to set up an SRA. Only if they do, they may enter EU ports and they retain the option to apply for a subsidy from the Transitional Fund.

Making maximum use of the EU market access incentive, this gives owners of older ships an extra motive to set up an SRA as long as possible. It reduces the risk of owners who only initiate an SRA just before expected end-of-life, in order to qualify for a recycling subsidy. In the case of middle-aged ships, owners have a strong reason to participate.

A detailed feasibility study would have to focus in depth on the question of avoiding a substantial transfer of wealth from owners of younger, more environmentally friendly fleets (more often EU/OECD-based) to owners with older, more polluting fleets (more often non-EU/OECD based). This needs to be addressed carefully through fine-tuning of the disbursement eligibility criteria and/or disbursement maxima. One could for instance stipulate that ships will only be eligible for a subsidy from the Transitional Fund three or five years after the EU Regulation has come into force. This means that shipowners applying for a subsidy will have already built up a certain SRA and that the surcharge on all SRA's does not need to be too high in the first years. It also makes sense to stipulate that only ships can apply that have entered EU-ports a minimum number of times since the EU regulation was implemented.

To deal with the fact that the demand for subsidies from the Transitional Fund will be largest in the first years and will gradually decrease over time, the future income stream of the Fund can be used as a security for a long-term loan guaranteed by the EU. The proceeds of the loan can then be used to cover part of the disbursements in the first years, to reduce the surcharges required from shipowners. In later years, when the surcharges stay at the same level while the subsidies decrease, the Transitional Fund will be able to repay this loan.

5.3.2 What would be the institutional costs of this mechanism?

Similar to option 1, the Ship Recycling Fund (see Chapter 3) would need some kind institutional framework to collect and disburse funds. However, the temporary nature of the Transitional Fund avoids the need for a new, permanent organisation at the EU level to administrate it. In theory, it could be outsourced to a financial institution. After 19 years, the Transitional Fund can be dismantled.

An important advantage in comparison to the Ship Recycling Fund is that the fund is filled by a surcharge on the annual deposits that the shipowners make to their SRAs. This surcharge is paid annually (together with the deposit) to a limited number of accredited banks and asset managers, who can transfer the collected surcharges once a year to the Transitional Fund. This funding mechanism is much simpler and therefore cheaper than the collection of port fees at all EU ports, as proposed for the Ship Recycling Fund.

5.3.3 Are there legal objections to any aspect of this mechanism?

The legal system on which the Transitional Fund is based, should respect the non-discrimination principle as laid down in the WTO/GATT agreements. The Transitional Fund should benefit all ship owners, regardless of their nationality or the flag state of the ship. It seems likely that the mechanism of a Transitional Fund would not be contrary to customary international law, given the ruling of the European Court of justice in the before mentioned case on the emission trade system for aviation.

5.3.4 Which kind of legislation would be most suited to introduce this mechanism?

Different from the fees for the Ship Recycling Fund, which would be levied by Port Authorities, the fees for the Transitional Fund would be paid as a surcharge on the annual deposits of shipowners to their SRA's. This surcharge should be based on the same regulation that introduces the Ship Recycling Account (see paragraph 5.2.7).

5.4 Conclusions on the Ship Recycling Account and Transitional Fund

The combination of a Ship Recycling Account with a Transitional Fund will have the same advantages as the Ship Recycling Insurance (see Chapter 4) in comparison to the EC proposal (paragraph 1.4):

- it applies the Polluter-Pays Principle, since the shipowners paying annual deposits to their SRA are also the ones benefiting from the economic use of the ship over its lifetime;
- the mechanism will not only cover European-flagged ships, but all ships calling at European ports. The owners of these ships will have a strong incentive to choose responsible ship recycling, as they can only enter EU ports if they make annual deposits in a Ship Recycling Account, while this money will only come available when the ship is recycled responsibly. Many more ships will therefore be recycled responsibly than under the EC proposal;
- it also stimulates Individual Producer Responsibility, as the Ship Recycling Account deposits will go down when the ship is designed in such a way that responsible recycling is most feasible.

In comparison to the Ship Recycling Fund (see Chapter 3), the Ship Recycling Account in combination with a Transitional Fund have the following advantages:

- although this combined option also includes a fund structure, it is easier to implement, with lower institutional costs, as the fees for the Transitional Fund are not levied by the port authorities, but are collected as surcharges on the annual deposit on the SRA;
- in the long term, it will eliminate the problem associated with determining which ships would be eligible for a subsidy from the Ship Recycling Fund, as each ship will save for the costs of its own responsible recycling through its SRA;
- it will stimulate competition between recycling facilities and will thereby help to bring down the additional costs of responsible ship recycling, which would also be relevant to encourage shipowners that do not visit EU ports to choose responsible recycling.

In comparison to the Ship Recycling Insurance (see Chapter 4), the Ship Recycling Account in combination with a Transitional Fund has some additional advantages:

- it will have a more immediate impact on ship recycling practices, as the Transitional Fund will deal with the responsible recycling of existing, older ships;
- as this is not an insurance, the insurance company does not have to be paid for taking the risk of an uncertain pay-out amount. The annual deposit into the Ship Recycling Account therefore will be lower than the annual insurance premium paid for the Ship Recycling Insurance.
- all deposits paid into the SRA will be available for the last shipowner, upon proof of responsible recycling. If the additional costs of responsible recycling at the end of the ships life are lower than calculated, this will result in a financial benefit for the shipowner. Theoretically, the opposite could occur as well. But with the big strong impetus given by this option to responsible recycling worldwide, it seems very likely that the costs for responsible ship recycling will drop.

The main disadvantage of the Ship Recycling Account in combination with a Transitional Fund is:

- the Transitional Fund will also incur some institutional costs, especially as attention needs to be paid to avoid misuse of subsidies.

Appendix 1 References

1 Basel Convention, “The Basel Convention At A Glance…”, *Basel Convention (www.basel.int/Portals/4/Basel%20Convention/docs/convention/bc_glance.pdf)*, August 2007; Basel Convention, “Status of Ratifications”, Website Basel Convention (www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx), Viewed in September 2012.

2 Basel Convention, “The Basel Convention At A Glance…”, *Basel Convention (www.basel.int/Portals/4/Basel%20Convention/docs/convention/bc_glance.pdf)*, August 2007.

3 Basel Convention, “The Basel Convention At A Glance…”, *Basel Convention (www.basel.int/Portals/4/Basel%20Convention/docs/convention/bc_glance.pdf)*, August 2007.

4 Basel Convention, “Technical guidelines for the environmentally sound management of the full and partial dismantling of ships”, *Basel Convention*, May 2003, available at: www.basel.int/Portals/4/Basel%20Convention/docs/meetings/sbc/workdoc/techgships-e.pdf

5 Basel Convention, “Text of the Convention”, *Website Basel Convention (www.basel.int/TheConvention/Overview/TextoftheConvention/tabid/1275/Default.aspx)*, Viewed in September 2012.

6 Basel Convention, “Ship Dismantling”, Website Basel Convention (www.basel.int/Implementation/TechnicalAssistance/ShipDismantling/Overview/tabid/2762/Default.aspx), Viewed in September 2012.

7 European Union, “Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste”, *Official Journal of the European Union*, 12 July 2006, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:190:0001:0098:EN:PDF

8 Basel Convention, “Status of Ratifications”, Website Basel Convention (www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx), Viewed in September 2012.

9 Basel Convention, “Basel Protocol on Liability and Compensation”, Website Basel Convention (www.basel.int/Implementation/LegalMatters/LiabilityProtocol/tabid/2399/Default.aspx), Viewed in September 2012.

10 Basel Convention, “Status of Ratifications”, Website Basel Convention (www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx), Viewed in September 2012.

11 European Union, “Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste”, *Official Journal of the European Union*, 12 July 2006, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:190:0001:0098:EN:PDF; Ormond, T. “The EU Waste Shipment Regulation and the need for better enforcement”, *Elni Review*, No.1/2010, May 2010, available at: http://elni.org/fileadmin/elni/dokumente/Archiv/2010/Heft_1/elni_Review_2010-1_Ormond_2010-05-20.pdf

12 Basel Convention, “Status of Ratifications”, Website Basel Convention (www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx), Viewed in September 2012.

13 Basel Convention, “Text of the Convention”, Website Basel Convention (www.basel.int/TheConvention/Overview/TextoftheConvention/tabid/1275/Default.aspx), Viewed in September 2012.

14 IMO, “Recycling of ships”, *Website International Maritime Organization (www.imo.org/ourwork/environment/shiprecycling/pages/Default.aspx)*, Viewed in September 2012.

15 IMO, “Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships”, *International Maritime Organization*, May 2009, available at www.basel.int/Portals/4/Basel%20Convention/docs/ships/HongKongConvention.pdf.

16 IMO, “Status of multilateral conventions and instruments in respect of which the International Maritime Organization or its secretary-general performs depositary or other functions as at 31 July 2012”, International Maritime Organization, 31 July 2012, available at: www.imo.org/About/Conventions/StatusOfConventions/Documents/Status%20-%202012.pdf.

17 Milieu & COWI, “Study in relation to options for new initiatives regarding dismantling of ships - Note on the ship dismantling fund - Pros and cons of the three options”, *Milieu & COWI*, August 2009, Available at: http://ec.europa.eu/environment/waste/ships/pdf/fund_note.pdf.

18 European Commission, “Proposal for a Regulation of the European Parliament and of the Council on ship recycling (COM(2012) 118 final)”, *European Commission*, 23 March 2012, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0118:FIN:EN:PDF.

19 European Commission, “Proposal for a Regulation of the European Parliament and of the Council on ship recycling (COM(2012) 118 final)”, *European Commission*, 23 March 2012, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0118:FIN:EN:PDF.

20 European Commission, “Proposal for a Regulation of the European Parliament and of the Council on ship recycling (COM(2012) 118 final)”, *European Commission*, 23 March 2012, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0118:FIN:EN:PDF.

21 European Parliament, “Ship recycling”, *Website Legal Observatory of the European Parliament (www.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=en&procnum=COD/2012/0055)*, Viewed in September 2012.

22 Vícha, O., “The polluter-pays principle in OECD recommendations and its application in international and EC/EU law”, *Czech Yearbook of Public & Private International Law*, Vol. 2, November 2011, available at: http://files.cyil.eu/200000043-87d4c88ce6/%C4%8CSMP_2011_05_vicha.pdf.

23 UNCED, “Rio Declaration on Environment and Development”, *United Nations Conference on Environment and Development*, 3-14 June 1992, available at: www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163.

24 De Sadeleer, N., “The Polluter-pays Principle in EU Law - Bold Case Law and Poor Harmonisation”, *St. Louis University*, March 2012, available at: www.desadeleer.eu/uploads/papers/de%20Sadeleer.pdf.

25 European Union, “Environment policy: general principles”, *Website European Union (circa.europa.eu/irc/opoce/fact_sheets/info/data/policies/environment/article_7292_en.htm)*, Viewed in September 2012.

26 Orellana, M. et al., “Shipbreaking and the Basel Convention: analysis of the level of control established under the Hong Kong Convention”, *The Center for International Environmental Law*, April 2011.

27 ITF, “FOC Countries”, *Website International Transport Workers’ Federation (www.itfglobal.org/flags-convenience/flags-convenien-183.cfm)*, Viewed in September 2012.

28 European Commission, “Commission Staff Working Document - Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council on Ship Recycling (SWD(2012) 47 final)”, European Commission, 23 March 2012, available at: ec.europa.eu/environment/waste/ships/pdf/Impact%20Assessment.pdf.

29 European Commission, “Commission Staff Working Document - Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council on Ship Recycling (SWD(2012) 47 final)”, European Commission, 23 March 2012, available at: ec.europa.eu/environment/waste/ships/pdf/Impact%20Assessment.pdf.

30 European Commission, “Proposal for a Regulation of the European Parliament and of the Council on ship recycling (COM(2012) 118 final)”, *European Commission*, 23 March 2012, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0118:FIN:EN:PDF.

31 Schlyter, C., “Draft Report on the proposal for a regulation of the European Parliament and of the Council on ship recycling (COM(2012)0118 – C7-0082/2012 – 012/0055(COD))”, *European Parliament Committee on the Environment, Public Health and Food Safety*, 20 November 2012, Available at: www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-498.083%2b02%2bDOC%2bPDF%2bV0%2f%2fEN

32 European Commission, “Commission Staff Working Document - Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council on Ship Recycling (SWD(2012) 47 final)”, European Commission, 23 March 2012, available at: ec.europa.eu/environment/waste/ships/pdf/Impact%20Assessment.pdf.

33 European Commission, “Commission Staff Working Document - Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council on Ship Recycling (SWD(2012) 47 final)”, European Commission, 23 March 2012, available at: ec.europa.eu/environment/waste/ships/pdf/Impact%20Assessment.pdf.

34 Ecorys, “Financing environmentally sound scrapping and recycling of sea-going ships”, *Ecorys Transport*, 1 February 2005, Available at: http://www.greenpeace.org/india/PageFiles/334111/fund.pdf.

35 Ecorys, “Financing environmentally sound scrapping and recycling of sea-going ships”, *Ecorys Transport*, 1 February 2005, Available at: http://www.greenpeace.org/india/PageFiles/334111/fund.pdf.

36 Milieu & COWI, “Study in relation to options for new initiatives regarding dismantling of ships - Note on the ship dismantling fund - Pros and cons of the three options”, *Milieu & COWI*, August 2009, Available at: http://ec.europa.eu/environment/waste/ships/pdf/fund_note.pdf.

37 Ecorys, “Financing environmentally sound scrapping and recycling of sea-going ships”, *Ecorys Transport*, 1 February 2005, Available at: http://www.greenpeace.org/india/PageFiles/334111/fund.pdf.

38 European Union, “Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles,” *Official Journal of the European Communities No. L269/34*, 21 October 2000, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:269:0034:0042:EN:PDF; Wikipedia, “End of Life Vehicles Directive”, *Wikipedia (en.wikipedia.org/wiki/End_of_Life_Vehicles_Directive)*, Viewed in September 2012.

39 US EPA, “Recycling and Reuse: End-of-Life Vehicles and Producer Responsibility”, *Website United States Environmental Protection Agency (www.epa.gov/oswer/international/factsheets/200811_elv_directive.htm#ImpDir)*, Viewed in September 2012.

40 European Union, “Directive 2002/96/EU of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE)”, *Official Journal of the European Communities No. L37/24*, 13 February 2003, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0024:0038:EN:PDF; European Union, “Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)”, *Official Journal of the European Communities No. L197/38*, 24 July 2012, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:EN:PDF.

41 European Union, “Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)”, *Official Journal of the European Communities No. L197/38*, 24 July 2012, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:EN:PDF.

42 IPR Works, “About IPR”, *Website IPR Works (www.iprworks.org/about.asp#Q7)*, Viewed in September 2012.

43 AISAM a.o. “Joint Statement by a group of Industry and NGOs on Producer Responsibility for Waste Electrical and Electronic Equipment”, *AISAM a.o.*, 17 September 2007, available at: http://www.iprworks.org/statements/IPR%20Statement%20-English%20-September%202007.pdf

44 European Commission, “Proposal for a Regulation of the European Parliament and of the Council on ship recycling (COM(2012) 118 final)”, *European Commission*, 23 March 2012, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0118:FIN:EN:PDF.

45 UNCTAD report Review of Maritime Transport 2011, p.41.

46 Robin des Bois, Bulletins of information and analysis on ship demolition, # 23 to 26 From January 1st to December 31st 2011, Ship-breaking.com, available at: http://www.robindesbois.org/english/shipbreaking/shipbreaking-2011.pdf

47 Data provided bij Sea2Cradle.

48 Milieu & COWI, “Study in relation to options for new initiatives regarding dismantling of ships – Note on the dismantling fund – Pros and cons of the three options”, *Milieu & COWI,* August 2009.

49 Schlyter, C., “Draft Report on the proposal for a regulation of the European Parliament and of the Council on ship recycling (COM(2012)0118 – C7-0082/2012 – 012/0055(COD))”, *European Parliament Committee on the Environment, Public Health and Food Safety*, 20 November 2012, Available at: www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-498.083%2b02%2bDOC%2bPDF%2bV0%2f%2fEN

50 According to a source at Breamar Seascope.

51 Eurostat, “Gross weight of seaborne goods handled in all ports (in million tonnes) 1997 2010”, Website Eurostat (epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Gross_weight_of_seaborne_goods_handled_in_all_ports_(in_million_tonnes)_1997_2010.PNG&filetimestamp=20120223095112), Viewed in December 2012.

52 Schlyter, C., “Draft Report on the proposal for a regulation of the European Parliament and of the Council on ship recycling (COM(2012)0118 – C7-0082/2012 – 012/0055(COD))”, *European Parliament Committee on the Environment, Public Health and Food Safety*, 20 November 2012, Available at: www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-498.083%2b02%2bDOC%2bPDF%2bV0%2f%2fEN

53 IMO, “List of IMO Conventions”, *Website International Maritime Organization (www.imo.org/About/Conventions/ListOfConventions/Pages/Default.aspx)*, Viewed in September 2012.

54 Ecorys, “Financing environmentally sound scrapping and recycling of sea-going ships”, *Ecorys Transport*, 1 February 2005, Available at: http://www.greenpeace.org/india/PageFiles/334111/fund.pdf.

55 Kragic, P., “Compulsory insurance for shipowner’s cargo liability - A heresy or logical step?”, *Website UK P&I Club (www.ukpandi.com/knowledge-developments/article/compulsory-insurance-for-shipowners-cargo-liability-845/)*, 6 October 2009.

56 European Union, “Directive 2009/20/EC of the European Parliament and of the Council of 23 April 2009 on the Insurance of Ship Owners for Maritime Claims”, *Official Journal of the European Communities No. L131/128*, 28 May 2009, available at: eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:131:0128:0131:EN:PDF”

57 Smaling, D., “Obligation for a Marine Insurance in Europe”, *The Maritime Executive*, 20 January 2012, available at: www.maritime-executive.com/article/obligation-for-a-marine-insurance-in-europe.

58 European Union, “Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)”, *Official Journal of the European Communities No. L197/38*, 24 July 2012, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:EN:PDF.

59 Sverkman, A., “Financial Guarantees as a Trigger for Individual Producer Responsibility”, Länsförsäkringar, December 2006, available at: www.iprworks.org/documents/file/FinancialGuaranteesasaTriggerforIndividualProducerResponsibility.pdf