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- *Impact Assessment*

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Impact Assessment for an EU strategy for better ship dismantling

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1.

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2. EXECUTIVE SUMMARY

This impact assessment (IA) accompanies the Commission proposal for an EU strategy on better ship dismantling.

The IA identifies the problem as a global market failure in the sense that the present ship recycling market operates under unacceptable conditions for the environment and workers' health in South Asia, and that this failure concerns also the EU on account of the high number of European-flagged and European-owned ships that go for scrapping to facilities in Bangladesh, India or Pakistan.

The general objective of an EU strategy on ship dismantling is to ensure that ships with a strong link to the EU in terms of flag or ownership are dismantled only in safe and environmentally sound facilities worldwide. This includes as specific objectives: to prevent, in line with the Waste Shipment Regulation, the export of hazardous end-of-life ships from the EU to developing countries and to reduce significantly and in a sustainable way by 2015 the negative impacts of shipbreaking, especially in South Asia, on human health and the environment without creating unnecessary economic burdens.

Four options were considered to address these objectives: 1) a continuation of the current level of EU activities as "baseline", 2) a policy with emphasis on voluntary action by shipowners and recycling facilities, 3) comprehensive EU legislation to implement key provisions of the forthcoming IMO Convention and complement it with certain mandatory provisions, and 4) an integrated policy approach combining selected legislative and non-legislative measures.

The first option would imply a low level of EU activity, essentially relying on Member States for the implementation of the IMO Ship Recycling Convention in the longer term.

The second option would favour non-legislative measures to promote voluntary action by the shipping industry, i.e. encourage shipping companies to use only safe and environmentally sound ship dismantling facilities. It would focus on positive incentives and not on the stricter enforcement of the current EC Waste Shipment Regulation. Two sub-options are distinguished, according to whether incentives should be used to encourage clean ship dismantling in the EU or candidate countries, or promote better practices worldwide.

Under the third option, EU legislation would transpose key elements of the future Ship Recycling Convention (survey and certification requirements for ships, essential requirements for recycling facilities, and rules on communication and reporting) into EU law and complement it where necessary to fill gaps. Beyond implementation, the EU legislative instrument would envisage additional measures to extend future Convention standards to government vessels of Member States, require EU-flagged ships go only to audited and certified facilities for dismantling, and establish a list of ships ready for scrapping to improve the control system of the Waste Shipment Regulation for ships. In this context, some other possible legislative actions - more prohibitions on hazardous materials in ships, stricter obligations for pre-cleaning or a ban on beaching - are also assessed. Apart from new legislation, the option would cover other measures (guidance documents, IMPEL-TFS projects, infringement proceedings, cooperation with third countries) to ensure better enforcement of current waste shipment law with regard to end-of-life ships.

The fourth option combines a selection of legal proposals under option 3 with certain supporting actions under option 2 in an integrated policy approach. This would include legislation to implement, as a priority, key elements of the envisaged Ship Recycling Convention as soon as adopted by the IMO diplomatic conference foreseen to take place in May 2009, in particular provisions concerning surveys and certificates for ships, essential requirements for recycling facilities and rules on reporting and communication. It would also include rules for the clean dismantling of warships and other government vessels and certified dismantling facilities, and a list of ships ready for scrapping. . Supporting actions would mean a range of non-legislative measures, such as a campaign for voluntary commitments, streamlining of shipping aids, certification and award schemes, and technical assistance to developing countries, but not subsidies for ship dismantling in the EU.

The impact analysis of these options presents an assessment of environmental, social and economic impacts. It gives an indication on the extent to which each of the options can resolve the problem, and discusses the costs and possible drawbacks. As the Communication on an EU ship dismantling strategy does not represent a concrete legislative proposal, and that the impacts of such measures that may be adopted subsequently will be analysed in detail in separate IAs, the level of analysis is deemed proportionate at this stage.

Finally, the impacts of the options are compared in two tables, distinguishing impacts in the short and medium term (until 2010 and 2015, respectively) from those in the long term.

The conclusion of this IA is that the fourth option (integrated policy approach) is preferable, as it is the only one that can achieve altogether positive environmental, social and economic impacts in the short and medium as well as in the long term. This option would ensure a high level of compliance with current waste shipment law and reduce significantly in the next years the negative impacts of shipbreaking on human health and the environment, especially in South Asia, without creating excessive burden on EU taxpayers.

The implementation of the ship dismantling strategy would need regular monitoring in order to evaluate changing impacts and adapt the actions accordingly.

3. INTRODUCTION / PROCEDURAL ISSUES

3.1. 2.1 Organisation and timing

This impact assessment (IA) accompanies the Commission proposal for an EU strategy on better ship dismantling. The IA has been prepared with input from the European Maritime Safety Agency (EMSA). The information contained in the document has been updated as far as possible until early June 2008.

Specific actions to be developed out of the strategy proposal will be accompanied by separate impact assessments as needed. This applies in particular to legislation proposed to implement and complement the International Convention for the Safe and Environmentally Sound Recycling of Ships ("Ship Recycling Convention") that is scheduled for adoption in May 2009. As the Convention is currently still under negotiation in the International Maritime Organisation (IMO), any assessment of its effects and of the need for complementing measures is bound to be preliminary at this stage.

3.2. 2.2 Consultation and expertise

This impact assessment is based on: the Green Paper on better ship dismantling¹ adopted by the Commission in May 2007; the results of the following public consultation and a stakeholder workshop held in Brussels on 28 November 2007; and on a broad range of studies, expert advice and media information on the subject.

Apart from DG ENV, other Commission services (SG, DGs TREN, ENTR, COMP, EMPL, FISH/MARE, RELEX, REGIO and TRADE) and EMSA have been involved in the framework of an Inter-service group on ship recycling.

In the public consultation process on the Green Paper, other European institutions, the Member States, non-governmental stakeholders and the public were invited to comment and used this opportunity widely. Participants generally encouraged the EU to take urgent action on ship dismantling. Apart from stronger EU coordination at the international level in order to achieve an effective IMO Convention, the expectations of stakeholders focused on legislation for its early implementation, guidance from the Commission, an EU label for the certification of clean ship dismantling facilities and research on ways to establish a sustainable funding system to upgrade the industry ("ship dismantling fund"). On the other hand, most stakeholders opposed to the idea of subsidies for the strengthening of ship dismantling capacity in the EU. The results of the consultation are published on the website of the Commission² and annexed to this Impact Assessment.

The general principles and minimum standards for consultation of interested parties by the Commission were respected.³

On 21 May 2008, the European Parliament debated the Green Paper and adopted a resolution specifying the actions it expects of the Commission and the Member States in the field of ship dismantling.⁴

Various studies launched by the Commission between 2000 and 2007 - most recently the COWI/DHI study on "Ship dismantling and pre-cleaning of ships"⁵ and the ongoing EMSA study on "Certification of ship recycling facilities" - were used for this impact assessment. So were relevant reports and impact assessments by institutions of Member States, in particular the Regulatory Impact Assessment for the UK Ship Recycling Strategy of February 2007⁶ and the report of the French Inter-departmental Committee on the Dismantling of Civilian and Military End-of-Life Ships (MIDN) of March 2007⁷. Further data on shipping and ship dismantling were provided by EMSA, IMO, the maritime press and consulted experts. For the environmental and social impacts of ship dismantling in South Asia, additional information

¹ COM (2007) 269 final, with Annex and references in Commission Staff Working Document SEC(2007) 645.

² http://ec.europa.eu/environment/waste/ships/pdf/report_consultation.pdf.

³ Cf. COM(2002)704, published at: http://ec.europa.eu/civil_society/consultation_standards/index_en.htm.

⁴ <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2008-0222+0+DOC+XML+V0//EN&language=EN>.

⁵ COWI/DHI / EC-DG ENV, Ship Dismantling and Pre-cleaning of Ships, Final report of June 2007, published

on the Commission website at <http://ec.europa.eu/environment/waste/ships/index.htm>. Further references are to be found on the same webpage.

⁶ Department for Environment, Food and Rural Affairs (DEFRA), published at <http://www.defra.gov.uk/ENVIRONMENT/WASTE/strategy/ship.htm>.

⁷ Hereafter called "MIDN report"; French original (with annexes) and English translation published at: http://www.sgmer.gouv.fr/article.php3?id_article=52.

was given by governments, industry and NGOs and in particular derived from two workshops in Mumbai (India) and Dhaka (Bangladesh) attended by Commission and EMSA experts in January 2008.

Nevertheless, there are considerable data limitations which have to be taken into account in this assessment. Notably, the available statistics on ship dismantling vary significantly if different databases are consulted. The cost effects of the future IMO Ship Recycling Convention are still in many respects uncertain and will depend on further specifications in the final drafting of the Convention and the accompanying guidelines. For these and other aspects it has often not been possible to make precise forecasts but only to indicate that a measure would more or less probably have a high, medium (limited) or low impact.

3.3. 2.3 Opinion of the Impact Assessment Board

A draft of this Impact Assessment was submitted to the Impact Assessment Board on 11 June 2008. The Impact Assessment Board submitted written technical comments on 26 June 2008 and issued its final Opinion on the draft IA on 18 July 2008. Five main areas of further improvement have been identified by the Board:

A more detailed analysis of how the proposed policy options will solve the current compliance problems;

A more complete description of how the Waste Shipment Regulation applies to end-of-life ships;

The need to support the analysis of options with clearer and additional quantitative data for the better assessment of the administrative burden;

Further clarification of the net impacts of the integrated policy approach;

The choice of legal instruments for the implementation of the international Ship Recycling Convention should be further explained.

The technical comments and the Opinion of the Impact Assessment Board have been answered by the author DG, and additional information and/or clarifications have been incorporated in the relevant IA sections. In particular, the text was revised to describe the legal provisions and documented implementation problems of the Waste Shipment Regulation, and supporting data for the proposed options have been added to the text.

4. ISSUE AT STAKE: WHY AN EU STRATEGY ON SHIP DISMANTLING?

4.1. 3.1 Definition of the problem

Worldwide, between 200 and 600 large end-of-life ships are dismantled every year. Their steel, other scrap metal and equipment constitute valuable raw materials. Most of this ship dismantling nowadays takes place in South Asia, on tidal beaches and under unacceptable conditions from the point of view of safety and environmental protection. The rate of accidents is high, many workers contract lethal diseases, and water, soil and coastal habitats are heavily polluted by hazardous materials from ships. Furthermore, due to a backlog in ship scrapping and the phasing out of all single-hull oil tankers in 2010 or 2015, the number of ships that have to be dismantled will rise sharply in the years to come.

As 25% of the merchant ships worldwide fly the flags of EU Member States and about 40% of the world tonnage is owned by European companies, the situation is of concern to the European Union. EU legislation is affected in particular where it covers the export of hazardous waste. Regulation (EC) No 1013/2006 on shipments of waste ("Waste Shipment Regulation") prohibits the export of hazardous wastes and certain other wastes from the EU to non-OECD countries also if the waste in question is destined for recovery (recycling). This export prohibition (known as the "Basel Ban") transposed a not yet internationally effective amendment to the Basel Convention on Transboundary Movements of Hazardous Wastes into binding EU law. Due to the hazardous materials on board of older ships - in particular asbestos, polychlorinated biphenyls (PCBs), tributyl tin (TBT), heavy metals in paints, F-gases in insulation and air conditioning systems, and large quantities of oils and oil sludge - ships going for demolition usually have to be regarded as hazardous waste.

However, the application of the hazardous waste export ban of the Community Waste Shipment Regulation only applies to the EU territory. If a ship has left European waters (without having been recognised as waste) and the owner then decides to send it for dismantling in other parts of the world, the Community rules do not apply. Such ships containing hazardous waste will be subject to the prior notification and consent rules of the Basel Convention. However, when they arrive for the purpose of recovery in the state of destination, the governments of most Asian recycling states are reluctant to apply the Basel Convention to ships, apparently for economic reasons. In some cases also competent authorities of EU Member States show that they are uncertain about application of the Waste Shipment Regulation to end-of-life ships which leave from their ports. Shipowners on their side complain that there is too little guidance available especially on clean dismantling facilities that exist worldwide.

The problem is further exacerbated because EU Member States, including some of the major maritime nations of the world, react very differently to the challenge and few have a national strategy on ship dismantling. There is a general fear that any national legislation on this subject runs the risk of driving ship-owners to re-flag to flags of convenience, to circumvent Community rules once a ship has left the EU territory.

The International Maritime Organization (IMO) is currently developing an international convention on the safe and environmentally sound recycling of ships. This convention is for the most part finalised and expected for adoption by a diplomatic conference foreseen to take place in May 2009. It will, however, not be sufficient as a solution for the whole problem. The current draft does not cover warships and other state-operated vessels, the compliance mechanisms appear weak and it is uncertain when the new regime will become binding and effective.. Moreover, the IMO Convention needs the active support and implementation by the major Parties (flag states and recycling states) if it is to generate real change on the ground.

Table 1: Top 10 flags and EU Member States in world merchant shipping (ships \geq 500 GT, 1 January 2008)⁸

No	Flag state	Tonnage in million GT	% of world fleet	Average age of ships (in years)

⁸ Compiled on the basis of data from DG TREN / Lloyd's Register database.

No	Flag state	Tonnage in million GT	% of world fleet	Average age of ships (in years)
1	Panama	251.5	22.9	17
2	Liberia	117.4	10.7	13
3	Bahamas	62.7	5.7	15
4	Greece	60.6	5.5	18
5	Hong Kong	59.6	5.4	11
6	Marshall Islands	59.4	5.4	11
7	Singapore	56.6	5.2	12
8	UK	44.3	4.0	13
9	Malta	41.2	3.8	17
10	China	37.0	3.4	23
<i>World total (90 states and territories)</i>		<i>1,097.8</i>	<i>100.0</i>	<i>19</i>
<i>EU-27</i>		<i>250.4</i>	<i>22.8</i>	<i>16</i>

Table 2: Top 10 flags of dismantled merchant ships (≥ 100 GT) by tonnage in 2006-2007⁹

Flag state	Dismantled tonnage 2006-2007 (1,000 GT)	% of world fleet 2006-2007
Panama	1,550	16.0
Tuvalu	1,208	12.4
Liberia	828	8.5
Mongolia	502	5.2
Malta	453	4.7
St. Vincent & Grenadines	413	4.2
Norwegian Internat. Register	343	3.5
USA	327	3.4

⁹ Compiled on the basis of data from EMSA / LMIU (Lloyd's Marine Intelligence Unit) database.

Marshall Islands	282	2.9
St. Kitts-Nevis	282	2.9
<i>Total (100 states, territories and international registers)</i>	<i>9,717</i>	<i>100.0</i>
<i>EU flags (21 first registers)</i>	<i>949</i>	<i>9.8</i>
<i>EU flags with overseas territories / second registers</i>	<i>1,091</i>	<i>11.2</i>

4.2. 3.2 The economics and politics of ship dismantling - drivers of the problem

The Green Paper of May 2007 has described in detail the working of the ship recycling market which in brief may be described as follows: Ship owners who have decided to end the economic life of a vessel will usually look for a so-called cashbuyer. This basically happens when the maintenance costs of the vessel start to exceed possible revenue, or when the vessel has become unattractive for the second-hand market, i.e. it is unlikely that it can be sold on for further use. The cashbuyer will either be a dedicated broker or the scrapyard operator himself. Typically, the ship will take cargo for a final voyage to the region where the scrapyard is located. After completion of this voyage, the ship will be brought, under its own power, to the scrap yard. This is in most cases a defined strip of a 20-30 km long tidal beach near Chittagong (Bangladesh), Alang (India) or Gadani (Pakistan) which is usually leased by the state to an operator and where the ship will be dismantled step by step. After the removal of reusable equipment (machinery, furniture etc) and the cutting-up of the hull in increasingly smaller portions on site, the steel plates from the ship will be carried to metal works in the hinterland. Most often, especially in Bangladesh, the steel is treated "cold" in re-rolling mills and then used as construction material.

This market does not exist in Europe any more. Due to stricter product regulations and less demand, the machinery from old ships is rarely re-used, and the scrap steel will have to be recycled "hot" via furnaces.

Ship recycling is a fully globalised market driven by factors like freight rates, the price of steel scrap and the costs of maintaining an ageing fleet, which decide at what point in time a ship will be scrapped. The choice of the dismantling location is influenced in particular by the metal price a facility can offer to the ship owner or the intermediary cashbuyer. This price in turn depends on the demand for recycled steel in the area concerned and on the costs of the recycling operations. The costs of ship recycling differ considerably according to the price of labour and the costs of infrastructure for workers' safety and environmental protection. Besides, a higher price for metal is be paid by the yard owner if the scrap steel can be recycled "cold", without energy-intensive and thus expensive re-melting in electrical furnaces.

More than 80% of the larger end-of-life ships worldwide since 2004 (in terms of tonnage) have been dismantled in India, Bangladesh and Pakistan. In these countries the "beaching" method is used, which means that the vessels are driven - usually by their own steam - onto sandy beaches and broken up without heavy machinery and without other containment than the hull of the ship itself. Other countries like China, Turkey and several EU Member States where under-used capacity exists for ship dismantling in dry docks, at piers and on hard slipways only account for a small fraction of the market. EU facilities have managed to

survive essentially where they concentrated on recycling of small ships (especially fishing vessels), where dismantling is performed as an additional service to ship repair or where they could rely on certain market niches like the recycling of oil rigs or river barges as their economic mainstay.

Ship recycling is an important source of raw material supply and of employment particularly in Bangladesh. Here it is estimated that 90% of the domestic steel supply for the building industry comes from scrap ships. Shipbreaking offers direct employment opportunities for about 25,000 workers and 200,000 more are said to be engaged in related business activities.¹⁰ The economic importance of the industry in India is less pronounced: The workforce numbers between 3,000 and 5,000, and the share of ship scrap in the overall steel supply is below 10% and decreasing.¹¹ In the EU, the current number of jobs in the industry (even if all approx. 50 locations for at least occasional ship recycling are included) is probably below 300, and the role of ship scrap on the market for raw materials is negligible.¹²

Table 3: Top 10 dismantling countries by number of dismantled merchant ships ≥ 100 GT in 2006-2007¹³

No	Country	Ships in 2006	Ships in 2007	Total ships 2006-2007	% of world 2006-2007
1	Bangladesh	161	118	279	28.5
2	India	113	155	268	27.3
3	Turkey	60	50	110	11.2
4	Pakistan	22	38	60	6.1
5	Denmark	32	18	50	5.1
6	China	30	14	44	4.5
7	Spain	5	23	28	2.9
8	UK	8	13	21	2.1
9	USA	10	7	17	1.7
10	Norway	8	5	13	1.3

¹⁰ Md. M. Hossain / M. M. Islam, Ship Breaking Activities and its Impact on the Coastal Zone of Chittagong, Bangladesh, 2006, p. 10.

¹¹ Cf. MIDN report, Annex XVI.

¹² For an overview of ship dismantling capacity in the EU and worldwide see Table 6 on page 26 The largest of the continuous operators in DK, NL and BE employ around 20 staff each (direct information from companies and cf. MIDN report, Annex XVI). The forthcoming dismantling of the French aircraft carrier Clemenceau in Hartlepool (UK) is reported to preserve or create about 170 jobs in the facility of Able UK; MailOnline of 2 July 2008, <http://www.dailymail.co.uk/news/worldnews/article-1030971/The-toxic-ship-shunned-world--lets-bring-Britain.html#>.

¹³ Compiled on the basis of data from EMSA / LMIU database, May/June 2008.

No	Country	Ships in 2006	Ships in 2007	Total ships 2006-2007	% of world 2006- 2007
	<i>Total (40 states and territories)</i>	493	487	980	100.0
	<i>All EU recycling states (14)</i>	68	76	144	14.7

Table 4: Top 10 dismantling countries by tonnage of dismantled merchant ships ≥ 100 GT in 2006-2007

No	Country	Total tonnage 2006-2007 (1,000 GT)	% of world 2006-2007
1	Bangladesh	5,025	51.7
2	India	2,413	24.8
3	China	636	6.5
4	Pakistan	632	6.5
5	Turkey	410	4.2
6	Unknown	201	2.1
7	USA	165	1.7
8	Canada	41	0.4
9	Denmark	26	0.3
10	Norway	25	0.3
<i>Total (40 states and territories)</i>		<i>9,717</i>	<i>100.0</i>
<i>All EU recycling states (14)</i>		<i>111</i>	<i>1.1</i>

Operators in South Asia employ many unskilled labourers at extremely low wages of about 1 dollar or at most 2 dollars per day. Investment in permanent constructions and machinery at the yards is very limited. Of the three countries on the sub-continent, only India has developed some central infrastructure for hazardous waste management, workers' training and health care in the last 2-3 years. The highest price for metal from ships in the first months of 2008 - up to 700 \$ per ton - was paid by operators in Bangladesh where the standards of workers' safety and pollution prevention were lowest, and most steel was processed without melting in re-rolling mills. There is thus a strong economic incentive for ship owners to choose recycling facilities with a particularly poor social and environmental standard.

The advantages of low-cost countries increase with the size of a ship, as more man-hours are needed to dismantle a large and especially complex vessel, the profit from higher steel prices rises and the transport costs to Asia are less relevant. For small ships (with less than about 500 GT¹⁴) these advantages are relatively smaller, which explains why fishing vessels are usually broken up near to their home port, and that countries like Denmark and Spain count relatively

¹⁴ GT = gross tons, the measure of the overall size (internal capacity) of a ship. The weight of a scrap ship is most often expressed in light displacement tonnes (LDT) which is calculated without cargo, fuel, ballast water etc and roughly equals the steel weight of a vessel. In order to compare gross tonnage/GT and LDT, different conversion factors are applied, depending on the type of ship: LDT equals e.g. 54% of the GT for fishing vessels and 46% of the fully loaded weight for warships; cf. COWI/DHI study of June 2007, at p. 40.

high in numbers of dismantled ships, but not in tonnage. Other small and medium ships operating solely in Europe are often dismantled in Turkey.

Bangladesh is in relation to its competitors the recycling country with the greatest difficulties of governance in relation to the shipbreaking industry. Although there is some relevant legislation on national level, the industry - about 32 companies grouped together in the powerful Bangladesh Ship-Breakers Association (BSBA) - takes advantage of a *laissez-faire* climate where government inspectors rarely intervene. Trade unions are not allowed to operate inside the yards and the current military caretaker government restricts their activities, as well as those of the media. Whereas in India several judgments by the Supreme Court in 2003 and 2007, on applications by environmental and human rights organisations, forced the authorities to take action and shipbreakers to upgrade their facilities to some extent, similar changes by legal proceedings do not seem to be possible at present in Bangladesh.

4.3. 3.3 Who is affected, in what ways and to what extent?

Shipbreaking offers jobs for thousands of poor labourers in Bangladesh, India and Pakistan but it also involves high risks for human health and the local environment in these countries. This is primarily due to dangerous working practices (e.g. insufficient precautions against explosions and falling hazards) and to the hazardous materials on board old ships. As was shown by a study for the Commission in 2004¹⁵, most vessels that were built before the mid-1980s contain large amounts of asbestos, oils and oil sludge, PCBs (polychlorinated biphenyls), tributyl tin and heavy metals in paints and equipment.

When sent for dismantling, old ships represent one of the major streams of hazardous waste from industrialised countries to the developing world. The 2004 study for the Commission (DG TREN) estimated that oil sludge from end-of-life ships alone might total between 400,000 and 1.3 million tonnes per year until 2015. Of the hazardous waste in dismantling facilities every year, asbestos would amount to 1,000-3,000 tonnes, TBT 170-540 tonnes and environmentally harmful paints to 6,000-20,000 tonnes. In addition, the release of ozone-depleting f-gases from cooling systems (approx. 150-400 tonnes per year) by careless ship dismantling would contribute to worldwide climate problems.

The scrapping of ships in South Asia takes place on sandy beaches without concrete covering or any other containment other than the hull of the ship itself. End-of-life ships are rarely pre-cleaned before their arrival on the shores of South Asia. Instead, one of the traditional "cleaning" methods is the drilling of holes into the beached ship through which sea water can wash out oil-contaminated tanks at high tide. Whereas in Alang (India) a landfill for hazardous waste (mainly asbestos and glass wool) has been built in 2005, and waste reception facilities and asbestos removal cells are in operation on some of the yards, no such facilities exist currently in Bangladesh. Here, on the beach of Chittagong, asbestos is crushed and handled without protective equipment and permeates the demolition zone. Waste oils are dumped into unsealed holes in the ground from where a large part of the toxic material seeps away within a few days.¹⁶

The impact of these practices on the environment has rarely been studied in detail. In India the responsible regional authority (Gujarat Maritime Board) conducted sampling and analysis of

¹⁵ COWI / EC-DG TREN, Oil Tanker Phase Out and the Ship Scrapping Industry, 2004; published at: http://europa.eu.int/comm/transport/maritime/safety/doc/prestige/2004_06_scrapping_study_en.pdf.

¹⁶ Results of investigations on site by IMO and EU experts in January 2008; cf. also Third Progress Report Identification Mission for EC support in the area of Environment and Disaster Management Bangladesh, J. Caldecott / A. Karim, 25 February 2008.

various parameters in coastal water in 2005, and found only "low" or "moderate" levels of hazardous substances.¹⁷ This may also be due to the powerful tide current which tends to disperse contaminants over a wide sea area. In Bangladesh, researchers from the Institute of Marine Sciences of Chittagong found considerable changes in the physico-chemical properties of sea water, beach soil and sediments and a significantly reduced diversity of fish species caused mainly by the discharge of ammonia, oil spillage, floatable grease balls, metal rust and other wastes, together with high turbidity of sea water.¹⁸ Due to the disappearance of commercially important species, many coastal fishermen had to give up their profession in the last two decades.

Table 5: Heavy metal concentration in the sediments of shipbreaking sites in Bangladesh (2004)¹⁹

Sampling stations (1-4 = affected sites)	Trace metal concentration (µg/g)							
	Fe	Cr	Ni	Zn	Pb	Cu	Cd	Hg
1) Salimpur	12	68	23	84	37	21	0.57	0.02
2) Bhatiari	35	87	35	102	122	40	0.83	0.02
3) Sonaichhari	41	78	49	143	148	31	0.94	0.12
4) Kumira	21	23	25	120	42	28	0.59	0.05
5) Sandwip (control site)	3	19	4	22	9	2	0.19	0.02

Safety and health conditions in many South Asian scrap yards are critical. According to a 2004 government report in India, there were 434 incidents at the Alang yards between 1996 and 2003, killing 209 labourers.²⁰ In Chittagong/Bangladesh, according to media reports, more than 400 workers were killed and 6,000 seriously injured between 1985 and 2005.²¹ The number of fatal accidents has significantly decreased in the last four years (with "only" 10 deaths in Chittagong in 2006, 8 in 2007 and 9 until June 2008)²², which may be attributed to the current slump in shipbreaking activity. However, unlike in India where the regional government has started to organise safety training for workers, no systematic accident precautions are at present visible in Bangladesh.

In addition, it is estimated that thousands of labourers contract irreversible diseases from handling and inhaling toxic substances without proper safety precautions. This is at present in particular true for Bangladesh where most shipbreaking workers do not even have hard hats, gloves and shoes to protect themselves. But also in India, according to a medical report to the Indian Supreme Court of September 2006, 16% of the workforce handling asbestos in Alang

¹⁷ Presentation to IMO National Workshop in Mumbai, 8-10 January 2008; data also published at: http://www.gmbports.org/env_issues.htm, Environment / Alang Sosia Shipbreaking Yard.

¹⁸ M. Hossain / M.M. Islam, Ship Breaking Activities and its Impact on the Coastal Zone of Chittagong, Bangladesh, 2006.

¹⁹ Hossain/Islam, op. cit., at p. 29.

²⁰ Lloyd's Register - Fairplay of 1 March 2005.

²¹ YPSA, Workers in shipbreaking industries: A base line survey of Chittagong (Bangladesh), 2005, p. 15 et seq. Other reports quoted by YPSA speak of 200 deaths from shipbreaking accidents between 1998 and 2003 alone.

²² Information from YPSA, latest data published on: <http://www.shipbreakingbd.info/>

at the time showed symptoms of asbestosis and were thus at serious risk of mesothelioma.²³ As is known from medical research, the incidence of this form of lung cancer reaches its peak only several decades after exposure.

4.4. 3.4 Effects of non-action

The current situation of the ship recycling market is characterised by fierce competition between the major recycling states Bangladesh, India and (to a lesser extent) Pakistan, while other competitors with higher technical standards, such as facilities in China, Turkey and the EU are only able to occupy market niches for special types of ships, small vessels or the fleet of particularly committed shipowners. Bangladesh in the first months of 2008 acquired again a lead, due to the particularly high prices (700 \$ per ton and more) its shipbreakers could offer. As a consequence, even major European shipping companies are still choosing Bangladesh as the location to scrap their ships.²⁴

Without any binding international regime on ship dismantling it is highly probable that this market situation will persist and that also the coming peak in ship recycling around the phasing-out dates for single-hull tankers (2010 and 2015) will essentially benefit the most primitive sub-standard facilities. A peak in shipbreaking activity is bound to lead to a resurgence of lethal accidents and occupational diseases, as the new staff will be recruited among the poorest and usually inexperienced rural labourers.

4.5. 3.5 International and national policy approaches

The IMO is planning to finalise its work for an international Convention on the Safe and Environmentally Sound Recycling of Ships in October 2008. This convention should be adopted at a diplomatic conference in May 2009 and may enter into force some years later. Supplementing guidelines on the certification of ships and the operation of ship recycling facilities are to be adopted by the Marine Environment Protection Committee (MEPC) of the IMO in July 2009.

The draft Ship Recycling Convention - in line with other IMO instruments - does not apply to ships of less than 500 GT and not to warships, naval auxiliary or other state-owned or -operated vessels which are used only on government non-commercial service. In addition, ships for domestic transport, i.e. operating throughout their lifetime inside the waters of the flag state, would be excluded from the scope. However, the Convention requires that these ships act in a manner consistent with the Convention in so far as this is "reasonable and practicable". The exemption for small and domestic vessels is more significant in number than that for warships but less relevant for the problem, as smaller ships are not normally taken to developing countries for dismantling.²⁵

The Convention is meant to provide a comprehensive system of control and enforcement from "cradle to grave" and relies in particular on the survey and certification of ships and the authorization of ship recycling facilities. Limitations are foreseen for the use of hazardous materials in shipbuilding and the most dangerous of them should be removed also from existing ships during their period of operation.

²³ Lloyd's List of 8 September 2006.

²⁴ "Bangladesh snaps up vintage Naftomar tanker", TradeWinds.no, 28 March 2008.

²⁵ For warships and other government vessels cf. below 6.2.1.3. According to data from EMSA, 26% of the 11,583 EU-flagged vessels in 2006 had less than 500 GT. Among the ships that went for dismantling in 2007 and were counted by the French "Robin des Bois", none had a tonnage below 500 GT (see: http://www.robindesbois.org/dossiers/a_la_casse_demolition_bilan_2007.pdf).

The current draft of the Convention establishes certain requirements for safety and environmental protection in ship recycling facilities but does not explicitly rule out beaching as a dismantling method. Implementation and compliance mechanisms are still under discussion but a mandatory third-party audit for recycling facilities has been rejected by IMO parties. The decision whether prior informed consent of the competent authority is necessary before each recycling operation can start will probably be left to each recycling state as an opt-in clause in the Convention.

In the context of the Basel Convention, the key issue under discussion is whether the proposed Ship Recycling Convention will ensure an equivalent level of control and enforcement as established under the Basel Convention. This would be the condition for releasing ships covered by the new international regime from the scope of the Basel Convention. The EU has expressed its view on the point of equivalency in a submission to the Basel Secretariat of January 2008.²⁶ The Conference of the Parties will assess the issue at its next meeting (COP 10) in 2011.

The IMO, the (Conference of the Parties to the) Basel Convention and the International Labour Organisation (ILO) have all adopted their own technical guidelines for ship recycling, ship dismantling or shipbreaking, respectively.²⁷ These non-binding guidelines reflect the different focus of the three bodies on maritime safety, waste shipments, and workers' safety and health. An ILO/IMO/Basel Convention Joint Working Group on Ship Scrapping has held two meetings in 2005 and will meet again in October 2008 to discuss joint technical cooperation activities and a coordinated approach to interim measures before the entry into force of the Ship Recycling Convention.

Some countries have developed national policies or strategies for ship dismantling. The UK Ship Recycling Strategy²⁸ was adopted in February 2007 after a public consultation process and provides a policy on government-owned vessels as well as guidance for private shipowners and recommendations for the environmentally sound management of ship recycling facilities. Key element of the government's policy on its own vessels is the commitment to have them recycled only in environmentally sound facilities within the OECD and, in case a vessel is sold for further use, to negotiate the inclusion of provisions in the contract ensuring similar standards for the eventual recycling and requiring the government's consent before a ship is disposed of. In the recommendations for owners of UK-flagged vessels the government expresses its expectation that the rules of the EC Waste Shipment Regulation and of the Basel Convention for the notification of waste shipments and the ban on exports of hazardous waste to non-OECD countries are complied with.

The report by the French Inter-departmental Committee on the Dismantling of Civilian and Military End-of-Life Ships (MIDN) of March 2007²⁹ proposes, on the basis of extensive fact-

²⁶ EU Assessment on ship dismantling with particular reference to the levels of control and enforcement established by the Basel Convention and the expected level of control and enforcement to be provided by the draft Ship Recycling Convention in their entirety, 21 January 2008, published at: <http://www.basel.int/ships/commentsOEWG6/oewg6.html>.

²⁷ Basel Convention: Technical guidelines for the environmentally sound management of the full and partial dismantling of ships (adopted December 2002); ILO: Safety and health in shipbreaking. Guidelines for Asian countries and Turkey (October 2003); IMO guidelines on ship recycling (December 2003).

²⁸ Published by the Department for Environment, Food and Rural Affairs (defra) at: <http://www.defra.gov.uk/ENVIRONMENT/WASTE/strategy/ship.htm>.

²⁹ French original (with annexes) and English translation published at: http://www.sgmer.gouv.fr/article.php3?id_article=52.

finding missions, a policy line for state-owned ships, for merchant vessels flying the French flag and for ship recycling in general. According to this, French warships as well as other European state-owned ships should be dismantled only in EU or EFTA facilities. The same should apply to merchant vessels flying the French flag but this restriction is seen as limited in scope, since the French merchant fleet is one of the youngest in Europe. The MIDN suggests various measures to promote cleaner ship dismantling and advises, in case the steps foreseen in the IMO Convention prove to be less efficient than expected or hindered by the national prerogatives of recycling countries, to prepare and discuss ideas for binding incentives. France encourages the EU to be resolute in helping the emergence of the IMO Convention and show the way by adopting a support and transition plan.

Some other countries like Denmark and the USA have provided their industry with guidance documents on the "implementation of green ship dismantling" and regulatory compliance in this field.³⁰

4.6. 3.6 Industry approaches

The shipping industry itself, under the co-ordination of the International Chamber of Shipping (ICS), has prepared in 2001 an Industry Code of Practice on Ship Recycling. It outlines a series of recommendations which constitute "good practice" with respect to ships destined for recycling. In July 2007, the same Industry Working Group on Ship Recycling agreed on a recommendation concerning interim measures for shipowners intending to sell ships for recycling (such as yard selection, providing an inventory of hazardous materials, and gas-freeing), by which shipowners could contribute to safe and environmentally sound ship recycling.³¹ The language of the recommendation is cautious, so that with regard to yard selection, for instance, owners who sell ships for recycling are "encouraged" to select only those yards which have stated they are willing to undertake operations compatible with the measures recommended in this document.

4.7. 3.7 The right of the EU to act

The Community competence to take action on ship dismantling matters comes in particular from the articles of the EC Treaty related to the protection of the environment and to maritime transport. According to Article 174(1) of the EC Treaty, Community policy on the environment shall contribute, among other things, to promoting measures at international level to deal with regional or worldwide environmental problems. Treaty provisions on common transport policy (Articles, 70, 71 and 80.2) give the Community a right to take measures to improve the safety of transport at sea, which will be affected by the ship-related elements of the forthcoming Ship Recycling Convention (e.g. the Inventory of Hazardous Materials that ships will have to carry).

Because of the international dimension of the ship dismantling problem, it cannot be solved at national level. The 27 EU Member States are all individually members of IMO. However, the EU has greater political and economic weight to ensure better ship dismantling if it acts

³⁰ Draft Pocket Manual on Implementation of Green Ship Recycling, prepared by the Danish Environment Protection Agency, December 2005; U.S. EPA "A Guide for Ship Scrappers – Tips for Regulatory Compliance", 2000, both published on the website of the Basel Convention at <http://www.basel.int/ships/compilation.html#7>.

³¹ Both published at <http://www.marisec.org/recycling/>.

coherently. As in the context of other international conventions, the EU is widely seen as a leader on environmental issues and its example encourages third countries to follow. For example, in the case of the AFS Convention concerning harmful anti-fouling systems on ships, Panama as the most important flag state decided to ratify the convention and thus let it pass the necessary quorum shortly after the implementing EU regulation entered into force. Conversely, if the EU does not act coherently, this is seen by those who are not interested in changing current practices as a confirmation of their position, and consequently also international efforts may be slowed down.

The inclusion of the Convention into Community law would promote harmonised decision-making and speed up the ratification process among the Member States. In addition, early action by the EU would influence third countries much more than action by individual Member States and thus is more likely to bring the Ship Recycling Convention quickly into force.

In summary, individual Member State actions are insufficient to address the problem effectively, and the EU can act in a unified manner, whilst respecting the principle of *subsidiarity*.

In addition, any improvements to existing and relevant EU legislation, such as the improved enforcement of the Waste Shipment Regulation, are within EU competence.

5. POLICY OBJECTIVES

The general objective of an EU strategy on ship dismantling is to ensure that ships with a strong link to the EU in terms of flag or ownership are dismantled only in safe and environmentally sound facilities worldwide.

This includes as specific objectives: to prevent, in line with the EC Waste Shipment Regulation, the export of hazardous end-of-life ships from the EU to developing countries, and to reduce significantly and in a sustainable way by 2015 the negative impacts of shipbreaking, especially in South Asia, on human health and the environment without creating unnecessary economic burdens.

In order to reach these aims, the following operational objectives will be relevant:

- To improve substantially the implementation of current EC waste shipment law with regard to end-of-life ships;
- To ensure an effective and early transposition of the forthcoming international Ship Recycling Convention in the EU;
- To supplement the Ship Recycling Convention with the necessary measures to address negative impacts of ship dismantling that are not covered by the Convention and promote its practical effectiveness.
- The improvement of the economic situation of ship dismantling facilities in the EU may become a welcome side-effect of some measures under the present strategy, but is not in itself a policy objective.

6. DESCRIPTION OF POLICY OPTIONS

Four main policy options for the EU are identified in the field of ship dismantling and will be assessed in the following chapters:

- (1) The "baseline option" would mean a continuation of the current level of EU activities, with only minimum amendments to legislation and no additional initiatives for voluntary commitments. It will mean in the longer term that the key provisions of the forthcoming Ship Recycling Convention are implemented only by the Member States.
- (2) Option 2 puts the emphasis on encouragement at EU level for voluntary action by shipowners and recycling facilities.
- (3) Option 3 envisages comprehensive EU legislation to implement key provisions of the future Ship Recycling Convention as soon as adopted by the IMO diplomatic conference foreseen to take place in May 2009 and complement it with mandatory requirements where necessary. In addition, measures to strengthen enforcement of the current law would be taken in the interim period.
- (4) Option 4 would combine selected legislative and enforcement measures with voluntary actions in an integrated policy approach.
- (5) Better enforcement of the current Waste Shipment Regulation has not been defined as a separate option because it would not be sufficient to achieve the objective of a worldwide improvement of ship recycling practices.

6.1. 5.1 Option 1: No additional action at EU level

The "baseline option" is defined here as maintaining EU activities at current levels which essentially consist of

- Ensuring implementation of the EC Waste Shipment Regulation in individual cases of end-of-life ships that become known through media reports (TV programmes or articles in newspapers or maritime journals);
- Participation of the Commission, in particular as an observer at the IMO, in the development and future implementation of a new Ship Recycling Convention;
- Occasional research and pilot projects to assess developments and promote better ship dismantling technology, e.g. under the EU 7th Framework Programme for research.

In addition, some minimal amendments to current EU legislation would probably be carried out in any case, by including references to the new Convention in the directives on port state control and classification societies. However, almost all initiative in implementing the Ship Recycling Convention would be left to the Member States.

6.2. 5.2 Option 2: Emphasis on voluntary action

This option would still leave the legal implementation of the Ship Recycling Convention largely to the Member States but in addition measures at EU level would be taken (especially in the interim period) to promote voluntary action by the shipping industry, i.e. encourage shipping companies to use only safe and environmentally sound ship dismantling facilities. The focus here is on positive incentives and not on the stricter enforcement of the current Waste Shipment Regulation. Two sub-options can be distinguished:

- (1) Encourage shipowners to send their end-of-life ships to facilities in the EU or candidate countries in accordance with current waste shipment law. To have major effect this sub-option would have to rely especially on subsidies which compensate the loss of revenue that owners would otherwise receive in South Asia. In addition, the sub-option would include streamlining of existing maritime aids, grants and loans to bring them into line with waste shipment

rules, and in the case of vessels owned by Member States, more activities by the Commission to coordinate their decommissioning and safe dismantling. This coordination could take the form of an initiative by the Commission inviting Member State experts to elaborate EU-wide guidelines or recommendations for the decommissioning of warships and common minimum requirements for their dismantling;

(2) Promote voluntary commitments of the shipping industry to use at least higher-standard facilities in developing countries and conclude partnerships for upgrading facilities there. Suitable instruments would be a public campaign for voluntary agreements with the shipping industry (shipowners' associations, major shipping lines), an EU-specific certification and audit scheme for ship recycling facilities, awards for exemplary industry action, EU participation in IMO pilot projects for clean ship recycling, and Commission guidance for shipowners in the form of a list of "green" ship dismantling facilities.). This sub-option would be linked with technical assistance out of public funds for improving workers' safety and environmental protection in the recycling facilities of South Asia.

(6) The measures within the sub-options are not mutually exclusive, i.e. a campaign to win shipowners for partnerships with higher-standard recycling facilities in developing countries could go along with an award for exemplary action and a certification scheme for those facilities. Within the analysis of sub-option (1), special attention will be given to subsidies for ship dismantling in the EU which have much stronger environmental, social and economic impacts than all other options or measures.

(7) Both sub-options could be supported by Commission guidance documents on good ship dismantling practice, in particular a list of "green" facilities.

6.3. 5.3 Option 3: Comprehensive EU legislation on ship recycling

Under this option, new legislation would be proposed and relevant existing legislation would be strengthened.

An EU Ship Recycling legislative instrument would transpose key elements of the Ship Recycling Convention as soon as adopted by the IMO diplomatic conference foreseen to take place in May 2009 into EU law and complement it where necessary to fill gaps. The EU act would ensure early implementation of the Convention rules on:

- (1) Survey and certificate requirements for ships, in particular to carry an Inventory of Hazardous Materials on board and be certified as "ready for recycling" before going to a dismantling facility;
- (2) Essential requirements for ship recycling facilities;
- (3) Communication and reporting requirements for shipowners, recycling facilities and recycling states.

Beyond implementation, the EU legislative instrument could envisage additional measures. The following will be assessed in more detail:

- (1) Extension of Convention rules to warships and other government vessels;
- (2) More prohibitions on hazardous materials in ships;
- (3) Stricter obligation for pre-cleaning of ships from hazardous materials;
- (4) Ban on "beaching";

- (5) Requirement that EU-flagged ships go to audited and certified facilities for dismantling;
- (6) List of ships ready for scrapping.

Again, the measures would as a rule not exclude each other; only the ban on beaching would be clearly more stringent than the requirements under (3) and (5).

The form of the legal measure and the specific impacts of each will not be assessed at this stage but left for discussion to the specific impact assessment accompanying the later legislative proposal.³²

A more far-reaching option to create a "ship dismantling fund" based on mandatory contributions from the shipping industry to finance ship recycling in safe and environmentally sound facilities will be the subject of a separate Commission study to be launched in 2008 and thus not be assessed in this document.

Apart from new legislation, Option 3 would also cover selected measures to improve enforcement of the current Waste Shipment Regulation at least for an interim period. As such are envisaged in particular:

- (1) Guidance document for Member States' competent authorities on the application of the Waste Shipment Regulation to end-of-life ships,
- (2) Funding for an IMPEL project on end-of-life ships,
- (3) Infringement proceedings against non-compliant Member States,
- (4) Increased cooperation with countries of destination and transit.

6.4. 5.4 Option 4: Integrated policy approach

This option combines the more effective of the legal proposals and the enforcement measures under option 3 with the more promising ideas to encourage voluntary action under option 2. Combining voluntary and legal approaches aims to prevent negative anticipatory effects and ensure positive environmental and social impacts already in the short term without creating excessive costs. There is an advantage in selecting the most promising measures that can be voluntary or legal in nature. This provides a good balance of both "carrot" and "stick" that working together can offer an optimal response to the problem at hand.

The legislative proposals could include the key measures for implementation of the IMO Convention as listed above in 5.3, together with an extension to government vessels, a requirement for EU-flagged ships to go only to audited and certified recycling facilities, and a list of ships ready for scrapping. This would be supported by selected voluntary actions, such as a campaign for shipowners' commitments to clean dismantling, certification and award schemes, technical assistance and research, streamlining of shipping aids (but not subsidies for ship dismantling in the EU), and on the other hand guidance, project funding and sanctions to strengthen enforcement of current waste shipment law by the Member States

³² Cf. below 6.3.

7. IMPACT ANALYSIS

7.1. 6.1 Impacts of Option 1: No additional action at EU level

7.1.1. 6.1.1 Short and medium term

Taking no additional action at EU level would mean in the short and medium term, until the new international regime is in place and transposed by Member States, that the current trends in ship dismantling would continue unabated. The problems of enforcement of the Waste Shipment Regulation with regard to end-of-life ships and the decommissioning of a ship outside the EU waters, will remain unsolved.

Environmental impacts: The pollution of water, soil and habitats in South Asia would at least remain unchanged and increase when peaks of ship scrapping due to the phasing out of single-hull oil tankers reach the South Asian beaches, probably around 2010 and 2015. The likeliness of natural disasters might increase due to the further destruction of coastal mangrove forests in Bangladesh.

The negative effects of various materials on board ships for the aquatic environment and for climate are to continue, in so far as they are not already banned by other legal instruments. Such a ban is in place within the EU for PCBs through the Stockholm Convention and Regulation (EC) No 850/2004³³, for organotin compounds (from 17 September 2008 also on foreign-flagged ships entering the EU) through the Anti-Fouling Systems - AFS - Convention and Regulation (EC) No 782/2003³⁴ and for the production and use of ozone-depleting substances through Regulation (EC) No 2037/2000³⁵. Similarly, prohibitions with certain exemptions exist in the EU for perfluorooctane sulfonates (PFOS) as from June 2008 by virtue of Directive 2006/122/EC³⁶ and for trichlorobenzene (TCB) since June 2007 on account of Directive 2005/59/EC³⁷, but e.g. for the time being not for mercury or brominated flame retardants. Especially the latter are still widely used, although some of them (like HBCDD and TBBPA) are known to be persistent, bioaccumulating and very toxic to aquatic organisms.

Social impacts: Employment in the EU recycling sector would remain at the current low level. Likewise, the high safety hazards and accident rates for workers in South Asian shipbreaking yards would remain unchanged and increase in peak times, as more inexperienced labourers

³³ Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC, OJ L 229, 29.6.2004, p. 5.

³⁴ Regulation (EC) No 782/2003 of the European Parliament and of the Council of 14 April 2003 on the prohibition of organotin compounds on ships, OJ L 115, 9.5.2003, p. 1.

³⁵ Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer, OJ L 244, 29.9.2000, p. 1.

³⁶ Directive 2006/122/EC of the European Parliament and of the Council of 12 December 2006 amending for the 30th time Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (perfluorooctane sulfonates), OJ L 372, 27.12.2006, p. 32.

³⁷ Directive 2005/59/EC of the European Parliament and of the Council of 26 October 2005 amending for the 28th time Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (toluene and trichlorobenzene), OJ L 309, 25.11.2005, p. 13.

are then employed. Child labour would continue, with sometimes fatal consequences.³⁸ The existing criminal structures in part of the Asian shipbreaking industry are not likely to change. The low or medium safety hazards associated with dangerous substances on board for shipyard workers and seafarers worldwide might slowly decrease in so far as vessels built until the 1980s with asbestos as flame retardant are increasingly being decommissioned. As for the substances mentioned above in the environmental context, the use of asbestos in shipbuilding is already today prohibited under the IMO SOLAS Convention and in the EU since 2005 for all types of asbestos (including chrysotile).³⁹

Economic impacts: The competitive disadvantages of EU recycling facilities are certain to continue, with the large cost and price disparity to Asian yards allowing them to occupy only niches in the market. The revenues of shipowners for the sale of scrap ships would probably continue to be high, depending on developments on the freight and steel markets. Their operating costs would remain largely unaffected, as would transport and consumer prices, administrative costs and intellectual property rights in the EU. Some shipowners might invest early and create business and job opportunities in classification societies by anticipating the IMO requirements on certificates and inventories of hazardous materials.

The supply of steel scrap and used ship equipment for the South Asian economies, the revenues of shipbreaking yard owners and the job opportunities for workers would stay at the current level or increase in peak times. On the other hand, local fishing and agriculture would continue to lose in quality and quantity, especially in Bangladesh.

7.1.2. 6.1.2 Long term: Effects of the IMO regime

After transposition of the IMO Ship Recycling Convention into the national law of flag states and recycling states, positive effects are expected in a step by step process. First would come probably the prohibition to install certain materials (asbestos, ozone-depleting substances, PCBs and organotin compounds) on ships in general directly after entry into force of the new Convention. Improvements would be limited here to ships produced in or flying the flags of countries that do not yet have relevant legislation in place (unlike the EU). The obligation to carry an Inventory of Hazardous Materials (IHM) would in parallel become applicable for new ships which are, however, defined as ships for which the building contract is placed after that point in time or for which the delivery is 30 months later. For existing ships, the IHM requirement would become mandatory not later than 5 years after the Convention's entry into force.

The dates when the Convention requirements for ship recycling facilities should come into force are currently at the centre of discussion and will be decided by MEPC 58 in October 2008 or by the Diplomatic Conference in May 2009. The time schedule for the improvement of shipbreaking yards, especially in Southern Asia, is thus at present uncertain, and it is even unclear whether the Convention will specify concrete dates or define timelines in terms of years after entry into force. It seems probable, however, that in view of alleged difficulties to mobilise sufficient ship recycling capacity with Convention standard in the short term, the

³⁸ According to information from YPSA, e.g. a newly-recruited 16-year-old worker died in Chittagong on 14.7.2008 from being hit by a steel plate and drowning in the oil sludge tank of a ship.

³⁹ On account of various EU directives, most recently Commission Directive 1999/77/EC of 26 July 1999 adapting to technical progress for the sixth time Annex I to Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (asbestos), OJ L 207, 6.8.1999, p. 18.

majority of the Parties will want to postpone the effectiveness of the provisions for recycling facilities in any case by several years.

Experience with IMO conventions suggests that it takes on average six years from adoption until entry into force of a convention. In the case of the Ship Recycling Convention there is a widespread expectation that the waiting period might stay below average and the treaty could come into force around the year 2013. How many flag states and recycling states will have ratified the Convention by then, however, and whether for example Bangladesh will become a Party is currently a matter of speculation. At present it is expected that the major flag states and, among the Asian recycling countries, at least China, Turkey and India will subscribe to the new international regime.

Without EU action it is probable that several Member States will, by their own decision, ratify the Convention and transpose it into their national legislation within the next 2-4 years. However, the statistics on ratification of IMO instruments show differing practices among the Member States and altogether considerable delay. The Anti-fouling Systems (AFS) Convention of 2001, for instance, was ratified four years later only by a minority of 5 Member States.⁴⁰ Implementation of the Ship Recycling Convention in the EU by purely national legislation is thus bound to be incoherent and partly delayed.

A minimum amendment of existing EU maritime directives on port state control (95/21/EC) and classification societies (94/57/EC) by including references to the Ship Recycling Convention would integrate the new certificates and in particular the Inventory of Hazardous Materials (IHM) into the harmonised control systems within the EU. However, amendments to the control-related EU directives would not as such transpose the substantial elements of the Convention into EU law and make the IHM and the Ready for Recycling certificate mandatory for shipowners. This would still depend on Member States' legislation.

Environmental impacts:

The draft Ship Recycling Convention contains in its Annex 1 a broad set of requirements for ship recycling facilities. The leading principle is that facilities which recycle ships to which the Convention applies need an authorisation from the competent authority. Further requirements include the preparation of a Recycling Facility Management Plan and the utilisation of procedures for accident prevention, safe removal of hazardous materials, emergency response, workers' training and reporting of incidents and occupational diseases.

The Ship Recycling Convention would not substantially alter the environmental conditions for the few existing ship dismantling facilities in the EU, as stricter requirements for water protection and waste management are already in place. The same is probably true for facilities in other OECD countries and China. The only new element of the Convention for EU operators is the requirement of a Recycling Facility Management Plan, in so far as they do not follow a similar procedure already under country-specific rules, EMAS or ISO standards. This management plan could improve compliance of an operator with environmental and safety rules.

In South Asia, since the draft Convention does not prohibit the beaching method as such, improvements would also be limited and depend on the strict implementation of its provisions on environmentally sound management by recycling states, taking into account also the envisaged guidelines on the operation of ship recycling facilities. In the case of India, the

⁴⁰ Commission Staff Working Document SEC(2005) 1497 of 23.11.2005 (Impact Assessment on the draft Flag State Directive), at p. 16.

Convention apparently has some anticipatory effects on account of a Supreme Court decision of September 2007 which obliged shipbreaking yards to meet certain environmental and safety requirements modelled on the draft Convention. India's government is of the opinion that the industry in Alang complies today already with 90% of the Convention requirements.⁴¹

In South Asian recycling states that do not ratify the Convention, the pollution of water, soil and habitats would remain unchanged or increase also in the longer term.

The banning of hazardous materials on ships might have positive environmental impacts in so far as countries that are not yet Parties to other relevant international agreements like the Stockholm (POPs) Convention or the AFS Convention decide to bind themselves for the first time with the Ship Recycling Convention. The number of such countries is not likely to be very high. For ozone-depleting substances the Ship Recycling Convention would hardly make any difference, as similar obligations have been accepted already by the 191 Parties of the Montreal Protocol. In essence, the Convention's provisions on hazardous materials alone would lead to no or only minor substantial improvements for the environment during the operating life of ships.

A minimal amendment of Annex VIII to the EC Waste Shipment Regulation No 1013/2006 by referring to the new IMO Convention and its envisaged guidelines on ship recycling facilities instead of the current technical guidelines of IMO on ship recycling would in principle provide guidance on the present meaning of environmentally sound management when the Waste Shipment Regulation is applied to ships. On the one hand it would update the Regulation on the recent developments in the field of ship dismantling and clarify that for the time being a dual regime of IMO and Basel Convention would apply to ships. On the other hand, this would create additional uncertainties in practice due to contradictions between the technical requirements of the Basel guidelines on ship dismantling (e.g. complete containment / impermeable floors) and those of the new IMO regime. In sum, however, the practical impacts of the reference are likely to be very small.

Social impacts:

In principle, no impacts of the Ship Recycling Convention are to be expected for the working conditions in EU dismantling facilities, due to the more stringent provisions in existing EU directives on workers' health and safety at work and protection against exposure to asbestos which the Member States have to respect. The same is true probably for facilities in other OECD countries (including Turkey) and China.

In the South Asian shipbreaking yards, depending on strict implementation of the Convention's safety requirements by recycling facilities and competent authorities, accident rates and occupational health hazards for workers are expected to go down. The quality of implementation, however, would in turn depend on awareness, public attention and effective sanctions in case of non-compliance. The weak position of trade unions and the tendency of certain governments in Asia to refuse access of the media and independent observers to the yards favour implementation deficits.

Structures of organised crime which are reported to exist at least in part of the shipbreaking industry in South Asia would probably recede with the increasing regulation and higher operating costs in those countries that implement the Convention.

⁴¹ Gujarat Maritime Board, presentation to IMO National Workshop on the IMO Ship Recycling Convention, Mumbai, 8-10 January 2008.

The occupational health hazards for shipyard workers and seafarers are altogether expected to diminish over the next decades, provided that at least the major flag states implement the Convention and order the substitution of hazardous materials on board ships by less dangerous substances. However, the effect would be limited particularly in the EU, as all relevant materials in the Convention are already covered by prohibitions under other EU legislation. The Convention might make a difference when ships built outside the EU and flying foreign flags are repaired in EU shipyards.

The Inventory of Hazardous Materials (IHM) would in general raise awareness and open the way for realistic risk assessments and better precautions for shipyard workers, seafarers and labourers in recycling facilities. On the basis of the inventories, informed decisions can be taken by shipowner and flag state on the choice of a suitable recycling facility and the need for prior decontamination, and by the scrapping facility and the recycling state on necessary waste management measures.

The new surveys and certificates would have a limited job effect particularly for classification societies. In order to deal with the approximately 50,000 ships of the world fleet (of which about 12,000 are EU-flagged), it is estimated that the major 5 or 6 European societies would each require about 100 additional staff (mainly engineers and chemists) in the first 5 years and about half of this on a more permanent basis.

Economic impacts:

The competitive disadvantages of EU recycling facilities in relation to yards in Asia will most likely remain also in the longer term, due to the much higher labour costs in Europe and in spite of the fact that EU shipyards would not need significant investments in order to comply with the requirements of the Convention. The national ship recycling policies of the UK and France might secure a niche for EU or environmentally sound OECD facilities in relation to the government vessels of these two Member States. Apart from this, employment and business opportunities in the EU recycling sector would not rise from the current low level.

For the Asian shipbreaking facilities, the new international regime might result in a separation of two distinct markets, one with a higher standard complying with the requirements of the Convention and catering for "Convention ships", and the other one continuing sub-standard practices for ships flying the flags of non-Parties to the Convention. It is possible that the line will be drawn between China, Turkey and India on the one hand, and Bangladesh and maybe Pakistan on the other. While operators in China and Turkey would most likely have few difficulties in complying with Convention standards, their counterparts in India would need some additional investment in environmental and safety equipment, for example asbestos removal installations and equipment (concrete covering, strong pumps) to contain oil spills. The additional costs are estimated in the range of 50 \$ per ton of scrap steel.

The revenues of shipowners whose ships fly the flags of Convention Parties and are sold to "Party facilities" would accordingly go down to some extent which is, however, minor in relation to the overall price of 600-700 \$ per ton that could be gained in the early months of 2008 (as compared to an average of 500\$/t one year before and less than 400\$/t in 2006). The operating costs of shipowners would also increase to a minor extent, due to the additional surveys, the maintenance of an Inventory of Hazardous Materials (IHM) and the need for a "Ready for Recycling" certificate. The costs for surveys and certificates of this kind are estimated as between 10,000 and 20,000 € each. For existing ships the costs of an IHM may be higher, as the information on hazardous materials in the ship's structure is often not readily available, but would still be limited in comparison to the several hundred thousand dollars that can be earned currently with the sale of even a smaller merchant ship for scrapping. On the

other hand, shipowners might save on individual compensation payments for occupational diseases due to hazardous materials if they comply with Convention requirements.

The IHM requirement and the necessary documentation would also cause additional costs for shipbuilders and suppliers in the range of some ten thousand or hundred thousand dollars. The precise amount is currently not known. Problems are feared for the protection of intellectual property if supplier information is published or circulated widely.

As the inventory and survey requirements are generally accepted by the international maritime community, it is unlikely that European shipping companies or shipyards will face difficulties in competition even against operators from countries that do not (yet) ratify the Convention. The cost factor of inventories is not big enough to influence competition between shipping companies substantially.

A visible impact on transport and consumer prices is unlikely.

Non-action by the EU might, however, create additional administrative and legal costs for industry due to the usually diverging national legislation and implementation by Member States. Especially delays and different timelines in the introduction of the IHM might lead to incoherent control standards and an uneven playing field for shipping companies and shipyards in different parts of the EU.

7.2. 6.2 Impacts of Option 2: Emphasis on voluntary action

7.2.1. 6.2.1 Measures to encourage ship dismantling in the EU/OECD (sub-option 1)

7.2.1.1. 6.2.1.1 Subsidies

Subsidies are potentially a strong measure for encouraging shipowners to send their ships only to good recycling facilities in the EU or suitable OECD countries (such as Turkey). This could be done in the form of grants or tax benefits either directly to shipowners to compensate for the loss of revenue that they would get in South Asia, or to dismantling facilities to enable them to compete with South Asian prices. Another option might be for the EU or its Member States to buy end-of-life ships at the market price and then tender the dismantling of the vessels to the most competitive environmentally sound facility in the EU/OECD.

In the EU exists currently a ship dismantling capacity of around 1.4 million ldt per year, mostly in smaller facilities, of which only a fraction is used.⁴² The accession candidate Turkey has a capacity of between 600,000 and 1 million ldt per year at the coast of Aliaga, though not all with a high environmental and safety standard. Apart from this, a considerable number of unused piers and drydocks in European harbours could be seen as "dormant" capacity that could be revived for ship recycling (which was in fact often executed here until the 1960s or 70s). The technical capacity in the EU and neighbouring OECD countries (i.e. Turkey) would thus be sufficient to treat all EU-flagged ships if the economic conditions allowed it.

Due to the huge cost difference between Europe and South Asia, however, a major revitalisation of the European ship recycling industry could only be achieved with subsidies that bridge the cost gap. However, such subsidies could lead to distortion of competition and

⁴² The COWI/DHI study of June 2007 calculated a combined EU capacity of some 200,000 ldt/a. After publication, the shipyards of Harland & Wolff in Belfast and Able UK in Hartlepool (UK) received waste permits for their large drydock facilities with a dismantling capacity of up to 300,000 and 600,000 ldt/a respectively; cf. COWI/DHI, p. 162, and 24dash.com of 26.6.2008: "Able UK finally granted permission to break up US 'ghost ships'"; TimesOnline of 2.7.2008: "Hartlepool to break up France's toxic flagship Clemenceau".

have no support in EU state aid rules. The effects of different alternatives will be discussed under "economic impacts".

Table 6 EU and worldwide ship dismantling capacity⁴³

Country	Number and type of facilities	Annual capacity (LDT)	Method / remarks
United Kingdom	Able UK (Hartlepool), Harland & Wolff (Belfast) and approx. 8 smaller facilities	1,000,000?	Dry docks, pier-breaking, slipways
Italy	Simont (Naples)	80,000	Pier-breaking; currently inactive
Belgium	Van Heyghen (Gent)	60,000	Pier breaking and slipway
Denmark	Fornaes (Grenaa), Smedegaarden (Esbjerg) and 2 smaller facilities	60,000?	Pier-breaking, slipways
Netherlands	Scheepssloperij (s-Gravendeel) and 3 smaller facilities	40,000?	Slipways, pier-breaking
Spain	Approx. 12 smaller facilities, mainly for fishing vessels	40,000?	Pier-breaking, slipways
GR, LV, EE, LT, PL, BG, PT, DE, FI, IE, possibly others	Approx. 20 facilities for smaller vessels	100,000?	Pier-breaking, slipways
EU total	Approx. 50 facilities, mostly for smaller vessels	1.4 million (?)	
Turkey	21 shipbreaking companies in Aliaga (near Izmir)	600,000-1,000,000	Slipways
USA	4 facilities in Brownsville (Texas) and 3 others	225,000	Pier-breaking; currently not open to foreign vessels

⁴³ COWI/DHI report of June 2007, updated with information from EMSA/LMIU database, May/June 2008. Information on Spain from J. Casas, El desguace y reciclaje de buques, at: <http://www.conama9.org/>

Country	Number and type of facilities	Annual capacity (LDT)	Method / remarks
China	5 large ship recycling facilities	800,000*	Pier breaking
Bangladesh	32 shipbreaking companies in Chittagong	Unlimited	Beaching
India	Approx. 30 shipbreaking companies in Alang	Unlimited	Beaching
Pakistan	33 registered shipbreaking companies in Gadani	Unlimited	Beaching

In principle, support of investments to reinforce regional competitiveness and employment under EU Structural Funds is possible for a broad range of projects, provided they can show to be beneficial to a region's economic structure in the longer term. *Environmental impacts:*

Effective incentives that would divert EU-flagged ships (23% of world tonnage) and even EU-owned vessels (about 40% of world tonnage) or at least a sizeable fraction of them from South Asia to EU and OECD facilities would reduce the ongoing pollution in the South Asian recycling yards and might increase the pressure for an upgrading of these facilities. This effect would be particularly relevant for Bangladesh where the negative impact of shipbreaking on the marine environment appears more acute than in India. Any significant decrease in the number of end-of-life ships going there for dismantling could stop, if not reverse, the further degradation of water quality, aquatic life and natural habitats.

Environmental impacts of the extension or reopening of EU dismantling capacity would be limited, if existing sites in harbour areas are used. However, conflicts with other interests are possible, as in the case of the Able UK facility in Hartlepool/UK whose planned modernisation and extension could potentially affect a protected habitat in the area.

Social impacts:

A significant decrease in the number of ships going for dismantling could have more or less grave social consequences, including on livelihoods, in the South Asian recycling states, particularly in Bangladesh. The loss of a quarter of the business would result in a similar drop in employment at the yards. On the one hand, fatal accidents and occupational diseases caused by the dangerous practices on the beaching sites would be diminished. On the other hand, thousands of jobs for poor labourers would disappear. Again, this impact would be more felt in Bangladesh where less job alternatives exist for the poor than in India.

The job effect of a fully subsidised "green" dismantling capacity for EU-flagged ships in the EU would depend on the degree of mechanisation. Some figures from existing yards in OECD countries show that under average conditions about 100 workers are needed for the dismantling of 100,000 ldt or tons of ship steel, i.e. one person per 1,000 tons. With modern cutting technology, half of this number is sufficient. The recycling of EU-flagged ships with a tonnage of 1.6 million per year would thus create industry jobs in the range between 1,000

and 2,000 Europe-wide. To this might have to be added the experts and workers engaged in pre-cleaning of a vessel, if undertaken separately.

Economic impacts:

The costs of subsidies for ship recycling were analyzed in the COWI/DHI study of June 2007.⁴⁴ For the three alternatives to conventional beaching that would be compliant with current EU waste shipment law it was estimated that the cheapest alternative, dismantling in Turkey, would reduce shipowners' revenue by approx. 150 \$/ldt, while thorough pre-cleaning in Europe with following export of the cleaned hull to Asia would result in additional costs of 180-280 \$/ldt, and full green dismantling in the EU would produce extra costs of 250-400 \$/ldt, depending on the complexity of the ship and differences in labour costs between various EU countries. On the basis of the estimate that in the average 1.6 million ldt of EU-flagged ships will be scrapped per year between 2007 and 2020, the total subsidy that would be needed to compensate this cost difference was calculated for the years 2007-2013 with 250 million \$ per year in the first scenario, 290-450 million \$ in the second and 400-640 million \$ in the third (at current exchange rates approx. 160, 180-280 and 250-400 million € per year, respectively).

Further economic impacts of this subsidy scenario are that the supply of steel scrap in Europe would be improved at the expense of the current recycling states in South Asia and would force especially Bangladesh to find other, more expensive sources of raw material for part of its construction industry. A measure to develop and protect the EU dismantling industry in this way is bound to provoke heavy criticism by the South Asian recycling states and to burden EU trade relations. It may lead to litigation against the Community in the World Trade Organisation.

The purchase of end-of-life ships by the EU or its Member States might avoid wasteful attribution of grants to the wrong facilities or shipowners but would create considerable administrative burden for the Commission or the relevant Member State authorities. In relation to the other two alternatives, tax benefits for shipowners would be least effective, as the tax burden in this sector is usually not very high anyway.

7.2.1.2. 6.2.1.2 Streamlining of EU grants and loans with a link to clean ship recycling

A significant amount of grants and especially loans under EU transport policy is today in place to improve maritime infrastructure by supporting the acquisition of modern, more efficient ferries in replacement of older vessels. From 2005 to early 2008, the European Investment Bank (EIB) granted low-interest loans over 262 million € for such acquisitions in Member States. Additional applications for approx. 230 million € to support replacements by modern ro-ro ferries are currently under appraisal. The EIB loans are given under general conditions of legal compliance but currently not with an explicit link to the safe and environmentally sound dismantling of the ships that are replaced by the new buildings.

Impacts

Establishing a systematic link of EU grants, state aids and loans for ship scrapping or replacements with strict requirements on the quality of the dismantling would affect a small but publicly visible segment of the market and would help to stabilise the economic basis of EU recycling facilities. Ferry operators would consequently have higher costs or rather earn a lower price when they sell their end-of-life vessels. The effect would be of medium intensity.

⁴⁴ See in particular at pp. 132-135.

7.2.1.3. 6.2.1.3 Voluntary coordination of EU governments for the clean dismantling of their own vessels (in particular warships)

Currently, the decommissioning of government vessels of the Member States - in particular warships - follows exclusively national rules and there is no systematic cooperation between navies or coordination at EU level.

The fleet of EU warships and other naval vessels to be dismantled over the next ten years is estimated at about 150 ships of more than 1,000 tonnes with a combined tonnage of approx. 300,000.⁴⁵ Half of this fleet is French or British. In addition, an uncertain number of state-owned ships for civilian purposes with a tonnage of altogether under 100,000 will come up for demolition within the next decade. There exist also a high number of small ships used by navies or other government services which, however, are normally scrapped near their berth.

The UK and France have published documents on a national ship recycling strategy where the governments commit themselves to a strict adherence to the EC Waste Shipment Regulation and the existing guidelines on environmentally sound management. Some other Member States, such as Denmark and Germany, have also indicated that they would send state-owned vessels only for dismantling in OECD countries. However, to date, most EU Member States - including the largest flag states (GR, MT, CY) and the new Member States with old naval vessels – seem to be reluctant to make any commitment.

Environmental and social impacts:

Although warships and other state-owned vessels represent only a minor fraction - 1-2 % - of the EU-flagged tonnage, their significance for environment and health is higher on account of their relatively heavy contamination with hazardous flame retardants, especially asbestos. A coordinated "Green public procurement" initiative by Member States for the recycling of their vessels could thus prevent the export of heavily contaminated warships to developing countries which currently cannot ensure their safe and environmentally sound dismantling, in accordance with the existing export ban for hazardous wastes under the EC Waste Shipment Regulation. The amount of hazardous wastes, especially asbestos, as a content of ships sent to South Asian countries would be reduced by several thousand tons a year. To this extent, pollution and health hazards would decrease in the countries of destination.

The environmental and social impacts in the EU would be relatively low. If public procurement strictly adheres to the rules of workers' safety and environmentally sound management, so that only qualified facilities with sufficient expertise are charged with the dismantling of government vessels, any risks for the local environment and workers' health can be limited to a minimum.

A drawback of the voluntary approach with stronger coordination by the EU is, however, that it relies largely on the goodwill of Member States, and that those states which have not developed a ship dismantling policy of their own might show little interest in active cooperation on the clean dismantling of government vessels.

Economic impacts:

As compared to ship dismantling on a South Asian beach, the additional costs to use a clean and safe recycling yard are estimated at between 50 and 150 US \$/ton (ldt). Taking into account higher production costs and lower prices for reusable steel in Europe, a cost difference of 250-400 \$/ldt seems plausible. This cost would have to be borne by the

⁴⁵ French MIDN report of March 2007, at p. 21.

respective government. On the other hand, the dismantling of state-owned vessels in the EU would create revenue for EU industry of at least 20 million Euros per year.⁴⁶

7.2.2. 6.2.2 Measures to encourage ship dismantling in higher-standard facilities worldwide (sub-option 2)

If the emphasis is put not so much on preventing hazardous waste exports to developing countries under current EU waste shipment law but on reducing the negative impacts of shipbreaking in South Asia on human health and the environment, without creating unnecessary economic burdens for the shipping industry or EU taxpayers, a range of other measures have to be considered. This takes account of the fact that most European-flagged or European-owned merchant ships operate worldwide and will also become waste usually outside of EU waters, so that the EC Waste Shipment Regulation might not apply. Without high subsidies it would not be attractive for owners of these ships to send their ships to EU facilities for recycling, due to the large differences in costs and prices. Nevertheless there is a potential to reduce the negative impacts of ship dismantling on human health and the environment in the affected Asian states.

7.2.2.1. 6.2.2.1 Campaign for voluntary agreements with the shipping industry

Voluntary commitments by ship-owners, their associations and their customers are potentially among the simplest and quickest ways to change practices on the ground, and could achieve this before the next expected peak of ship scrapping in 2010. The shipping company P&O Nedlloyd, for instance, (now part of the Maersk Group) maintains a partnership with Chinese facilities whose environmental and safety standards were upgraded through technical assistance and training. The Industry Working Group on Ship Recycling elaborated in July 2007 a set of "Interim Measures" to promote clean ship recycling pending the entry into force of the IMO Convention. However, these are only of a recommendatory nature and appear to be worded in rather vague terms.

Any more ambitious voluntary commitment would require strong political involvement on high level, systematic negotiations with major stakeholders in the field, and considerable publicity.

Impacts

Especially high-level talks with ECSA (European Community Shipowners' Associations), INTERTANKO and major oil companies (for single-hull tankers), with European ferry and cruise lines (for passenger ships) and key players in container and bulk shipping could have a positive impact, due to their economic importance, high public profile and the large membership of the owner associations. For the latter, the limits of influence of the association on its members have to be taken into account. Voluntary agreements achieved in this way could lead to significant environmental and social improvements by directing merchant ships to higher-standard recycling facilities, at the price of a 10-20% reduced profit for ship owners. Owners would, however, benefit from positive publicity, avoidance of administrative burden and indemnity against liability risks. Sub-standard facilities, especially in Bangladesh, would get less business and employment. This could, however, give operators the necessary incentive to upgrade their facilities and prompt governments to establish binding environmental and safety rules and/or implement them more effectively.

⁴⁶ MIDN report, p. 24; COWI/DHI report of June 2007, p. 124.

As with all voluntary agreements, their effectiveness would depend on transparency, public attention and clear performance indicators, as well as the possibility of sanctions in case of non-compliance, at least in the form of "naming and shaming". At present the likelihood for achieving such effective voluntary agreements is not very high. However, the pressure by a public campaign in this direction could support and increase the positive effect of other legislative and non-legislative measures.

7.2.2.2. 6.2.2.2 EU-specific certification and audit scheme for ship recycling facilities

An EMSA study is currently looking into the possibility of an EU-specific certification and audit scheme that may be opened to ship recycling facilities worldwide. This scheme would go beyond the existing ISO 14001 and OHSAS 18001 standards which are generic, focus on procedure and do not include performance standards. Instead, it would build on the forthcoming Ship Recycling Convention and on the planned specific ISO standard 30001 for ship recycling facilities and would establish a system of quality levels. An important element would be the publication of the certificate categories in connection with a list of ship dismantling facilities worldwide.

Environmental and social impacts

By applying this scheme the EU would increase transparency and have a tool to monitor that the facilities to which EU-flagged vessels are sent for scrapping comply with the applicable standards and rules on safe and environmentally sound recycling of ships. The participating facilities themselves would have a better control of operations and of their compliance with international standards, the rules of the future IMO Convention and also national legislation. The certificate would give them an incentive to improve environmental and safety performance. Certified facilities would serve as a benchmark for the industry and for national competent authorities.

Depending on the number of facilities that participate in the system, there is a considerable potential for the reduction of pollution, accidents and occupational diseases in South Asian facilities. However, as with voluntary agreements, the chances that a purely voluntary audit scheme would be widely used and have a strong impact are at present not very high.

Significant impacts on the environment and social conditions in the EU are not likely.

Economic impacts

An EU certificate and audit of this type would to some extent duplicate existing or envisaged schemes, such as those of ISO. The additional auditing of performance indicators and the classification would produce costs for recycling facilities in the range of 20,000-40,000 € plus internal personnel costs of 1-2 man years. The EU scheme would be less complex than the current EMAS certificate for industrial sites in Europe, but would be more demanding and thus also more expensive than the usual ISO certificate. It would be attractive in particular for better qualified entrants who want to convert these technical qualities into a marketplace advantage. They can also reap financial benefits through better control of operations and avoid sanctions for non-compliance by competent authorities. Shipping companies, especially those with a clear profile of Corporate Social Responsibility, would be enabled to differentiate the yards and still maintain a large pool of compliant facilities. The cost for them would be a reduced profit (by 10-20%) but they would benefit from positive publicity, avoidance of administrative burden and indemnity against liability risks. Sub-standard recycling facilities, especially in Bangladesh, might lose business and employment but would get an incentive to upgrade, so that they could also meet the standard.

7.2.2.3. 6.2.2.3 Award schemes

A new specific award for exemplary ship recycling or the inclusion of ship dismantling aspects in a re-installed "Clean Marine Award", on the lines of the prize awarded to shipping lines in 2004 by Commissioner Wallström, could provide public recognition for recycling and shipping companies with a clear environmental profile and also show the Commission's commitment to the issue. The 2004 award, which focused on air emissions from ships and was celebrated with a high-profile event in connection with the Green Week, did not involve a financial reward but nevertheless worked as an incentive for 11 shipping companies plus ports and other stakeholders to compete for the prize in various classes. In order to draw public attention and stimulate sufficient interest from industry for the more challenging ship recycling issue, it might be necessary to fund the award with at least 100,000 € which would have to be split in different classes or prize levels.

Impacts

If made attractive enough, an EU award could have limited positive impacts on environmental and safety practices in ship recycling. A potential drawback of award schemes is that, besides the positive incentive for the winner, it may at the same time cause disappointment with those facilities that have not been nominated in spite of their functioning in accordance with green and safe standards. However, the range of potential contenders (best-practice facilities and shipping lines) is for the time being small and the drawback could be overcome by a sufficiently broad and transparent selection scheme.

Participation in the award scheme as such would produce only minor costs for the competing ship owners and recycling facilities, but would presuppose higher investments or a CSR policy involving more renunciation of profit than for average operators or users of certified ship recycling facilities under 6.2.2.2. On the other hand, the publicity of the award would also promote the reputation and CSR profile of a prize-winner to a particularly high extent and could thereby benefit his economic performance.

7.2.2.4. 6.2.2.4 Technical assistance for developing countries

Technical assistance to recycling states in South Asia can help to support the quick upgrading of dismantling facilities and associated infrastructure (waste management, transport, health-care, training facilities etc), so that they can comply with the forthcoming international regime on ship recycling. Measures would have a particularly high impact in Bangladesh, the poorest of the big recycling countries, whereas the infrastructure and some facilities of its major competitor India are being developed already on the basis of domestic resources and without significant assistance from abroad.

EU technical assistance could be organised in various ways, for instance:

- Country projects;
- Contribution to the UNEP/IMO/ILO "Global Programme" for sustainable ship recycling;
- Contribution to the IMO "Ship recycling fund" for voluntary technical assistance.

The advantage of country projects is that they can be tailor-made to the specific needs of a country and organised as part of a country-specific development strategy. In the case of Bangladesh, for example, the use of "challenge funds" to promote health and safety in shipbreaking would be possible in the framework of the Mission for EC support in the areas of Environment and Disaster Management in Bangladesh (MIP 2007-2010). However, at present (spring 2008), government and recycling industry in Bangladesh show no particular interest in development cooperation focusing on environment and health matters. As the industry draws considerable profits from shipbreaking - the biggest operator (PHP) is reputed to earn 50 million \$ per year with this business -, the main problem does not seem to be financial and technical resources but governance and the political will to implement standards of environmentally sound management.

For this reason, the Secretariat of the Basel Convention which has initiated, in cooperation with IMO and ILO, a "Global Programme for sustainable ship recycling" currently does not foresee concrete projects in Bangladesh. The IMO "Ship recycling fund" for voluntary technical assistance contains at present 5,500 \$ and is for the time being not expected to provide the necessary potential for development measures.

Moreover, in the interim period before the entry into force of the Ship Recycling Convention the major recycling States, notably Bangladesh and India, could be approached in the framework of the EU Cooperation Agreement to negotiate, on a bilateral basis, the introduction of a mandatory inventory of hazardous materials on board ships in order to be certified as ready for recycling before going to a dismantling facility. An item on this issue could be added in the existing (or future) action plan of the EU Cooperation Agreement.

Impacts

At present, therefore, positive impacts of development aid programmes in the field of ship recycling are not very likely, although this situation might change quickly if a widespread acceptance of the IMO Convention and higher standards make technical assistance more attractive for government and industry in Bangladesh.

The scope of such programmes will probably be limited to financing training schemes and low-level infrastructure and thus not involve large sums of money.

A general drawback of country-specific technical assistance is that it may interfere in international competition at the expense of other countries which have made more efforts with their own resources to achieve a good standard of environmental and health protection. This risk is clearly apparent in the competition between Bangladesh on the one hand and India, China and Turkey on the other.

7.2.2.5. 6.2.2.5 Participation in IMO pilot projects for clean ship recycling according to the draft Convention

Pilot projects for safe and environmentally sound ship recycling in accordance with the draft IMO Convention are currently envisaged in Turkey and Japan. Turkey has invited foreign participation in the Steering Committee for its project. Subject to available resources, EMSA will participate on behalf of the Commission. The pilot project is meant to test the procedural and substantive provisions of the draft Convention on the dismantling of two ships at the Aliaga facility in Turkey. Supporting this project would have a political impact - demonstrating the strength of EU commitment to achieve practical progress with the new IMO Convention - and improve to some extent the competitive position of the Turkish facility concerned in relation to other dismantling yards.

7.2.2.6. 6.2.2.6 Commission guidance for shipowners (list of ship dismantling facilities)

Guidance of the Commission for the shipping industry could be of particular value if it informed about higher-standard facilities in developing countries, as the cost difference between them and badly managed yards in those countries are much smaller than in relation to EU facilities, so that there is a higher chance of convincing shipowners to choose the better option.

As there exist already several technical guidelines by ILO, IMO and Basel Convention on safe and environmentally sound ship recycling, and the IMO will elaborate new guidelines to accompany the Ship Recycling Convention, once it is adopted, the idea of Commission guidance is not to duplicate these efforts but to add new information, in particular with a list of worldwide ship dismantling facilities which satisfy the requirements of the Convention or EU legislation.

Preliminary tables listing such facilities have been included in the Annex to the Green Paper and in the COWI/DHI study on "Ship dismantling and pre-cleaning of ships".

Impacts

A regularly updated list of higher-standard facilities would provide information on key features (design of the facility, capacity, authorisation status, certificates, limitations etc) in a standardised format and thus enable shipowners to compare. Publication would make it possible for interested users and third parties (trade unions, NGOs) to verify the information. Better-qualified facilities would gain a marketplace advantage, which in turn would create incentives for upgrading the environmental and safety performance of the industry in general.

Updating the list would require considerable expertise and human resources, in view of a frequently changing market. Annual costs of 100,000 € for a Commission service contract appear realistic.

7.2.3. 6.2.4 Summary Option 2

The impacts of the actions under Option 2 are summarized in the following table:

Table 7: Measures to encourage voluntary action and their impacts

Sub-option / measure	Positive impacts Affected group or concern: <i>Likelihood / intensity</i>	Negative impacts Affected group or concern: <i>Likelihood / intensity</i>	Recommended selection:
<i>Sub-option 1: Encourage dismantling in EU/OECD</i>			
Subsidies for EU dismantling	Environment + workers' safety in South Asia: <i>high / high</i> Jobs + revenue in EU recycling industry: <i>high / medium</i> Fishing in South Asia: <i>medium / medium</i>	Jobs in South Asia: <i>high / high</i> Costs for EU: <i>high / high</i> Revenue for industry in S. Asia, steel supply (especially Bangladesh): <i>high / high</i> Trade relations with South Asia: <i>high / high</i> Subsidies could lead to distortion of competition and have no support in EU state aid rules: <i>high / high</i>	Reject
EU coordination for warships	Environment + workers' safety in South Asia: <i>low / medium</i> Jobs + revenue in EU recycling industry: <i>low / medium</i>	Costs for EU navies: <i>low / medium</i> Environment + workers' safety in EU: <i>low / low</i>	Reject
<i>Sub-option 2: Encourage clean dismantling worldwide</i>			
Campaign for voluntary agreements	Environment + workers' safety in South Asia: <i>low / medium (but potentially effective in short term)</i> Jobs + revenue in EU recycling industry: <i>low / low</i>	No major impacts	Accept

<i>Sub-option / measure</i>	Positive impacts Affected group or concern: <i>Likelihood / intensity</i>	Negative impacts Affected group or concern: <i>Likelihood / intensity</i>	Recommended selection:
EU certification & audit scheme	Environment + workers' safety in South Asia: <i>low / medium</i> Jobs + revenue in EU recycling industry: <i>low / medium</i>	Costs for shipowners + recycling facilities: <i>low / low (or even net positive)</i>	Accept
Award scheme	Environment + workers' safety in South Asia: <i>medium / low</i> Reputation for EU shipowners + other participants: <i>medium / medium</i> Jobs + revenue in EU recycling industry: <i>medium / low</i>	Costs for EU: <i>high / low</i>	Accept
Technical assistance for developing countries	Environment + workers' safety in South Asia: <i>medium / medium</i> Fishing in South Asia: <i>medium / medium</i>	Costs for EU: <i>high / low</i> Effect on competition: <i>medium / low</i>	Accept
Participation in pilot projects	Environment + workers' safety in South Asia: <i>low / low</i> Jobs + revenue in EU recycling industry: <i>low / low</i>	No major impacts	Accept
Guidance for shipowners (global list of dismantling facilities)	Environment + workers' safety in South Asia: <i>medium / medium</i> Jobs + revenue in EU recycling industry: <i>medium / medium</i>	Costs for EU research: <i>high / low</i>	Accept

7.3. The actions presented above as acceptable would encourage voluntary actions by shipowners to improve the worldwide practice of ship dismantling, but will not necessarily address the gaps with regard to end-of-life ships in the current EU legislation.

7.4. 6.3 Impacts of Option 3: EU legislation on ship recycling

It should be noted that before any integration of Convention provisions into EU law a detailed impact assessment, including a conformity check will have to be carried out with a view to avoiding any possible incompatibilities with the already existing EU *acquis* e.g. in the field of health and safety at work. For the present strategy communication which does not contain detailed legislative proposals, a more simplified impact assessment seems proportionate.

Overall, it is expected that there would be positive environmental, social and economic impacts of implementing IMO Convention into EU law. In particular with respect to the baseline described in section 6.1, the following positive impacts are to be expected:

- A coherent approach, for example ensuring uniform controls across the EU in ports and shipyards.

- Faster potential for legislation to take effect and speeding up information processes such as on recycling facilities in Member States.
- Greater certainty and level playing field for operators in the EU
- Reduction of administrative burden for both Member States and EU operators
- Each of these in turn would benefit workers safety and the state of the environment. Specific aspects of implementing the IMO Convention into EU law are dealt with in the following sections 6.3.1 and 6.3.2.

7.4.1. 6.3.1 *Implementation of the Ship Recycling Convention*

An EU Ship Recycling legislative instrument that transposes the key elements of the future IMO Convention into Community law would be able to harmonise implementation EU-wide. Differences between Member States concerning the point in time when the Convention requirements take legal effect would be considerably reduced. Delays, especially if going beyond the deadlines of the Convention itself, could be addressed with the means of Community law. Coherence would thus be much better ensured than with the possibly weak implementation and control mechanisms of the Convention itself.

Moreover, an EU legislative instrument could foresee an early implementation of Convention requirements independent of the treaty's entry into force in international law.

Transposition of Convention elements into the Ship Recycling legislative instrument would not be necessary where existing EU legislation already covers the issue and provides for a higher standard of safety or environmental protection. This is the case particularly for the ban on hazardous materials on board ships or the environmental and workers' health and safety requirements in recycling facilities. Here a reference to the relevant provisions of EU law (for the latter e.g. Directive 2006/12/EC on waste, Directive 89/391/EEC on measures to encourage improvements in the safety and health of workers at work, and Directive 83/477/EEC on the protection of workers from the risks related to the exposure to asbestos at work, as amended) would be sufficient.

The most important elements of a Ship Recycling legislative instrument to implement the IMO Convention would be the following:

- Introduction of a mandatory Inventory of Hazardous Materials (IHM) on board ships, of the "Ready for Recycling" certificate, and the surveys necessary for them;
- Specification of the key requirements for ship recycling facilities, including an obligation to prepare a Recycling Facility Management Plan;
- Obligations on Member States to communicate relevant information (especially on ship recycling facilities, competent authorities, recycled ships, violations and actions taken) to the IMO, as well as directly to other Member States and the Commission;
- Reporting requirements for shipowners and recycling facilities which could be linked to the existing requirements of the EC Waste Shipment Regulation for notification and prior informed consent.

7.4.1.1. 6.3.1.1 Inventory of Hazardous Materials, surveys and certificates

The environmental, social and economic impacts of the new survey and certificate system have been described already in the context of the IMO Convention (above 6.1.2).

Harmonization of standards and procedures for surveys and certificates by an EU legislative instrument would establish a level playing field for operators in the EU and reduce administrative and legal costs. It would also increase the effectiveness of EU controls in ports and shipyards which in turn benefits health and safety of seafarers and workers. This effect could be strengthened by incorporating important elements from the envisaged IMO guidelines on the various certificates into the set of binding rules.

7.4.1.2. 6.3.1.2 Requirements for ship recycling facilities

The Convention requirements for ship recycling facilities have been outlined above under 6.1.2. Current EU legislation does not regulate such facilities explicitly, but as performing an operation for the recycling of metals they fall under the permit requirement of Directive 2006/12/EC on waste. A recycling facility management plan does not exist as a legal obligation under Community law. Other substantial requirements for the protection of workers' health and safety, however, are essentially contained in relevant EU directives.

Transposing the relevant provisions of the Convention into an EU Ship Recycling legislative instrument would therefore not introduce new elements - apart from the management plan - but rather clarify the legal situation.

EU rules on the Recycling Facility Management Plan would cause no additional administrative costs in relation to national legislation but could reduce such costs by preventing different standards in Member States.

7.4.1.3. 6.3.1.3 Information duties of recycling states

The draft Ship Recycling Convention requires Parties (in this case recycling states) to report to the IMO various relevant data, e.g. a list of authorized ship recycling facilities and an annual list of ships recycled within the jurisdiction of that state.

Such obligations are useful tools to ensure transparency and contribute to an effective implementation of the Convention, provided the lists contain sufficient information and are regularly updated and disseminated to all interested parties and the public.

EU legislation would have the positive effect of harmonising implementation and ensuring a minimum standard of communication. The additional obligation on Member States to communicate the information directly to other Member States and the Commission (instead of waiting for the IMO to disseminate it) would simplify and speed up the process and enhance its effectiveness in the EU. The information on recycling facilities, recycled ships, violations of the Convention and action taken would be important for any implementation of an EU-wide strategy on ship dismantling.

The administrative burden for Member States' authorities and the recycling facilities would not be substantially increased in relation to what is required by the Convention (baseline scenario). In case the Convention does not foresee information to be submitted by recycling states on the capacity, the status of authorisation and certification, and the limitations of recycling facilities concerning ship type and size and hazardous wastes, these details would be made obligatory by EU legislation, but essentially be limited to a one-page document. This elementary information could be quickly established at minimal costs and would on the other hand benefit EU facilities which, as a rule, have an economic interest in more transparency, so as to document their comparatively high environmental and safety standard.

7.4.1.4. 6.3.1.4 Reporting requirements for shipowners and recycling facilities

The requirements currently foreseen in the draft Convention with regard to initial notification of a planned ship recycling and the reporting upon completion can be seen as a weaker version of the notification procedure under the Basel Convention and the EC Waste Shipment Regulation. The opt-in clause foreseen in the current Regulation 25(5) of the draft Convention would allow recycling states that have made a prior declaration to that effect, to require a review period of 14 days for objections or tacit consent to a planned ship recycling. In addition, recycling facilities will be required under the draft Convention to report on incidents, accidents, occupational diseases and chronic effects. The EU legislation would not go beyond these reporting requirements of the baseline scenario and thus not create additional administrative burden.

Under the current EC Waste Shipment Regulation, mandatory prior notification and consent procedures are in place for transboundary waste shipments. The competent authorities for this regime are, however, normally different from those concerned with the application and enforcement of IMO rules. Also the type of information to be reported is more ship-specific under the draft IMO Convention.

For an indefinite period, until Basel Convention Parties may find the new control regime equivalent to that of the Basel Convention and thus exempt ships from waste shipment rules, the two control procedures would co-exist side by side. The additional administrative burden of the IMO system for shipowners and recycling facilities cannot be avoided for the time being, but EU rules could reduce it to some extent by obliging the relevant authorities to cooperate and exchange information. In the case that a vessel is transported to a ship recycling facility in the EU, for instance, the Ship Recycling legislative instrument could foresee that one national competent authority has to be nominated as a contact point, to which all necessary notifications by shipowner and recycling facility can be addressed.

7.4.1.5. 6.3.1.5 Impacts of the timing of implementing the Convention

Before the final negotiations for the Ship Recycling Convention in May 2009, and as its entry-into-force mechanism still remains to be specified, it is at present uncertain when the Convention will become binding in international law.. Experience with other IMO conventions suggests that it takes in the average six years from adoption until entry into force of such an instrument. This means that the new regime on ship recycling would become effective around the year 2015. As the draft Convention contains separate deadlines for compliance with the various requirements - for instance not later than five years after entry into force, or before going for recycling if it is earlier for an Inventory of Hazardous Materials to be present in existing ships (as opposed to new ships)- the full effect of the new international regime is not to be expected before 2020.

The new Convention potentially raises problems of capacity. If 50,000 larger ships worldwide have to be surveyed and certified within a few years, a shortage of qualified staff in classification societies is probable. Likewise, the mobilisation of sufficient clean dismantling facilities might create temporary difficulties if the entry into force of the Convention coincides with a peak of vessels coming up for demolition.

An early implementation of the Convention rules at EU level for ships flying EU flags would create additional costs for ship owners only in so far as it obliges them to pay for surveys and certificates some years in advance of what would have been necessary under the Convention itself. Early movers might, however, benefit from avoiding bottlenecks of survey and certification capacity and being able to use certificates as a marketing argument.

Early legislation at EU level would give a boost to ship recycling as a business field of classification societies and is likely to put EU companies in a lead position against their non-EU competitors without a home market.

Temporary disadvantages for EU ship owners would be completely eliminated if the requirement to carry an Inventory of Hazardous Materials or - where applicable - the Ready for Recycling Certificate were extended beyond EU-flagged ships to all vessels that call at EU ports.

The bottleneck problem is less relevant for ship recycling facilities. Sufficient clean dismantling capacity for EU-flagged ships exists already today in the EU, Turkey and China and could be extended in 2-3 years to cover even a peak demand. The necessary legislation, certification schemes and guidance would have to be based on the Convention of May 2009 and the guidelines on ship recycling facilities that are scheduled for adoption by the IMO (MEPC 58) in July 2009.

In order to profit from the advantages of early moving and, in line with policy objectives, reduce significantly the negative environmental and social impacts of shipbreaking before 2015, it would be necessary to develop and adopt EU legislation as soon as possible after July 2009.

7.4.2. 6.3.2 Complementing legal measures: Filling the gaps of the Convention

The Ship Recycling Convention is to be understood as an international minimum standard on ship dismantling. Like other international conventions it explicitly (in Article 1.2 of the draft) acknowledges the right of Parties to take, individually or jointly, more stringent measures consistent with international law with respect to safe and environmentally sound recycling of ships in order to reduce or minimize the adverse effects on human health and the environment. Neither Member States nor the EU are thus prevented from legislation that lays down more stringent measures on environmental and health protection and fills relevant gaps of the Convention.

All measures at national or EU level that are not foreseen in the text of the Ship Recycling Convention run potentially the risk of driving ship owners to change the flag of their ships to a "flag of convenience". The quantification of this risk is difficult but there is some experience with maritime legislation which suggests that not every unilateral legal measure will result in a significant out-flagging. The main driver here is the net financial burden. While a ship owner will be ready to change flag if measures mean high costs for him, he may be less likely to do so if the costs are outweighed by the advantages of a good reputation (for big companies) or the risks of tighter port state controls affecting flags of convenience. The re-flagging risk is also limited if the new measure closely resembles an existing scheme and enjoys broad public acceptance.

This re-flagging risk in relation to the proposed complementing measures, and particularly the potential increase in costs and administrative burden, will be further analysed by the Commission through studies to support the forthcoming legislative instrument on ship dismantling. The complementing measures that are assessed in the following section and those mentioned in the section on "implementation" (6.3.1) are not mutually exclusive.

7.4.2.1. 6.3.2.1 Extension of Convention rules to government vessels

The draft Ship Recycling Convention exempts three categories of ships from its scope: small vessels below 500 GT, ships used only on government non-commercial service, and ships operating throughout their life only inside domestic waters. The most serious exemption is

that for warships in the second category, on account of their relatively high contamination with asbestos and other hazardous materials (see above 6.2.1.3). Unlike the IMO, which traditionally provides for a "government" exemption due to concerns for national sovereignty, the EU is not a priori prevented from laying down environmental and safety rules for state-owned vessels. Article 296 of the EC Treaty in particular does not rule out EU action, but allows for such an exemption only in exceptional and clearly defined cases if this is necessary for the protection of Member States' essential security interests which are 'connected with the production of or trade in arms and war material'. However, in so far as the future IMO Convention regulates also the design, construction and operation of ships (for instance requiring an Inventory of Hazardous Materials), interests of military secrecy would have to be taken into account.

With its legislation, the EU would follow the explicit provision in Article 3(2) of the Convention that exempted ships should act in a manner consistent with the Convention.

Extension of the Convention rules to small ships and domestic transport in the EU is a possible option but not regarded as urgent at this stage, since those ships do not normally go for dismantling to Asian facilities, and significant environmental and safety risks caused by their recycling in the EU are not apparent.

In order to make a regime on the scrapping of state-owned ships more effective it would be necessary to impose conditions also on the sale of ships to third states or private companies before they become waste. As laid down in the UK Ship Recycling Strategy, all sales contracts would have to contain clauses obliging the new owner to comply with IMO and Basel Convention rules on clean ship dismantling and not to dispose of the vessel without prior written consent of the Member State's government. In addition, sales could be restricted to those countries, or private owners flying the flag of those countries, that have declared their agreement to apply for the time being the Basel Convention to end-of-life ships.

In view of their prerogatives on security and defence matters, an EU rule on the sale of warships would have to be agreed by Member States.

Impacts

An explicit legal requirement at EU level to dismantle all state-owned or -operated ships in Europe or OECD countries according to Convention standards would in substance not go beyond the already existing export ban for hazardous wastes under the EC Waste Shipment Regulation but would clarify the legal situation and explicitly oblige Member States to act in an exemplary fashion with regard to their own ships.

The environmental, social and economic impacts outlined in the context of a stronger EU coordination would be much more certain than with a voluntary commitment of Member States. The risk of out-flagging is not a major one for government vessels, as the action of states is much more under public scrutiny than that of private operators.

If rules on the sale of government vessels for further use were included in the legislation, the freedom of navies and other Member State agencies to dispose of their vessels would be restricted. This has the potential to depress considerably the price that the government agency would otherwise receive on the market.

7.4.2.2. 6.3.2.2 More extensive bans on hazardous materials in ships

As mentioned under 6.1.1, existing EU legislation on the marketing and use of hazardous substances is more stringent than the prohibitions envisaged in the draft IMO Convention. Even where the Convention bans a material like asbestos, this ban is subject to a wide range of exemptions (e.g. asbestos in vanes and watertight joints) that have long been abandoned in

EU law. In order not to weaken the existing *acquis* and in the interest of clarification, it would thus be necessary not to copy the provisions of the Convention but to refer to the current EU prohibitions on hazardous substances in a future EU Ship Recycling legislative instrument.

Some other hazardous substances used on ships might be considered for a ban or substitution by less hazardous materials. In particular for brominated flame retardants like hexabromocyclododecane (HBCDD) and tetrabromobisphenol A (TBBPA) which are widely used, scientific evidence suggests that they are persistent, bioaccumulating and highly toxic to aquatic organisms. Both substances are classified under the OSPAR Convention as priority substances for reduction or elimination of releases, and Norway has proposed to include at least HBCDD - for the time being unsuccessfully - in the minimum list of items for the Inventory of Hazardous Materials. An IMO technical working group will assess this proposal in more detail. A further substance ban could concern mercury, in line with the aims of the EU Mercury Strategy to reduce global mercury supply, trade and demand.

However, inclusion in a Ship Recycling legislative instrument would have to be done in line with the results of ongoing risk assessments (e.g. for HBCDD) and with the more general substance-related EU legislation.

Impacts

A Norwegian study found low economic impacts but high environmental benefits to be expected from the prohibition of both flame retardants.⁴⁷

A ban on materials covered by existing EU directives would have additional impact only if it is extended to all ships calling at EU ports regardless of their flag. Such an extended ban would benefit the marine environment of the EU, as considerably more ships (about one third of global shipping) have an EU port as origin or destination than fly the flags of EU Member States (nearly 25 % of the world tonnage).

In case the additional substance bans are limited to EU-built or EU-flagged ships, unilateral action is likely to have negative impacts in particular on EU ship suppliers who would face difficulties in relation to Asian competitors. A particular risk is to be seen in the delays to obtain "material declarations" for region-specific products.

Apart from this, substance bans could be used in practice as an excuse to limit necessary investigations on risk materials in the supply chain.

For this reason, European prohibitions in the field need further assessment and should in any event be extended to all ships entering EU waters.

7.4.2.3. 6.3.2.3 Stricter pre-cleaning obligations

The current EC Waste Shipment Regulation No 1013/2006 provides already for an indirect obligation to pre-clean ships that go for dismantling, since it lists as "green", non-hazardous waste in Annex III vessels and other floating structures for breaking up only if "properly emptied" of any cargo and other materials arising from the operation of the vessel which may have been classified as a dangerous substance or waste (entry GC 030). The draft Ship Recycling Convention, on the other hand, contains only an obligation to minimize the amount of cargo residues, fuel oil and (loose) waste on board prior to entering the recycling facility,

⁴⁷ IMO document MEPC 57/3/19 of 8 February 2008; EFTA Surveillance Authority, Impact assessment of a proposal for prohibition on certain hazardous substances in consumer products (Sept. 2007), published at www.eftasurv.int.

and requires no pre-cleaning of the ship's structure if the recycling facility is fully authorized to handle hazardous materials and does not by itself request the pre-cleaning.

Environmental and social impacts:

An explicit obligation to decontaminate an EU-flagged ship to the maximum extent compatible with keeping it afloat as a vessel would clarify the legal situation and in theory prevent the export of a large quantity of hazardous wastes to developing countries via ship recycling. This would benefit the marine environment especially due to the minimization of oils and of organotin compounds, PCB and heavy metals in paints on the hull of a scrap ship. The safety and health of recycling workers would profit especially from the prior extraction of asbestos from the structure of the ship.

A minor additional risk might be created for the workers of the pre-cleaning facility and for seafarers if the decontamination is not carried out thoroughly enough and under strict safety precautions, so that e.g. asbestos fibres are released from the structure into the air inside the ship. Also, the removal of the engine and oil tanks has the effect that the vessel has to be towed to its destination and the accident risk en route is higher than with a self-propelled ship (the COWI/DHI study estimated a risk increase of 60%). Besides, the dismantling of a vessel that has arrived under tow in a South Asian facility cannot take place on the beach itself but in the water and thus involves additional hazards for environment and workers' health as long as the current primitive working methods are maintained.

Economic impacts:

A recent example - the pre-treatment of the chemicals tanker "Otapan" in the Netherlands before its dismantling in Turkey - shows that a thorough pre-cleaning is feasible but also involves considerable costs. The removal of 76 tonnes of asbestos and 332 t of asbestos-containing material (plus other hazardous wastes) from the 22,000-dwt ship took one year and cost the Dutch administration in the end 4 million €.⁴⁸

Efficient management and rationalisation effects might significantly reduce the pre-cleaning costs per ship, so that an average of 230 US\$ or 150 € per Idt could be reached (see above 6.2.1.1). Nevertheless, the economic burden for shipowners would be relatively high. On the other hand, pre-cleaning on a large scale could provide good business opportunities and job effects for the European ship repair industry. As the decontamination process cannot be easily mechanised, the job potential could be higher than with the mere dismantling of a vessel.

The drawback of any obligation to pre-clean ships flying the flags of EU Member States is that it can be avoided by changing flag before the intention to recycle a vessel is announced. Re-flagging is already today a widespread practice before the final voyage of a ship but is likely to take place even earlier in a lot of cases if decontamination is made mandatory for EU end-of-life ships. The only vessels where the obligation could be made effective are state-owned or -operated ships and vessels for which the owner receives public subsidies or loans under this condition. The subsidy would have to be high enough, however, to compensate all additional costs if the desired effect is to be achieved.

⁴⁸ Press release Basel Action Network (BAN) of 16 May 2008, published at http://www.ban.org/ban_news/2008/080516_victory_for_proper_ship_scrapping.html.

7.4.2.4. 6.3.2.4 Ban on beaching

The Basel Convention's technical guidelines on ship dismantling state that the primary block breaking area of a dismantling facility should be equipped with adequate impermeable bottom protection (containment) and a system for pumping, draining and storage, and by this indicate that shipbreaking on a sandy beach is not compatible with environmentally sound management.⁴⁹

The draft Ship Recycling Convention does not envisage an explicit ban on beaching, even though it would be difficult (if not impossible) to fulfil also this Convention's requirements on pollution prevention and safe waste management with the primitive operating method. The Japanese draft of Guidelines for safe and environmentally sound ship recycling cautiously acknowledges this difficulty by stating that "beaching method should not be recommendable for facilities to be newly established".⁵⁰ The government of India and South Asian operators nevertheless have indicated that they interpret the draft Convention as allowing the continuation of beaching practices in the existing yards.

Impacts:

A prohibition for EU-flagged ships to go for dismantling to beaching facilities would therefore mean a clear break with established practices. The environmental and social impacts would potentially be similar to those of full subsidies to achieve high compliance with the Waste Shipment Regulation for EU-flagged ships (see above 6.2.1.1).

If a ban on beaching could be enforced effectively for EU-flagged ships, owners would have to use recycling facilities with a higher standard (drydock, pier-breaking or slipways). Alternatives with sufficient capacity would be available in Turkey, China and to a lesser extent in the EU. It is also possible that the Pipavav dockyard in India, which was built with Japanese subsidies as a model ship recycling facility but due to the competitive disadvantage turned to shipbuilding instead, might revert to its original purpose, and that some beaching operators could invest in jetties and concrete surfaces to upgrade their yards.

As a consequence of using higher-standard facilities, the cost of ship recycling would increase by at least 150 \$/ldt and thus reduce the current revenue for the sale of a scrap ship by approx. one fourth (see above 6.2.1.1). European facilities might acquire a small share of this market, although it is probable that the vast majority of shipowners would choose the cheaper facilities in Turkey or China for the dismantling of their ships.

However, overall the ban on beaching would not have a great effect because shipowners would have a much easier and cheaper alternative by simply changing flag, which is a legally acceptable practice. In view of the considerable financial advantage it is likely that the large majority of owners would choose to do this at least some time before they openly show their readiness to recycle a ship.

7.4.2.5. 6.3.2.5 Obligation for EU-flagged ships to go to certified facilities for dismantling

Independent of the idea of an EU-specific certification and audit scheme (see above 6.2.2.2), a proposal based on discussion papers by EMSA to include provisions on a voluntary certification and audit scheme for ship recycling facilities in the draft Convention is currently

⁴⁹ UNEP/CHW.6/23, published at <http://www.basel.int/meetings/cop/cop6/english/Report40e.pdf#vi24>, at p. 70.

⁵⁰ IMO document MEPC 56/3/4 of 6 April 2007, Annex I, no. 2.

under discussion in the IMO. This is meant as a mechanism to ensure a higher level of transparency and a more harmonised and effective implementation of the requirements for ship recycling facilities.

The provisions on auditing and certification of dismantling facilities are still under discussion at IMO level. Depending on the outcome of those discussions the Commission will examine how it can be ensured that ships flying the flags of EU Member States go for dismantling to certified and audited facilities.

Flag states are generally free to take more stringent measures than those foreseen in IMO conventions and lay down additional rules for ships flying their flag, in order to protect human health or the environment.

A legal requirement for ships to go to certified and audited facilities for dismantling would be less rigid than a total ban on beaching and more in line with the certificate-based approach of IMO conventions and resembling the existing voluntary audit scheme of IMO for flag state administrations. It has more potential to gain acceptance among shipowners and recycling yard operators, and would thus be more readily enforceable and having a generally positive impact. An EU rule to that effect would carry more weight in the international arena than purely national legislation and would give the certification and audit scheme a chance of success.

Environmental and social impacts:

The audits under the scheme would look into the environmental and safety performance of ship recycling facilities and thus establish whether they comply with the requirements of the Ship Recycling Convention. Additional criteria would be provided by the envisaged IMO Guidelines on ship recycling and by the forthcoming ISO 30000 standards. Certificates would only be granted to facilities which are in full compliance with the Convention. If the approach suggested by the EMSA study on certification systems is followed, beaching facilities would not as such be excluded from a certificate but would have to show that they have improved infrastructure and operating methods to a level where they can fully meet the Convention requirements. This would give South Asian operators an incentive to upgrade their facilities and reduce the environmental and health impacts of the activities on the beaches.

Economic impacts:

Audits and certificates under the scheme would mean an additional administrative burden for ship recycling facilities on top of the authorisation by a competent authority that is necessary under the draft Convention. In theory, there should be no additional costs for the upgrading of facilities compared to those required already by the Convention itself. In practice, however, the impact to be expected from audits and certificates by an independent third party is that they ensure more effectively than the authorisation an upgrading to a good performance standard. For South Asian beaching facilities the costs of this are estimated in the range of approx. 50 \$/ldt (cf. above 6.1.2).

For European, Chinese and probably also Turkish facilities additional investments on account of the audit scheme would, as a rule, not be necessary. The costs of audit and certification are not likely to be higher than 50-100,000 € (see above 6.2.2.2). The certificate could serve to raise the profile of the facilities that have acquired it and thus improve business opportunities, especially if it is entered as information into a worldwide list of ship dismantling facilities published by the IMO or the EU.

For shipowners the impact would not consist in administrative burden - as the procedures (notification of selected facility to the flag State, ship recycling plan etc) would follow the IMO model - but in a reduction of profit for the sale of the ship in accordance with the improved performance standard of the recycling facility.

7.4.2.6. 6.3.2.6 List of ships ready for scrapping

The European Parliament in its Resolution of 21 May 2008 suggested that the Commission should compile and maintain a list of seagoing ships which are likely to be scrapped within a few years and to envisage mechanisms whereby such ships are considered as "pre-waste ships". This is meant primarily to promote an effective implementation of the current Waste Shipment Regulation. It would, however, go beyond existing waste legislation, since the register and the consequential monitoring obligations for Member States would target ships that are not yet "waste".

The actual technical and legal feasibility of a list of ships ready for scrapping is uncertain and shall be further assessed by the Commission taking into account the procedures contained in the future Ship Recycling Convention.

Although information about the age and condition of ships is to some extent available already now through maritime databases, its dissemination and use by the Commission, EMSA and/or Member States' authorities would indeed require an explicit legal basis.

Moreover, there does not seem to be a simple way to effectively target the ships ready for scrapping. Even though the likelihood that a merchant ship will be scrapped increases significantly beyond the age of 25 years, it can still vary considerably depending on the category and individual quality of a vessel.

The Commission will therefore launch a study to assess the relevance of criteria like the poor standard qualifying for a phase-out (e.g. single-hull oil tankers), special risk factors (such as prior accidents) or an age approaching the scrapping average.

This study will also assess how such a list could improve the enforcement of the Waste Shipment Regulation for example for further inspections. In view of the high number of older ships that call at EU ports - approx. 1300 per week and thus one in four ships were beyond 25 years in 2006 - inspections requiring a lengthy detention should be too burdensome and should not contravene international obligations of port states not to cause undue delay for ships visiting their port. Another option which can be examined by the future study is that of introducing a "label" for high quality ships which would provide incentives to ship-owners buying these ships.

Impacts:

The obligation to report the age of a ship to national and EU authorities would not as such mean additional burden for shipowners, as this information is already today part of the IMO ship identification system and entered into various databases. The additional administrative burden induced by the creation and update of the list will be further assessed by the Commission. , Additional inspections might entail delays and costs for operators of older ships calling at EU ports. In 2006 the number of such merchant ships (>500 GT, >25 years) was between 1,200 and 1,500 per week; the number of calls amounted to 1,800-2,800 per week all over the EU.⁵¹ The frequency of additional checks and thus the administrative burden is, however, difficult to quantify as older ships are anyway more subject to inspections under

⁵¹ Data compiled by EMSA from Equasis database.

the new risk-based system of port state control in the EU, and the envisaged pre-waste checks would probably overlap with these inspections.

A side-effect of any such regime might be that ships beyond the age limit or with special risk factors would avoid EU ports. This could contribute to higher maritime safety in EU waters, since older ships are more prone to accidents and causing marine pollution than modern ones. A DNV study of 2004, for instance, revealed a significant rise in accident frequency when ships turn 15 years old.⁵² Even India recently banned chartered vessels that are older than 25 years from its waters in the monsoon season for fear of accidents.⁵³

An impact on consumer prices due to the costs of inspections, additional port fees for older ships or a scarcity of shipping volume is altogether not likely, in view of the current boom in shipbuilding. Negative impacts on trade or the competitive position of EU ports are not to be expected in most of Europe but could occur for transit ports in the Mediterranean where non-EU ports might offer an alternative.

7.4.3. 6.3.3 *Stricter enforcement of the Waste Shipment Regulation*

EU measures focusing on better implementation of the current EC Waste Shipment Regulation (WSR) and its application to ships might be considered particularly for the interim period until the new international regime becomes fully effective.

Impacts of the proposed measures

A guidance document on the application of the WSR to end-of-life ships would not have binding force but clarify the Commission's position on this legal question and instruct Member States' authorities on the best ways to take action against ships in their ports. Public dissemination would raise awareness further and prevent open contraventions of the Regulation. The effect in practice would, however, be limited, as the application of the WSR ends outside EU territory and thus can be easily avoided by a shipowner's decision to send a ship for dismantling once it is outside EU waters. Already today shipowners' associations are well aware of the Commission's legal view, and individual owners make considerable efforts to hide any intention that they may have of sending a ship for scrapping from an EU port.

A specific project of the EU implementation and enforcement network IMPEL and its "TransFrontier Shipment of Waste" (TFS) cluster on end-of-life ships would intensify the awareness-raising in competent authorities and help to build capacity by exchanging information on best practices. The effectiveness would, however, depend on active participation of the major flag and port states in the EU (GR, MT, CY, IT, UK/Gibraltar). A project of this type would need public funding from the EU and/or Member States in the range of at least 100,000-200,000 €.

Infringement proceedings against reluctant Member States can provide a strong additional incentive for compliance with the current law but would be rare due to the above-mentioned reasons.

Increased cooperation with countries of destination (recycling states) for the application of the Basel Convention to ships is likely to be difficult in nearly all cases, except for Turkey. Cooperation with transit states would focus in particular on Egypt, due to the crucial importance of the Suez Canal for the transfer of end-of-life ships from Europe to South Asia.

⁵²

http://www.dnv.com/press_area/press_releases/2004/25percentoffallshipsrepresent51percentofallshipaccidents.asp

⁵³

Lloyd's List of 19 May 2008.

There is a potential for raising the effectiveness of the Basel Convention system of controls if Egyptian authorities can be convinced that this would have financial advantages for the country and not create additional cost risks due to abandoned scrap ships.

7.4.4. 6.3.4 Anticipatory effects of legislation

For both the implementing as well as the complementing EU legislation anticipatory effects are possible in the short and medium term until its entry into force. These impacts can go in both directions: On the one hand, certain provisions of the forthcoming regime on ship dismantling might be implemented voluntarily by industry, especially where this can produce competitive benefits (e.g. early commissioning of surveys for the Inventory of Hazardous Materials). On the other hand, some shipowners might seek to avoid expected economic burdens by selling their end-of-life ships quickly to sub-standard recycling facilities. Negative anticipatory effects can be limited to some extent by a mix of voluntary measures (such as organised public campaigns and voluntary agreements) and an increased effort to enforce the rules of the current Waste Shipment Regulation.

7.4.5. 6.3.5 Summary Option 3

The impacts of the actions under Option 3 are summarized in the following table:

Table 8: EU legislative measures on ship recycling and their impacts

Measure	Positive impacts Affected group or concern: <i>Likelihood / intensity</i>	Negative impacts Affected group or concern: <i>Likelihood / intensity</i>	Recommended selection
<i>Measures to implement the IMO Ship Recycling Convention</i>			
Inventory of Hazardous Materials, surveys and certificates	Early harmonization of safety rules in EU would - establish level playing field - reduce costs for shipowners + shipyards - increase effectiveness of health + safety controls: <i>medium / medium</i>	No additional costs in relation to baseline (IMO Convention)	Accept
Requirements for ship recycling facilities	No major impacts, potential reduction of costs for Management Plan	No additional costs in relation to baseline (IMO Convention)	Accept
Information duties of recycling states	Transparency, more effective implementation: <i>medium / medium</i>	Additional administrative burden for MS: <i>medium / low</i>	Accept
Reporting requirements for shipowners + recycling facilities	No major impacts, potential reduction of costs by rule on single contact point	No additional costs in relation to baseline (IMO Convention)	Accept
<i>Complementing measures</i>			

Measure	Positive impacts Affected group or concern: <i>Likelihood / intensity</i>	Negative impacts Affected group or concern: <i>Likelihood / intensity</i>	Recommended selection
Extension of rules to government vessels	- Environment + workers' safety in South Asia, - Jobs + revenue in EU recycling industry: <i>medium / medium</i> (higher if additional rules on sale of ships)	Costs for EU navies: <i>medium / medium</i> Environment + workers' safety in EU: <i>low / low</i> Jobs + revenue in South Asian facilities: <i>medium/low</i>	Accept
More extensive bans on hazardous materials	Marine environment : <i>high / high</i> Workers' safety + health: <i>high / medium</i>	Interference with EU product legislation: <i>high / high</i> Competitive position of EU ship suppliers: <i>medium / high</i> Effectiveness of risk investigations: <i>medium / medium</i>	Reject
Stricter pre-cleaning obligations for EU-flagged ships	Environment + workers' safety in South Asia, <i>low / medium</i> - Jobs + revenue in EU recycling industry: <i>low / medium</i>	Costs for shipowners: <i>medium / medium</i> Re-flagging of EU ships: <i>high / medium</i> Additional risks of accidents en route + for safety/ environment in SouthAsia: <i>low / medium</i>	Reject (as ineffective)
Ban on beaching for EU-flagged ships	Environment + workers' safety in South Asia, <i>low / medium</i> - Jobs + revenue in EU recycling industry: <i>low / medium</i>	Costs for shipowners: <i>low / medium</i> Re-flagging of EU ships: <i>high / medium</i>	Reject (as ineffective)
Obligation for EU-flagged ships to use only certified facilities	Environment + workers' safety in South Asia: <i>medium / medium</i> - Jobs + revenue in EU recycling industry: <i>low / medium</i> - Jobs + revenue in class societies: <i>medium / medium</i>	Costs for shipowners + recycling facilities: <i>medium / medium</i> Re-flagging of EU ships: <i>medium / medium</i>	Accept
List of ships ready for scrapping.	Prevention of hazardous waste ship exports from EU: <i>medium / medium</i> Marine safety + environment (prevention of accidents) in EU: <i>medium / medium</i> Environment + workers' safety in South Asia: <i>low / medium</i>	Administrative burden for shipowners: <i>low / low (higher for owners of older ships)</i> Admin. burden for authorities: <i>medium / medium</i> Loss of revenue for EU transit ports in the Mediterranean: <i>medium / medium</i>	Accept

Measure	Positive impacts Affected group or concern: <i>Likelihood / intensity</i>	Negative impacts Affected group or concern: <i>Likelihood / intensity</i>	Recommended selection
<i>WSR enforcement measures</i>			
Guidance document on waste ships	Prevention of hazardous waste ship exports: <i>medium / medium</i> Environment + workers' safety in South Asia: <i>low / medium</i>	Administrative burden for EU + Member States: <i>high / low</i>	Accept
IMPEL-TFS project	Prevention of hazardous waste ship exports: <i>medium / medium</i> Environment + workers' safety in South Asia: <i>low / medium</i>	Administrative burden for EU + Member States: <i>high / low</i>	Accept
Infringement proceedings	Prevention of hazardous waste ship exports: <i>medium / high</i> Environment + workers' safety in South Asia: <i>low / medium</i>	Costs for EU + MS: <i>low / low</i>	Accept
Cooperation with third countries	Prevention of hazardous waste ship export, transit and import: <i>low / medium</i> (countries of destination), <i>medium / medium</i> (Egypt) Environment + workers' safety in South Asia: <i>low / medium</i>	Administrative burden for EU + Member States: <i>high / medium</i>	Accept

7.5. 6.4 Impacts of Option 4: Integrated policy approach

Under Option 4, EU legislation to implement and complement the Ship Recycling Convention would be combined with suitable non-legislative measures and actions for a better enforcement of the EC Waste Shipment Regulation, in order to reach maximum effect without creating unnecessary economic burden.

The impacts of the legislative and enforcement measures that would be at the heart of the policy are explained above under 6.3., the impacts of the selected measures to encourage voluntary action under 6.2.1.2, 6.2.2 and 6.2.3.

An extensive OECD study analysed the impacts on environmental effectiveness and economic efficiency of using an “instrument mix” approach, rather than a single instrument, to address a given environmental problem⁵⁴. It outlined the main arguments for using such instrument mixes, and the instrument mixes currently in use with supporting case studies. The study shows that policy mix approaches are particularly useful when problems are of a "multi-aspect" nature, when instruments can mutually support each other, and when addressing problems of failures in markets. In particular mixes can be effective in reducing compliance-cost uncertainty, enhance enforcement and reduce administrative costs.

⁵⁴ Instrument Mixes for Environmental Policy, OECD, May 2007.

On top of this, the added value of an integrated concept for ship dismantling lies in a greater effectiveness already in the short term. Whereas EU legislation would take at least 2-3 years to enter into force and measures to improve enforcement of current waste shipment law are likely to be effective only within EU waters, voluntary commitments by shipowners can have an immediate worldwide effect on the European-owned merchant fleet and by their economic weight help to improve environmental and social conditions in South Asia quicker than any other measure. Campaigns for voluntary action are also important to gain acceptance in the international maritime community and political legitimacy for a higher or lesser degree of legal intervention at a later stage. They are relevant especially in the interim period until the new international regime enters into force, and can prepare the ground for its immediate effectiveness in practice.

Other interactions are to be expected e.g. for the extension of the Convention regime to government vessels: This would promote its positive environmental and social impacts not only directly, but also by showing to private shipowners that governments are not exempted and have to shoulder an equal, if not heavier burden for their own ships.

A potential risk for the effectiveness of the mix of policies is that shipowners might feel unwilling to participate in voluntary actions if rigid enforcement measures or punitive sanctions are taken against them. The establishment of a list of "pre-waste ships" in particular might be regarded by industry as an unnecessary burden and weaken the readiness of shipowners' associations to enter into voluntary agreements. This effect could be somewhat reduced or even reversed if the control of prospective end-of-life ships would not be introduced from the start but made dependent on whether voluntary cooperation has proved successful within a period of 1-2 years.

Stronger enforcement measures would, on the other hand, to some extent limit negative anticipatory effects of the new legislation, especially if they are combined with closer monitoring and "naming and shaming" of shipowners who try to make quick profits from sub-standard ship scrapping in the interim period.

In addition, the balance of enforcement and voluntary actions would be likely to promote those operators that have already started to take action. They would also benefit from the obligation on owners of EU-flagged ships to use only certified and audited facilities for dismantling. In order to ensure the practical effect of this obligation and prevent evasion by out-flagging, the Commission (and, as far as possible, Member States' governments) would have to make it a key element of the campaign for voluntary agreements that would emphasise the advantages of the scheme for a good reputation of shipowners and the strong link to Corporate Social Responsibility.

Table 9: Net impacts of measures under Option 4 (integrated policy approach)

Measure	Positive impacts	Negative impacts	Net impact / interference
<i>EU legislation</i>			
Inventory of Hazardous Materials, surveys and certificates	Early harmonization of safety rules in EU would <ul style="list-style-type: none"> - establish level playing field - reduce costs for shipowners + shipyards 	No additional costs in relation to baseline (IMO Convention)	Medium positive impact; no interferences expected.

Measure	Positive impacts	Negative impacts	Net impact / interference
	- increase effectiveness of health + safety controls: <i>medium / medium</i>		
Requirements for ship recycling facilities	No major impacts, potential reduction of costs for Management Plan	No additional costs in relation to baseline (IMO Convention)	Minor positive impact; no interferences expected.
Information duties of recycling states	Transparency, more effective implementation	Minor additional burden for MS	Minor positive impact; no interferences expected.
Reporting requirements for shipowners + recycling facilities	No major impacts, potential reduction of costs by rule on single contact point	No additional costs in relation to baseline (IMO Convention)	Minor positive impact; no interferences expected.
Extension of rules to government vessels	Less pollution + health impacts from contaminated warships in South Asia, More jobs + revenue in EU recycling industry:	Higher costs / less revenue for EU navies Possibly minor impacts on jobs + revenue in South Asia Possibly minor impacts on environment + workers' safety in EU	Medium positive impact; no interferences expected.
Obligation to use only certified facilities	Less pollution + health impacts from EU-flagged ships in South Asia More jobs + revenue in certified facilities, possibly in EU More jobs + revenue in classification societies:	Higher costs / less revenue for shipowners, minor certification costs for recycling facilities Possibly out-flagging of EU ships	Medium positive impact, if no major out-flagging. Combination with campaign for voluntary action/CSR necessary.
List of ships ready for scrapping.	Prevention of hazardous waste ship exports from EU Contributes to protection of marine environment by less old ships + accidents in EU waters Minor impact on environment + workers' safety in South Asia	More administrative burden for authorities and owners of older ships through monitoring + controls Loss of revenue for EU transit ports in the Mediterranean:	Medium positive impact. Could interfere with encouragement for voluntary actions by shipowners.
<i>WSR enforcement measures</i>			
- Guidance document on waste ships - IMPEL-TFS project - Infringement	Better compliance with WSR / prevention of hazardous waste ship exports from EU Minor impact on environment + workers'	More administrative burden for authorities and owners of older ships through additional controls	Medium positive impact. Rigid execution of measures could interfere with encouragement for voluntary actions.

Measure	Positive impacts	Negative impacts	Net impact / interference
proceedings	safety in South Asia		
Cooperation with third countries (countries of destination + transit)	Possibly better compliance with Basel Convention / prevention of hazardous waste ship export, transit and import: Possibly medium impact on environment + workers' safety in South Asia	More administrative burden for EU + Member States	Potentially medium positive impact, but successful cooperation with countries of destination not likely. No interferences expected.
<i>Measures for voluntary actions</i>			
Streamlining existing shipping aids	Better compliance with WSR / prevention of hazardous waste ship exports from EU Minor impact on environment + workers' safety in South Asia More jobs + revenue in EU recycling industry	Higher costs / less revenue for ferry operators:	Medium positive impact; no interferences expected
Campaign for voluntary agreements with shipowners	Possibly medium impacts on environment + workers' safety in South Asia, especially in short term	No major impacts	Potential for positive impact, especially in short term. Interference by legislative + enforcement measures possible.
Award scheme	Minor impact on environment + workers' safety in South Asia Better reputation for EU shipowners + other participants Possibly more jobs + revenue in EU recycling industry	Minor costs for EU + industry participants (but presupposes already high standards).	Medium positive impact; if transparent + broad scheme no interferences expected.
Technical assistance for developing countries	Possibly medium impacts on environment + workers' safety in South Asia Possibly better conditions for local fishermen in South Asia:	Costs for EU funds Possibly distortion of competition with other recycling states	Potential for positive impact, dependent on cooperation from recycling state. No interferences expected.
Participation in pilot projects	Minor impacts on environment + workers' safety in South Asia	No major impacts	Minor positive impact. No interferences expected.
Guidance for shipowners (global list of "green")	Possibly medium impacts on environment + workers' safety in South Asia	No major impacts	Medium positive impact. No interferences expected.

Measure	Positive impacts	Negative impacts	Net impact / interference
dismantling facilities)	safety in South Asia Possibly more jobs + revenue in EU recycling industry		

8. COMPARING THE OPTIONS

7.1 Impact matrix

The two tables below summarize the results of the previous impact analysis. The first table addresses short and medium-term impacts, the second one long-term impacts.

Short term is here defined as reaching until 2010, medium term until 2015 or until national transposition of the IMO Ship Recycling Convention.

Table 10: Short and medium-term impacts

Options	Environmental	Social	Economic
1) No policy change	Pollution of water, soil + habitats in S. Asia would continue, probably increase	- High safety hazards for workers in South Asia, - Criminal structures in shipbreaking yards would continue, probably increase. Low safety hazards for shipyard workers + seafarers probably unchanged	- Revenues for shipowners, - Transport + consumer prices, - Revenues for yard owners in South Asia - Raw material supply for S. Asian economies, would continue probably at same level. Competitive disadvantages for EU recycling industry certain to continue. Losses for fishermen in South Asia unchanged, probably increasing.
2) Emphasis on voluntary action	A) With full subsidies for dismantling in EU/Turkey strong positive impacts for environment in S. Asia (no pollution by EU ships).	A) With full subsidies for dismantling in EU/Turkey net positive impacts on jobs and workers' safety:- - Positive for workers' health in South Asia (less accidents) - Positive for jobs in EU - Negative for jobs in S. Asia.	A) With subsidies net negative impacts: - High costs for EU taxpayers, - Negative impacts on economy in South Asia (revenue from recycling, steel supply), - Trade conflicts with S. Asia. - Positive impacts for EU recycling industry - Better conditions for fishers in S. Asia
	B) Without subsidies limited positive impacts possible with dismantling of - state-aid ferries, - warships, - some other ships; + through	B) Without subsidies limited positive impacts on workers' safety + EU jobs possible with dismantling of - state-aid ferries, - warships, - some other ships; + through development	B) Without subsidies no major impacts expected. Costs for development aid, negative impacts on competition possible.

Options	Environmental	Social	Economic
	development aid.	aid.	
3) Comprehensive EU legislation	<p>A) Short term: - Negative anticipatory effects of legislation possible (more ships to sub-standard yards). - Compliance with WSR in EU waters improved through enforcement measures.</p> <p>B) From entry into force: - Limited positive impacts on environment in S. Asia (state-owned ships, audit requirement) - Higher compliance with WSR through list of ships.</p>	<p>A) Short term: - Positive anticipatory effects possible (inventories). - Negative anticipatory effects possible (more ships to sub-standard yards).</p> <p>B) From entry into force: limited positive impacts on safety ensured (inventories, state-owned ships, audit requirement). New jobs in classification societies.</p>	<p>A) Short term: higher administrative burden for authorities through enforcement measures.</p> <p>B) From entry into force net positive impacts: - More business for EU recycling industry (state-owned ships). - Higher costs for shipowners (in particular navies), shipyards + S. Asian recycling facilities but less administrative costs in EU due to harmonization. - New revenues for classification societies. - Higher administrative burden for authorities through monitoring of pre-waste ships.</p>
4) Integrated policy approach	<p>A) Short term: - Higher WSR compliance through enforcement measures. - More potential for improvements in S. Asia through voluntary action (2B).</p> <p>B) From entry into force of legislation: combined positive impacts of 2B) and 3B).</p>	<p>A) Short term: More potential for improvements on workers' safety + EU jobs through voluntary action (2B).</p> <p>B) From entry into force of legislation: combined positive impacts of 2B) and 3B).</p>	<p>A) Short term: - More administrative costs through WSR enforcement measures. - Costs for development aid, negative impacts on competition possible.</p> <p>B) From entry into force of legislation: Combined impacts of 2B) and 3B).</p>

Table 11: Long-term impacts

Options	Environmental	Social	Economic
1) No policy change	<p>Limited positive impacts of IMO Convention (less pollution in S. Asia). Delays through diverging MS implementation.</p>	<p>Limited positive impacts of IMO Convention on workers' safety. Delays through diverging MS implementation. New jobs in classification societies.</p>	<p>Net negative impacts: Limited investment costs for shipowners, shipyards + S. Asian recycling facilities. Additional costs for EU shipowners + shipyards through diverging MS implementation. Minor increase of transport + consumer prices possible. Competitive disadvantages for EU</p>

Options	Environmental	Social	Economic
			recycling industry certain to continue. Positive impacts for S. Asian fishermen possible.
2) Emphasis on voluntary action	A) With subsidies same strong impacts as in short term (Table 3, 2A). B) Without subsidies positive impacts on environment in S. Asia slightly higher than in 1) (state-aid ferries, development aid).	A) With subsidies same impacts as in short term (Table 3, 2A).. B) Without subsidies positive impacts on workers' safety slightly higher than in 1) (state-aid ferries, development aid). New jobs in classification societies.	A) With subsidies same impacts as in short term (Table 3, 2A). B) Without subsidies - essentially same impacts as in 1) - Costs for development aid, negative impacts on competition possible.
3) Comprehensive EU legislation	Limited positive impacts on environment in S. Asia, higher than in 1) (state-owned ships, audit requirement) Higher compliance with WSR through list of ships and enforcement measures.	Limited positive impacts on workers' safety, higher than in 1) (inventories, state-owned ships, audit requirement). New jobs in classification societies.	Net positive impacts: - More business for EU recycling industry (state-owned ships). - Higher costs for shipowners (in particular navies), shipyards + S. Asian recycling facilities but less administrative costs in EU due to harmonization. - New revenues for classification societies. - Positive impacts for S. Asian fishermen possible - Higher administrative burden for authorities through monitoring of pre-waste ships + enforcement measures.
4) Integrated policy approach	Positive impacts on environment in S. Asia higher than in other options (except 2A), due to combination of measures: - Binding rules on state-owned ships, audit requirement; - Additional voluntary action for merchant ships; - Development aid. Higher compliance with WSR through list of ships, guidance, enforcement measures, streamlined state aids.	Positive impacts on workers' safety higher than in other options (except 2A), due to combination of measures. New jobs in classification societies.	Net positive impacts: - More business for EU recycling industry (warships, state aid ships). - Higher costs for shipowners (in particular navies), shipyards + S. Asian recycling facilities but less administrative costs in EU due to harmonization. - New revenues for classification societies. - Positive impacts for S. Asian fishermen possible. - Higher administrative burden for authorities through monitoring of pre-waste ships and more WSR enforcement measures. - Costs for development aid, negative impacts on competition possible.

8.1. 7.2 Conclusion

The analysis in chapter 6 has shown that Option 4 (integrated policy approach) would probably have the largest positive overall impacts. While Option 2, if full subsidies are used for clean ship dismantling in the EU or Turkey, is likely to produce the quickest and strongest positive effects for environment and workers' health in South Asia and strengthen business and job prospects in the EU, it involves also a high burden for EU taxpayers and would lead to trade conflicts with the South Asian recycling states. The other options avoid these negative consequences, but are also less effective in keeping European end-of-life ships away from sub-standard yards in Asia. Option 4 offers an appropriate way out of the dilemma, by combining the most effective legal proposals and the enforcement measures under option 3 with the more realistic voluntary actions under option 2.

This option would

- in the short term, until legislation is in force, improve enforcement of current waste shipment law and prevent the direct export of hazardous waste ships from the EU to developing countries;
- in the medium and long term provide a comprehensive set of rules to make the recycling of EU ships safer and more environmentally sound worldwide by an early implementation of the forthcoming IMO Convention and complementing measures; and
- in parallel encourage voluntary actions by shipowners to improve the worldwide practice of ship dismantling already in the short term and support the transition process in general.
- In this way, the integrative approach is most likely to achieve a high level of compliance with the EU *acquis* and to reduce significantly before 2015 the negative impacts of shipbreaking on human health and the environment, especially in South Asia, without creating excessive economic burdens. It is thus the preferred option.

8.2. 8. Monitoring and evaluation

Monitoring and evaluation would be an important part of an EU strategy on ship dismantling. Progress on the objectives should be monitored to check the implementation and effectiveness of the measures and their contribution to the objectives of other EU policies.

Indicators of the progress in this context could be in particular:

- the number of ships leaving EU ports and going to developing countries for dismantling;
- the number of ships whose departure to developing countries was prevented (e.g. by detention);
- the number of ship recycling facilities that are authorized, audited and certified in compliance with the draft Ship Recycling Convention and the certification scheme under the envisaged EU legislation;
- the number and percentage of EU-flagged ships and formerly EU-flagged ships dismantled in such facilities;
- the overall percentage of ships dismantled in higher-standard facilities worldwide; and
- data on accidents, occupational diseases and environmental pollution associated with ship dismantling, as available.

Taking these indicators into account, it is necessary to review the EU policy concerning ship dismantling on a regular basis (every 3-4 years) and to submit regular

implementation/progress reports to the European Parliament and the Council. The first of these reports should be submitted and published in 2012, after completion of approximately half of the period envisaged in the specific policy objectives.

Information on "end-of-life" ships moving in European waters could come in through the continual monitoring of these ships by Member States' authorities, possibly assisted by the European Maritime Safety Agency (EMSA). In addition, cases of (prevented) exports of hazardous waste ships should be contained in the annual implementation reports of Member States under the EC Waste Shipment Regulation. Other data on ships and their dismantling could be drawn from existing maritime databases that are used by EMSA, from the observation of press reports and contact with key experts in the Member States and recycling countries.

From the entry into force of EU legislation implementing the Ship Recycling Convention, the mandatory annual reports of Member States on ship recycling facilities and recycled ships could be used. The same would apply to other Parties of the Ship Recycling Convention when this instrument becomes effective; these data would be disseminated by the IMO. In view of probable delays, gaps and inaccuracies it is highly recommended to contract a study for the preparation of each policy review.

Annex I: List of references

Annex II: Report on the public consultation on the Green Paper on better ship dismantling
(of 15 October 2007)

8.3.

8.4. Annex I: List of references

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Annex II: Report on the public consultation on the Green Paper on "Better ship dismantling" (COM(2007) 269 final)

The consultation on the Green Paper on "Better ship dismantling" closed on 30 September 2007. In total, 44 responses were received in this period. 12 EU Member States, 2 local authorities, 6 NGOs, 14 industry associations or companies and 5 trade unions sent their comments, while 5 replies came from academia, media and others. Not all contributions answered directly to the questions put forward in the consultation paper; 2 stakeholders sent in information brochures on their activities and 3 stakeholders provided information on future projects or the ship dismantling situation in South Asia. Therefore, the relevant feedback can be counted from about 39 contributions.

The feedback on the questions of the Green Paper can be summarised as follows:

Question 1: How can the enforcement of current Community law (Waste Shipment Regulation) affecting end-of-life ships be improved? What is the best mix of measures to divert EU-flagged or EU-owned vessels to dismantling sites with high environmental and safety standards?

The majority of the stakeholders consider that the Waste Shipment Regulation (WSR) is difficult to apply in this case and indicate that a legally binding definition on when a ship can be considered waste is crucial. However, other stakeholders hold the view that a definition is not necessary but that practical criteria to determine whether a ship is an end-of-life ship or not should be developed. In order to apply the WSR and guide the authorisation for import and export of waste, it is suggested that the EU should adopt its own certification system, to be controlled by an EU authority.

Concerning the measures to divert EU-flagged/owned vessels to dismantling sites with high standards, it is suggested that the EU should compile a list of green recycling facilities, and that authorities should apply stricter controls to older ships and hold shipowners liable who would be fined if not dismantling the ships in adequate sites. It is also mentioned that voluntary commitments by shipowners could improve the situation. Some stakeholders point to the recent proposals in the International Standardization Organization (ISO) for an international standard ISO 30000 "Specifications for management systems for safe and environmentally sound ship recycling facilities" and ISO 30003 "Requirements for bodies providing audit and certification of ship recycling management systems".

Question 2: Would guidance on waste shipment rules and definitions on end-of-life ships help to improve implementation of rules and business practices, and what form should it take?

Guidance and clear definitions are welcomed. However, most stakeholders express the view that guidance should be in line with the discussions at IMO level on a draft Ship Recycling Convention and accompanying guidelines. It is suggested that resources should be directed to improving such guidelines and implementing them at an early stage. Guidelines on the "green passport", the "inventory of hazardous materials" and the term "properly emptied" (of hazardous materials) are indicated as examples in this context.

Question 3: What is the best way of steering the current negotiations on the IMO Ship Recycling Convention in order to improve ship dismantling practices globally?

National binding solutions can escape enforcement. Therefore it is generally seen as very important to support the work at IMO level to establish a globally binding regime on ship dismantling. Many stakeholders also emphasise the necessity of cooperation with other international bodies (ILO, Basel Convention) and with the recycling states on this issue. A stronger coordination within the EU is supported by several Member States and other stakeholders. There is limited support for EU membership in the IMO.

Question 4: Should the EU aim at global environmental and safety standards under the IMO Convention that are comparable with EU standards?

Most stakeholders are in favour of aiming at global environmental and safety standards that are compatible with EU standards, while at the same time taking into account the special needs of developing countries. Several Member States point to the necessity of a gradual improvement, in order not to endanger a worldwide agreement on common minimum standards.

Question 5: How can the EU best ensure that European ships are dismantled in a safe and environmentally sound way during the interim period before the IMO Convention becomes effective? What about ships owned by the public sector? Will national strategies and voluntary commitments by ship-owners be sufficient? What additional measures would be needed at EU level?

It is suggested that the EU should do its best to reduce the transitional period (until the entry into force of the IMO convention). Various measures improving transparency and awareness and the application of EU law are proposed. Many stakeholders see a role for the EU in coordinating and supporting voluntary measures by shipowners. In addition, some Member States and NGOs are in favour of EU legislation anticipating the entry into force of the IMO convention by incorporating its expected provisions. It is also suggested that the EU should ensure strict public procurement rules for the dismantling of state-owned ships and compile a list of the single hull oil tankers that are to be phased out.

Question 6: Should the EU and its Member States take an active role in increasing the EU's own ship recycling capacity, and how?

In general stakeholders do not indicate that there is a need for increasing ship dismantling capacity in the EU but rather recommend the upgrading of existing facilities. Some Member States and commercial stakeholders point to the possibility of stimulating the demand for EU capacity by restricting exports to non-OECD countries. It is also suggested that the EU could undertake research on issues like ships' inventories of hazardous waste, economic instruments to reflect the "polluter pays" principle, and the coordination of calls for tender by European navies.

Question 7: What measures and actions should the EU take to encourage South Asian states to introduce and implement higher environmental and safety standards for ship dismantling?

Many stakeholders take the view that the EU should conduct public awareness campaigns and provide technical assistance to South Asian countries. Also partnerships between shipowners and recycling facilities, such as between a leading EU shipping company and facilities in China, are seen as helpful and worth of encouragement from the EU. Guidance to shipbreaking countries for the implementation of the Basel Convention is also suggested.

Question 8: What measures and actions should the EU take to encourage ship-owners to direct end-of-life ships to dismantling sites with high environmental and safety standards?

Direct high-level talks between the Commission and major stakeholders (e.g. shipping companies and associations) are suggested as an important means to encourage voluntary

action. There is some support for the establishment of an EU certification system for clean ship dismantling (as long as it is compatible with the rules of the envisaged convention and not too bureaucratic) and for awards for exemplary green recycling. Several stakeholders highlight the importance of Member States' leadership on environmentally sound dismantling of their own vessels. Other suggestions, apart from financial mechanisms mentioned below under 9), include stricter enforcement of waste shipment rules, the linking of maritime subsidies to the beneficiary's use of clean and safe dismantling facilities, and the setting up of pilot projects for clean ship dismantling.

Question 9: How should the EU secure sustainable funding for clean ship dismantling in accordance with the polluter pays principle, and what measures and actions should it take?

The majority of stakeholders is of the opinion that the establishment of a sustainable funding mechanism to ensure clean ship dismantling should be in line with the polluter pays principle. Several stakeholders refer to other EU legislation on waste (end-of-life-vehicles, waste electrical and electronic equipment, batteries) where extended producer responsibilities have been established. It is suggested that in the case of ships, due to their long lifetime, a system of shared responsibility for shipyards and shipowners should be set up. Some stakeholders provide detailed suggestions for funding options (e.g. taxes to be levied on each new ship, port fees, yearly tax linked to IMO registration, etc). The general view is that, if a ship dismantling fund is set up, it should be done at IMO level. Many stakeholders see the need for an EU study exploring such funding possibilities.

Glossary

AFS	Convention concerning harmful anti-fouling systems on ships
COP	Conference of the Parties
CY	Cyprus
CSR	Corporate Social Responsibility
EC	European Community
ECSA	European Community Shipowners' Associations
EMAS	European Union's Eco-Management and Audit Scheme
EMSA	European Maritime Safety Agency
EU	European Union
GR	Greece
GT	Gross tons
HBCDD	Hexabromocyclododecane
IA	Impact Assessment
ICS	International Chamber of Shipping
IHM	Inventory of Hazardous Materials
ILO	International Labour Organisation
IMO	International Maritime Organisation
IMPEL	European Union Network for the Implementation and Enforcement of Environmental Law
ISO	International Organization for Standardization
LDT	Light Displacement Tonnes
MEPC	Marine Environment Protection Committee
MIDN	Report of the French Inter-departmental Committee on the Dismantling of Civilian and Military End-of-Life Ships
MT	Malta
OECD	Organisation for Economic Co-operation and Development
OHSAS	Occupational Health and Safety Advisory Service

OJ Official Journal (of the European Union)

OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic

PCBs Polychlorinated biphenyls

PFOs Perfluorooctane sulfonates

SOLAS International Convention for the Safety of Life at Sea

TBBPA Tetrabromobisphenol A

TBT Tributyl tin

TFS TransFrontier Shipment of Waste

WSR Waste Shipment Regulation

UNEP United Nations Environment Programme

UK United Kingdom