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## How to improve EU legislation to tackle marine litter

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## Executive summary

This study, conducted by IEEP for Seas At Risk, seeks to outline which existing pieces of EU legislation could be amended or better implemented to ensure a significant drop in marine litter, and whether new EU legislation might be required to fill gaps in the body of regulation to prevent litter entering the marine environment from EU sources.

The report begins with a short summary of the issue of marine litter and its impacts. It then examines an array of EU policy instruments, assessing their potential level of relevance to marine litter, identifying specific types of debris that could be affected by the legislation, highlighting specific articles of interest, and determining how well those articles address the problem. The policy instruments examined fall into four main groups:

- The overarching policy framework: the Marine Strategy Framework Directive (MSFD);
- Those which have potential for quantitative prevention, i.e. reducing the amount of litter entering the sea: from land-based sources (waste and industrial emissions legislation); from riverine and sewage related waste streams (water and cosmetics legislation); and from sea-based sources (the Common Fisheries Policy);
- Those which have potential for qualitative prevention, i.e. reducing the hazardousness of marine litter: product-related legislation; and
- Those which may contribute to cleaning up marine litter: the CFP and European Maritime and Fisheries Fund, Environmental Liability Directive, Habitats Directive and Bathing Waters Directive.

Six policy instruments in particular are identified as having a high potential level of impact: the MSFD, the Waste Framework Directive, the Packaging and Packaging Waste Directive, the Cosmetics Regulation, and the European Maritime and Fisheries Fund (the funding instrument of the Common Fisheries Policy). This is either because they are relevant to a large range of marine litter items and sources, or may have a large or dramatic impact in terms reducing an important type of litter.

Following the gap analysis undertaken within the study, a set of policy recommendations have been identified to improve the performance of EU legislation to help reduce the amount, and environmental impact, of marine litter. These policy recommendations are presented according to the four main groups of policies as outlined above. Throughout the discussion of recommendations, several best practice case studies are presented to provide practical examples of action that has already been taken and shown to have an environmental impact that could be beneficial to tackling marine litter.

The study concludes that whilst the basic policy framework for addressing marine litter appears to be in place in the EU, there are a number of apparent deficiencies, often related to implementation, enforcement, level of ambition and lack of prominence for the issue of marine litter. Several priority options for improvements are presented. These include:

- Increasing the ambition of Member States' implementation of the MSFD, including setting targets and implementing measures that will have a significant impact on marine litter, and incorporating an EU wide target for marine litter into the MSFD;

- Improving waste legislation and its implementation generally, including by more explicitly introducing the concept of litter into existing legislation, perhaps by inserting a reference within waste legislation to marine litter elements of the MSFD;
- Using current opportunities within EU waste policy – namely the on-going review of EU waste legislation and targets, the development of Member States’ national waste prevention plans, and the follow-up to the Green Paper on plastic waste – to raise awareness about and encourage action on marine litter;
- Investigating further how the Packaging and Packaging Waste Directive could help prevent and reduce the harmfulness of the packaging waste fraction of marine litter;
- Taking action at the EU level to prohibit the addition of microplastic particles into cosmetics products;
- Ensuring that the EMFF includes a measure to fund fishing-for-litter, filling the gap in terms of financing marine litter clean-up operations; and,
- Improving the regulation of ship-related marine litter, particularly in light of the upcoming reform of the PRF Directive, for example by the EU-wide introduction of indirect fee systems (which require mandatory waste delivery at port and payment of a fee for port facilities irrespective of the quantities and types of waste delivered).

It is important to recognise that many of the policies relevant to marine litter interact with each other, and that the interactions between certain policy options therefore must also be considered. In addition, factors such as the scale of potential impact, the type of approach taken (eg prevention versus end-of-pipe), the feasibility of enabling change, the timing of policy review cycles and opportunities for influencing must also be taken into account when considering the policy recommendations. The coherence of the entire body of legislation might be improved by establishing a legal definition of marine litter within the MSFD, to which other policy instruments could refer.

Finally, the study notes that now is a good time to argue the case for action on marine litter, given the prominence of resource efficiency on the EU policy agenda and the on-going wide-ranging review of the EU’s waste legislation, the results of which will be published in 2014. Marine litter has obvious synergies with both the resource efficiency and waste agendas, and the door is therefore open for the issue of marine litter to be discussed seriously by policy-makers and practitioners in the broader policy context.

# 1 Introduction

Marine litter is of increasing concern, globally as well as in Europe. Marine litter is defined as “any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine or coastal environment” (Galgani et al, 2010). Determining how much marine litter is in the oceans is challenging, given the variety of routes through which it enters the environment, and the degradation processes that occur. Nevertheless, the amount of litter in the marine environment is recognised to be significant and growing (European Commission, 2013a; UNEP, 2009; United Nations General Assembly, 2012). Although there are various types of marine litter, plastics (synthetic organic polymers) make up the majority of debris worldwide and in European seas (approximately 60 to 80 per cent (Derraik, 2002)). This issue is of concern as marine litter is widely recognised to result in negative ecological, social and economic impacts, such as the entanglement of protected marine species or losses in tourism revenue due to litter on beaches. This issue should be high on the European agenda given the threat it poses to the transition towards a resource-efficient Europe (European Commission, 2011a), and in light of the current review of EU waste legislation and policy.

As marine litter can originate from numerous sources, measures to reduce litter pollution need to target these different origins. In addition, due to the transboundary nature of the marine litter problem, it is necessary to regulate at a supranational level. These are both reasons for seeking to address the issue at an EU level. There are numerous EU legal instruments already in operation that could have a role in tackling marine litter, addressing litter sources from a diversity of sectors.

In relation to these policies this study seeks to answer two overarching questions:

- *Which existing pieces of EU legislation could be amended or better enforced/implemented to ensure a significant drop in litter items entering the marine environment? And,*
- *What new EU legislation is required to fill gaps in the body of regulation leading to an end to litter entering the marine environment from EU sources?*

In order to answer these questions, this study examined an array of different EU policies. We assessed the potential relevance of each piece of legislation to marine litter, identifying specific types of debris that could be affected by the legislation, and specific articles of interest, determining how well those articles address the problem. Based on the results of this gap analysis it was possible to identify potential policy options to improve the performance of EU legislation to help to reduce the amount of marine litter. The report begins with a short summary of the issue of marine litter and its impacts, and throughout the discussion of policy options we present a series of best practice case studies to illustrate our findings.

## 2 Marine litter – sources and impacts

### 2.1 Sources and types of marine litter

Litter enters the marine environment through various means and from numerous different origins, including land-based and sea-based sources. The main land-based sources of marine litter include municipal landfills; riverine transport of waste from landfills and urban areas or other sources along rivers and other waterways; discharge of untreated municipal sewage; industrial facilities; and tourism, particularly recreational visitors to the coast/ beach (UNEP, 2009). The primary ocean-based sources of marine litter are merchant shipping, ferries and cruise liners; fishing vessels, particularly with respect to lost or abandoned fishing gear; military fleets and research vessels; pleasure craft; offshore oil and gas platforms; and aquaculture farms (UNEP, 2009).

It is frequently cited that 80 per cent of marine debris originates from land-based sources, and 20 per cent from ocean-based sources, however the origins of this ratio are unclear (NOAA, 2009). Besides, the importance of these sources in terms of their contribution to the marine litter problem varies significantly regionally and locally depending on the scale of these activities in the area, as well as the policies regulating them. This means that there is significant variation in the amounts and types of debris arising from these sources regionally and locally, and indeed, seasonally. For example, tourism related litter (eg food wrappers, cigarette butts, etc) is most likely to make up a greater proportion of marine debris in popular tourist beaches, particularly during the tourist season. Another important factor affecting the distribution of litter are ocean currents which may concentrate litter in certain places. For example, the Bohus Coast in the northern parts of the Swedish west coast is heavily affected by marine litter because it is where several currents from the North and Baltic seas converge (Kinell et al, 2012).

In the North-East Atlantic, the items most commonly found on beaches are ropes, nets and cords; and packaging materials and small (<50 cm) pieces of plastic, including plastic bottles and bottle caps (Interwies et al, 2013). The prevalence of these items suggests that maritime activities (eg fishing vessels, merchant shipping, pleasure craft, etc) and coastal recreation and tourism activities are the predominant sources of marine litter in the sea basin (accounting for approximately 30-40 per cent of marine litter items found each) (Interwies et al, 2013). In addition, research from the University of Plymouth has shown that plastic debris is fragmenting in the environment and that microscopic pieces of common polymers (microplastics) including polyethylene, polyvinyl chloride and polypropylene are now present on shorelines and in the water column of the North East Atlantic (Thompson et al, 2004; Thompson et al, 2009).

Data on the amounts and origins of marine litter in the Black Sea are very limited and local. Nevertheless the three reports which refer to the main items found in the Black Sea region are coherent, with disposable packaging and single use plastic goods making up the majority (i.e. bottles, bags, crisp/sweet packets, cans, and bottle caps). According to Topçu et al (2013) municipal waste/sewage and badly managed landfills are the most important sources, followed by marine transport and ports. In contrast, Arcadis (2012) concluded that recreational tourism activities represent the most important source.

In the Baltic Sea the most commonly found items of marine litter are plastics generally (50-60 per cent of items), and more specifically, plastic bottles, cigarette butts, cotton bud sticks, and food and snack packaging. Fishing nets and micro particles are also assumed to be important (HELCOM, 2013 in Interwies et al, 2013). This suggests that land-based sources are the most important sources (particularly municipal and sanitary waste management, and recreational and tourism activities). Litter from maritime sources is less important than in the North East Atlantic, with the probable exception of fishing (HELCOM, 2013 in Interwies et al, 2013).

As per the other sea basins, plastics make up a high proportion of litter in the Mediterranean, on beaches (37-93 per cent), in floating litter (60-83 per cent), and on the sea floor (36-90 per cent) (UNEP, 2009). The most commonly found items on beaches are sanitary items (mostly cotton bud sticks), cigarette butts, and packaging items and bottles. Lost fishing gears are also considered to be of importance.

## 2.2 Impacts of marine litter

Marine litter is recognised to cause negative ecological, economic and social impacts. Given the prevalence of marine debris, and plastics in particular, marine organisms are likely to encounter litter items. The detrimental consequences of these encounters are mainly as a result of ingestion and entanglement, but other impacts may include the alteration, damage and degradation of benthic habitats, and the transport of alien invasive species (Katsanevakis, 2008). A study of reported encounters with marine litter found that 57 per cent of reported encounters were with rope and netting, plastic fragments (11 per cent), packaging (10 per cent), other fishing related litter (8 per cent) and microplastics (6 per cent) (CBD, 2012). This clearly indicates that lost and abandoned fishing gear is an especially problematic form of marine debris.

With respect to ingestion, at least 43 per cent of cetacean species, all species of marine turtles, approximately 44 per cent of the world's seabird species and many species of fish have been reported to ingest marine litter (Katsanevakis, 2008). The most comprehensive data available on ingestion is on northern fulmars. The analysis of the stomach contents of beached fulmars in the Southern North Sea indicates that 95 per cent contain plastics, in average 35 pieces per bird (van Franeker et al, 2011). Ingestion of microplastics is also common. In the Clyde Sea 83 per cent of *Nephrops* sampled contained plastics (mainly fibres) in their stomachs (Murray and Cowie, 2011), and in the English Channel 36.5 per cent of individuals sampled (spanning ten pelagic and demersal fish species) had plastics in their gastrointestinal tracts (Lusher et al, 2013). Ingestion can cause harm physically through choking, obstruction of the gastrointestinal tract leading to starvation or malnutrition, or internal injury and infection. It can also cause harm through chemical contamination, as certain items of marine litter, especially plastics, may contain toxic substances which cause death or reproductive failure in certain marine organisms.

Harm and death from entanglement in litter items is more direct and obvious than from ingestion, and is more frequently reported. At one colony Votier et al (2011) found on average 63 northern gannets are entangled each year, totalling 525 individuals over eight years. The prevalence and composition of fishing gear debris in northern gannet nests in a colony in the Gulf of St Lawrence has been found to correlate to fishing effort (Bond et al,



2012). Mean annual entanglement of grey seals in southwest England ranged from 3.6 per cent to 5 per cent between 2004 and 2008, and of the 58 entanglement cases, 64 per cent had serious injuries (Allen et al, 2012).

Studies assessing the socio-economic impacts of marine litter are less common. One impact reported is harm to human health and safety, from sewage related waste presenting a health risk to bathing waters for example, or hazardous materials such as syringes and glass on beaches (ten Brink et al, 2009). Entanglement of swimmers and divers in submerged or floating debris has also been reported. Entanglement of propellers also presents a safety issue for mariners. In 2008 there were 286 rescues to vessels with fouled propellers in UK waters at a cost of between €830,000 and €2,189,000 (Mouat et al, 2010). Similarly, in 2005, the US Coastguard made 269 rescues to incidents involving marine litter resulting in 15 deaths, 116 injuries and \$3 million in property damage (Moore, 2008). Marine litter also has negative economic effects on the fishing sector, through the loss of fish stocks to ghost fishing or spoiled catches through contamination with debris, for example. Research focusing on the Shetland fishing fleet found that marine litter could cost a vessel up to £30,000 a year (Hall, 2000). The same applies to the aquaculture industry, a growing sector in Europe, for which entangled propellers and blocked intake pipes present the most common problems, resulting in costly repairs and lost time. Marine litter can also reduce tourism revenue and consequently weaken coastal economies, as studies have indicated that beach cleanliness is of high importance to potential visitors (Mouat et al, 2010). The cost of cleaning up beaches has been estimated at approximately €10.4 million per year in the Netherlands and Belgium, and €18 million annually for UK municipalities (Mouat et al, 2010). Other sectors that can face similar problems and therefore costs include the shipping industry, harbours and mariners, power stations, and coastal agriculture (Mouat et al, 2010).

### 3 EU legislation to tackle marine litter

There are numerous EU legal instruments already in operation that could have a role in tackling marine litter, addressing litter sources from a diversity of sectors. One directive can be considered as ‘core’ to the EU’s efforts to tackle marine litter is the Marine Strategy Framework Directive (MSFD). The MSFD constitutes what we describe as the overarching policy framework for addressing marine litter, as it is the primary driver of targets and actions on the issue. Additionally there is a large suite of other pieces of EU legislation which may not have explicit marine litter objectives, or may not even make specific mention of marine litter, but nevertheless have varying levels of potential impact on the generation or clean-up of marine debris. All these policies are described and analysed with respect to their relevance and potential, showcased as fiches in the Annex to this report. One exception is the Directive on Port Reception Facilities for ship-generated waste and cargo residues, which is the focus of another study produced by IEEP for Seas At Risk (see Øhlenschläger et al, 2013) and is therefore not included in detail in this report.

The policies in question and the key points from the analysis within the policy fiches are presented in the matrix below (Table 1). The legislation is grouped by the different roles it could take to tackle the problem. Some legislation might reduce the amount of litter being produced and entering the sea from land-based sources, some from sea-based sources, and some from sewage and riverine sources. We have grouped these under the heading ‘quantitative prevention’ as these policies have a role in reducing the quantity of litter entering the environment. Other policies might reduce the hazardousness or harmfulness of litter items in order to reduce the negative effects upon entering the marine environment, and therefore we have referred to these as ‘qualitative prevention’ policies. Lastly there are certain pieces of law which could potentially play a role in the clean-up of marine litter, thereby becoming ‘end-of-pipe’ solutions. The matrix describes the main aims of instruments, their relevance to the problem of marine litter, and the gaps identified from the analysis (e.g. ambition, requirements, implementation, compliance, enforcement, etc). The matrix also provides an assessment of what the potential impact of the policy instrument is in terms of its ability to tackle marine litter (described as high, medium or low potential). Instruments with a high potential impact might have the potential to tackle a large range of litter items and sources, and also have a large or dramatic impact in terms of their reduction. Instruments classed as having a low potential might only address a small proportion of litter items, or a restricted number of sources, and/or would not have the capacity to drive a significant reduction (i.e. there might be other factors at play). The medium classification was chosen to capture instruments that might have the potential to make a significant impact but on a limited scale in terms of litter items and sources, for example. Also factored into account were any interactions between different policies (e.g. if another policy could have a similar or greater impact), and the cost-effectiveness of amending the instrument.

**Table 1 Matrix of EU policy instruments with a potential to tackle marine litter**

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
<b><i>The overarching policy framework</i></b>				
Marine Strategy Framework Directive	To achieve 'Good Environmental Status' in European seas by 2020.	Descriptor 10 on marine litter requires that 'properties and quantities of marine litter do not cause harm to the coastal and marine environment' (Annex I (10)).	<p>Implementation is still in its early stages but MS targets indicate a lack of ambition.</p> <p>Lacks EU wide quantitative target for marine litter reduction.</p> <p>Difficulty in proving and costing the level and extent of biological 'harm'; socio-economic harm easier to determine.</p>	<p>High.</p> <p>Greater potential with respect to socio-economic impacts.</p>
<b><i>Quantitative prevention - Reducing the amount of litter entering the sea</i></b>				
<i>From land-based sources</i>				
Waste Framework Directive	To provide the basis for EU waste management legislation, setting out key definitions, principles and requirements for environmentally responsible waste management and attempts to move treatment up the waste hierarchy.	<p>Sets out the essential conditions for the management of all types of waste.</p> <p>Relevant measures are related to: collection and treatment infrastructure; application of extended producer responsibility (EPR); establishment of national waste management plans and waste prevention programmes; prohibition of dumping or uncontrolled management of</p>	<p>No specific mention of litter or the marine environment.</p> <p>Issues related to poor and/or incomplete implementation by the Member States.</p>	<p>High.</p> <p>If fully implemented, should both help to prevent litter and deal with it once it has been created.</p>

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
		waste; target for reuse and recycling of 50% of waste (including paper, metal, plastic and glass) from households and similar origins by 2020; requirement for waste management to be carried out without risk to water.		
Landfill Directive	To establish technical requirements for the operation of landfills with the aim of reducing their impact on the environment, including the pollution of surface water, and to limit the final disposal of waste through landfill.	<p>Landfill location must consider the proximity of water bodies and coastal waters, and landfill design must aim to avoid pollution of soils and waters from the landfill (including from wind-blown waste).</p> <p>Less waste sent to landfill may mean less waste reaching the marine environment (as it tends to mean more recovery and recycling).</p> <p>Indirect mention is made of litter through a reference to wind-blown waste from landfills (which can reach water bodies and the marine environment).</p>	<p>Inadequate implementation by Member States (the European Commission has identified 1,000 landfills as sub-standard, but the actual figure for dumps in the EU may well be in the dimension of tens of thousands).</p> <p>Cost exemptions for small landfills serving islands or remote settlements could mean inadequate management post-closure, leading to leakages or wind-blown waste reaching the marine environment.</p>	<p>Medium-high, depending on current level of implementation in a specific Member State.</p> <p>If fully implemented, the Directive could help to prevent marine litter.</p>
Packaging and Packaging Waste Directive	From an environmental perspective, to limit the amount of packaging waste going to final disposal by	Packaging (eg cans, bottles, food wrappers) makes up a large proportion of marine litter.	No specific mention of litter or the marine environment.	<p>High.</p> <p>The Directive's measures should help to</p>

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
	prioritising prevention. (Non-environmental aims are to harmonise national measures to prevent competition distortions and to ensure free movement of packaged goods.)	Relevant measures include: targets to increase recovery and recycling (including 22.5% recycling by weight of plastic packaging waste by 2008); requirement for return, collection and recovery systems; essential requirements for packaging to facilitate reuse, recovery and recycling and concentration limits for heavy metals.		reduce the amount of packaging waste in the marine environment, and also to reduce its harmfulness.
Batteries Directive	To minimise the negative impact of batteries and waste batteries on the environment, by improving the environmental performance of batteries and relevant economic operators, including in particular those involved in treating and recycling waste batteries.	Batteries do not tend to make up a large proportion of marine litter in the EU.  Relevant measures are related to: limits on the use of hazardous substances (notably heavy metals) in batteries; targets for collection and recycling of waste batteries; maximising separate collection of waste batteries; application of producer responsibility to waste batteries.	No specific mention of litter or the marine environment.	Low.  But may help to limit the amount of waste batteries entering the (marine) environment, and to limit environmental harm by reducing the hazardous content of batteries.
End of Life Vehicles (ELV) Directive	To reduce the amount of waste resulting from the disposal of vehicles and to reduce the associated adverse environmental	Unlikely that ELVs or their components will reach the marine environment as litter (for legal, technical and economic reasons).	No specific mention of litter or the marine environment.	Low.  But may help to limit the amount of ELVs and components entering

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
	effects, by improving the environmental performance of relevant economic operators, in particular those involved in the treatment of ELVs.	Relevant measures are related to: reducing hazardous content of ELVs; high reuse, recovery and recycling targets and a requirement for collection systems.		the (marine) environment, and to limit environmental harm by reducing hazardous content.
Waste Electrical and Electronic Equipment (WEEE) Directive	To prevent/reduce environmental and health impacts of WEEE by increasing collection, recovery and recycling rates and by improving the environmental performance of relevant producers, distributors and consumers.	<p>WEEE is relatively valuable and therefore unlikely to be dumped in the EU marine environment.</p> <p>Relevant measures are related to: minimising disposal and improving collection, recovery and recycling rates; reducing the hazardous content of EEE.</p>	<p>No specific mention of litter or the marine environment.</p> <p>Risks related to illegal shipments of WEEE for treatment outside the EU, where environmental pollution may occur due to lower standards of treatment.</p>	<p>Low.</p> <p>But may help to limit the amount of WEEE entering the (marine) environment, and to limit environmental harm by reducing hazardous content.</p>
Industrial Emissions Directive (IED)	To ensure that certain industrial activities attain ‘a high level of protection for the environment’, eg by preventing or reducing emissions to air, water and land, including measures concerning prevention of waste.	<p>Specific mention of the marine environment in relation to emissions of waste from titanium dioxide installations, including prohibition of the disposal of certain types of waste from titanium dioxide plants into any water body, sea or ocean, and annual average emission limit values for emissions into water of sulphate and chloride.</p> <p>Industrial installations should reduce waste generation and</p>	No specific mention of litter.	<p>Low/Medium.</p> <p>May help to limit the amount of waste released into the (marine) environment from industrial installations, and to reduce its hazardousness.</p>

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
		<p>manage waste in line with the Waste Framework Directive and waste hierarchy. Permit applications must describe measures to prevent, re-use, recycle and recover waste. Development, review and updating of Best Available Techniques (BAT) reference documents should take into account techniques related to waste generation, including use of low-waste technology, use of less hazardous substances, and encouraging recovery and recycling.</p>		
<i>From riverine and sewage related waste streams</i>				
Water Framework Directive	To achieve good ecological status for surface waters (incl. coastal waters) by 2015.	<p>Rivers are a source of litter, but litter is not a criterion of good ecological status.</p> <p>But if litter causes a particular biological criterion not to be met, then Member States would need to address the pressure.</p>	<p>Litter is not a criterion of good ecological status, and is not monitored.</p> <p>But monitoring or tackling riverine litter does not need to be in the remit of the WFD (can be done within the MSFD framework).</p>	<p>Low.</p> <p>Measures can be implemented under the MSFD.</p>
Urban Waste Water Treatment Directive	To reduce the pollution of freshwater, estuarial and coastal waters by domestic	Urban waste water is a source of marine litter eg sanitary towels, tampons, plastic cotton wool bud	Poor compliance record; and implementation still ongoing in some newer Member	<p>Medium</p> <p>Sewage related waste is</p>

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
	sewage, industrial waste water and rainwater run-off.	sticks, microplastics from cosmetics and fibres from clothes washing.	states.  Current requirements are not strict enough to prevent marine litter items entering the sea.	one of the predominant waste sources in many areas; but improved treatment can only remove a proportion of waste (and larger pieces, not microplastics) and there are high costs. Product design has a much greater potential for improvement, particularly for microplastics.
Cosmetics Products Regulation	To ensure that cosmetic products circulate freely within the EU whilst maintaining a high standard of protection for consumers.	Relevant to marine litter due to the extensive use of microplastics in cosmetic products (which then get washed into the marine environment).	Does not contain any restrictions on the use of microplastics in cosmetic products.	Medium/ Low.  It could have a big impact on a limited part of the marine litter problem.
<i>From sea-based sources</i>				
Port Reception Facilities Directive  <i>N.B. For a more in-depth analysis see Øhlenschläger et al (2013).</i>	To reduce the amount of pollution in seas and on coastlines of Member States caused by ship-generated waste and cargo residues discharged into the sea.	Directly relevant (see aims). Ports must have adequate facilities for the prompt reception of waste and cargo residues from ships.	All ship generated waste must be delivered to port reception facilities, unless the Master can certify that sufficient storage capacity exists on board to cope with waste that will be accumulated before the next port of call. This is an obvious loophole. The Directive is not prescriptive	High.  Ship generated waste is an important source of litter and tightening of the Directive could have a big impact on this source.



Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
			enough and leaves much room for interpretation, and inadequate implementation.	
Common Fisheries Policy Control Regulation	To ensure a Community system for fisheries control, inspection, and enforcement.	<p>Contains provisions intended to reduce marine debris in the form of lost fishing gear.</p> <p>Article 48 requires fishing operators to have the equipment on board to retrieve lost gear and for the master of the vessel to attempt to retrieve it as soon as possible.</p>	<p>Information on rates of gear loss and the impacts of lost gear is scarce.</p> <p>It is difficult to determine how well the Control Regulation is being complied with.</p>	<p>Medium</p> <p>Potential difficult to assess due to a lack of information on gear loss and compliance. Limited due to ability to tackle one source, although fishing nets are an important type of litter.</p>
<b>Qualitative prevention – Reducing the hazardousness of marine litter</b>				
Integrated Product Policy (IPP)	To create a coherent product dimension in environmental policy, to ensure that environmental impacts are considered throughout a product’s life cycle and to minimise the environmental degradation caused by products during all phases of their life-cycle.	<p>IPP principles have been integrated into other legislation (eg waste legislation and product standards), thereby having indirect impact on products and waste which may become marine litter.</p> <p>Some of the work of the Retail Forum (born from the IPP process) is of potential relevance to marine litter, including past work on packaging and minimising waste, and future work on waste minimisation, greening the supply chain and</p>	<p>Non-legislative measure therefore not directly enforceable.</p> <p>No specific mention of litter or the marine environment.</p>	<p>Low.</p> <p>But through integration of IPP principles into other legislation may help to reduce the hazardousness of marine litter.</p>

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
		environmental management/ corporate social responsibility.		
Restriction of Hazardous Substances (RoHS) Directive	To restrict the use in electrical and electronic equipment (EEE) of substances that cause risks to human health or the environment, including during the recovery and disposal phases.	The most relevant measure prohibiting the placing on the market of EEE containing lead, mercury, hexavalent chromium, PBB, PBDEs or cadmium.	No specific mention of litter or the marine environment.	Low.  But provisions to reduce hazardous content of EEE should limit environmental harm caused by WEEE that does enter the marine environment.
<b><i>Cleaning up</i></b>				
Common Fisheries Policy (European Maritime and Fisheries Fund)	To ensure exploitation of living aquatic resources that provides sustainable economic, environmental and social conditions.	The current European Fisheries Fund supports measures to remove lost fishing gears from the seabed.  The proposal for a new European Maritime and Fisheries Fund includes a measure to collect marine litter from the sea including the removal of lost fishing gears.	Extension of fishing-for-litter measure still in proposal form.  Proposed measure requires safeguards to ensure it doesn't lead to overfishing.	High.
Environmental Liability Directive	To establish a framework of environmental liability rules, based on the polluter pays principle, with the aim of preventing and remedying environmental damage.	Does not explicitly refer to marine litter, but it aims to prevent and remedy environmental damage which could be caused by marine litter.	Challenge to identify polluters of marine litter and assign responsibility. ELD only applies to waters protected under the WFD or marine species and habitats protected under the Habitats Directive (not the marine	Low.

Policy instrument	Aims	Relevance to marine litter	Gaps	Potential level of impact
			environment generally). Only regulates against damage meeting a certain threshold of significance (relating to the requirements of the WFD and Habitats Directive again).	
Habitats Directive	To maintain or restore natural habitats and species of wild fauna and flora at favourable conservation status.	If marine litter was responsible for the deterioration of a Natura 2000 site, or the destruction of protected species' breeding or resting site, Member States would be required to restore the necessary ecological conditions.	It only protects certain species and areas.  It is difficult to determine/ prove if marine litter has a negative effect on protected species or sites.  The Natura 2000 network is still to be completed in the marine environment.	Low.  Limits to how much it can drive marine litter measures; more potential under the MSFD.
Bathing Waters Directive	To 'preserve, protect and improve the quality of the environment and to protect human health by complementing the Water Framework Directive' (focusing on microbiological indicators of faecal contamination).	Requires bathing waters to be inspected visually for certain polluting items (including glass, plastics, rubber or other waste) and when such pollution is found adequate measures shall be taken.	Does not require monitoring of litter in bathing waters, or any targets for reduction.	Medium / Low.

## 4 Policy recommendations

### 4.1 The overarching policy framework

The MSFD is the first and only piece of EU legislation specifically designed to protect and restore the marine environment and tackle marine litter. It outlines 11 descriptors for determining 'Good Environmental Status' (GEnS), one of which explicitly identifies marine litter as an issue to be addressed. Its aim is that 'properties and quantities of marine litter do not cause harm to the coastal and marine environment' (Annex I (10)). It requires Member states to set targets and indicators for reducing marine litter, establish a monitoring programme, and operationalize a set of measures to meet their targets.

The MSFD does not include an EU wide target for reducing marine litter. However, the EU has committed, by signing up to the Rio+20 Resolution in June 2012 in Rio de Janeiro (United Nations General Assembly, 2012), to 'take action, by 2025, based on collected scientific data, to achieve significant reductions in marine debris to prevent harm to the coastal and marine environment'. Going even further, the 7<sup>th</sup> Environment Action Programme (7<sup>th</sup> EAP), which sets out priority objectives for EU environment policy to 2020 and is to be adopted in 2013, requires the establishment of 'an EU-wide quantitative reduction headline target for marine litter supported by source-based measures' (European Commission, 2013a). Some of the benefits of having an EU wide target are that it would help to drive a political commitment to mobilise action, give the EU credibility on the global stage to promote efforts in non-EU countries, and provide a level playing field across the EU for industry. A marine litter target could be set in different ways – from an overall quantitative reduction target, individual targets for different types of litter or targets on the hazardousness of litter.

Marine litter presents quite a challenge in terms of target setting. The MSFD descriptor requires marine litter action so long as it causes environmental or socio-economic 'harm' to the coastal and marine environment. As it will not be possible to eliminate marine litter entirely, this is a sensible objective. However establishing that marine litter causes 'harm' on a population, community or ecosystem scale is very difficult due to the wide range of factors affecting this level of biological organisation (Piha et al, 2011). The current lack of knowledge means that it is difficult to link any target to the desired condition of 'good environmental status', or to set a quantitative target given the lack of a baseline (particularly in the Black and Mediterranean seas). Nevertheless, the precautionary principle (enshrined in the TFEU and a guiding principle of the MSFD) requires that a lack of scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. Targets play a key role in drawing the attention of policy makers to a problem and providing the political impetus needed to set the EU on course to meet the MSFD objective, as well as act as an important driver for the implementation of other existing legislation. Given that the preliminary results of the MSFD assessment show a lack of coherence and differing level of ambition among Member States with respect to their target setting, including those sharing a common sea basin, it is doubtful that Member States will achieve the MSFD and Rio+20 targets without the stimulus of an EU wide quantitative target (Interwies et al, 2013).

A group of NGOs including Seas At Risk has called for a 50 per cent reduction target. A 50 per cent reduction in the abundance of plastic pellets in the stomachs of beached fulmars from the Dutch coast was already achieved between the mid-eighties and late nineties thanks to improved methods of production and transport by the plastics industry (van Franeker et al, 2011). This example suggests that simple changes to certain waste streams may enable significant reductions in litter to be made. Although it cannot be assumed that all waste streams would follow this trend, it is encouraging and suggests a 50 per cent reduction would certainly be feasible in some cases.

There have also been calls for multiple operational targets for different sources/ items of marine litter (ie one target for plastic bags, another for cotton bud sticks, etc) (see Galgani, 2013, the Issue Paper for the International Conference on Prevention and Management of Marine Litter in European Seas). Such targets could focus on litter that causes the most impact. This is similar to the Waste Framework Directive approach of having separate recycling targets for different waste types, and would mean that Member States would have to tackle all the primary forms of marine litter, not just the 'low hanging fruit'. However due to the variation across sea basins and Member States targets based on sources would probably have to be regionally specific.

Setting a target on the hazardousness of litter is another way of focusing on the impacts of litter. However, there are major problems at this stage in doing this, not least because of difficulties of defining the nature of the hazard with an impact.

## **4.2 Quantitative prevention - Reducing the amount of litter entering the sea**

### **4.2.1 From land-based sources**

A major overarching issue related to marine litter from land-based sources is that the concept of litter (in the sense of waste that has been disposed of in an inappropriate manner or location) is scarcely mentioned within existing EU waste legislation. The main focus of EU waste legislation is on regulating the management of waste that is collected. Whilst the Waste Framework Directive does require Member States to take measures to prohibit the abandonment and dumping of waste, which should help to tackle larger scale fly tipping and illegal dumps, the legislation does not adequately capture the concept of litter at the smaller scale, which also makes a major contribution to the marine litter problem. There is a considerable amount of legislation that is relevant to marine litter, but the lack of an explicit mention of, and objectives for, litter in key waste legislation creates the possibility for the issue to be overlooked, or at least not to be dealt with specifically. Adding a specific mention of litter (a reference to the marine litter descriptor in the MSFD may suffice) could therefore be an important step towards ensuring that legislation addresses the issue. The Waste Framework Directive could be an appropriate place to do this.

The **Waste Framework Directive** sets out the essential conditions for the management of all types of waste; as it governs all waste in the EU, by definition it has a direct influence on marine litter. If fully implemented, its provisions should both help to prevent litter and deal with it once it has been created. The Directive has several provisions related to plastic waste, which is estimated to comprise somewhere between 50 and 80 per cent of marine litter in European Regional Seas (European Commission, 2012a; European Commission,

2013b). These provisions include improved collection (including separate collection for plastic by 2015) and treatment infrastructure for recycling and reuse, and a target for the reuse and recycling of 50 per cent of waste (including at least paper, metal, plastic and glass) from households and similar origins by 2020, which should ensure that more plastic is recycled and less is disposed of, reducing the risk of it reaching the marine environment as litter. The Article 36 requirement for Member States to take the 'necessary measures' to prohibit the abandonment, dumping or uncontrolled management of waste could be interpreted broadly to include the dumping of waste into the marine environment, and could therefore potentially be used to encourage Member States (and ports) to ensure that measures are in place to address marine litter. The Article 13 requirement for waste management to be carried out without risk to water could, again, be interpreted broadly to encompass both inland water bodies and the marine environment.

In October 2012, the European Commission published a guidance document to support Member States in developing their waste prevention programmes. With regards to plastic waste specifically, the guidance suggests that plastic bags can be effectively targeted by waste prevention activities (BioIntelligence Service et al, 2012). Indeed, several Member States including Ireland, Italy and the UK have already taken action on plastic bags, including bans and taxes (see Box below). Additional guidance could perhaps be developed to encourage Member States to include (marine) litter provisions in their waste prevention programmes.

#### **Box 1 Case study: Selected Member State action on plastic bags**

In 2002, **Ireland** introduced a levy on general purpose plastic bags of 0.15 EUR per bag with the primary purpose of reducing the consumption of disposable plastic bags. The levy had an immediate effect on consumer behaviour with a decrease in plastic bag usage from an estimated 328 bags per capita to 21 bags per capita almost overnight. Consumption increased again to 31 during 2006, so the levy was increased to 0.22 EUR on 1 July 2007 to attempt to reduce the plastic bag per capita usage to 21 or lower (Department of Environment Community and Local Government, 2013). Since the entry into force of the Environment (Miscellaneous Provisions) Act 2011, local authorities may raise the levy to 0.70 EUR, but no increase has yet been agreed. Data from the National Litter Pollution Monitoring System shows that plastic bags constituted 0.25 per cent of litter pollution nationally in 2010 compared to an estimated 5 per cent in 2001 prior to the introduction of the levy. Data from Coastwatch indicates that in 2001 (prior to the levy), around 17 plastic bags were found per 500m of coastline surveyed; this fell to around 10 bags in 2002 (the year the levy was introduced), 5 bags in 2003 (one year after the levy's introduction), and 2 in 2012 (Doyle and O'Hagan, 2013).

In the **United Kingdom**, a 0.05 GBP levy on the use of single-use carrier bags (plastic and paper) was introduced in Wales in October 2011. Figures from July 2012 indicate that bag use at 13 retailers fell by 70-96 per cent for food retail and by 68-75 per cent for fashion following the introduction of the charge (Welsh Government, 2012). Since 8 April 2013, a levy of at least 0.05 GBP has also been charged for new single use carrier bags in Northern Ireland (retailers may charge more if they wish) (NI Direct, 2013), and Scotland is consulting on introducing the same level of tax. There are as yet no plans yet to introduce such a tax in England (The Guardian, 2012).

In relation to plastic waste, a public consultation which ran from 7 March to 7 June 2013 invites stakeholder views on how to deal with the challenges posed by plastic waste which are not currently specifically addressed in EU waste law. The Green Paper recognises the significant problem of marine litter, and suggests that poor waste management on land, in particular low plastic waste recovery rates, aggravates plastic marine pollution. The Green Paper calls in particular for capacity building in waste management and actions by Regional Seas Conventions (such as the Mediterranean strategy on marine litter that was endorsed in February 2012), and asks how an EU wide quantitative reduction target for marine litter can be developed and established. This could be taken as an indication that the European Commission may be willing to consider policy options such as capacity-building and awareness-raising amongst stakeholders, the development of regional strategies on marine litter, and the development of a quantitative target for marine litter. In addition, consideration could be given to promoting changes in the quality/chemical composition/biodegradability of plastics, to reduce their harmfulness within the marine environment.

The **Packaging and Packaging Waste Directive** has the potential to have a high impact on marine litter, given that packaging comprises a large proportion of marine litter (more than half of the plastic fraction of marine litter is composed of plastic packaging waste such as bottles and bags (European Commission, 2013b)). The targets in Article 6 (including a 22.5 per cent recycling target by weight of plastics contained in packaging waste by 2008) and the return, collection and recovery systems required by Article 7 should drive up the collection, recovery and recycling of packaging waste, thereby reducing final disposal and the risk of packaging ending up in the marine environment. In addition, the essential requirements for packaging waste contained in Article 9 and Annex II should facilitate the reuse, recovery and recycling of packaging waste. With regards to plastic in particular, full implementation of the Packaging Directive by the Member States is important to close loopholes in the plastic packaging cycle, and should have significant benefits for the quantities of marine litter generated. The addition of a specific mention of marine litter/the marine environment to the Directive could be considered to ensure that the importance of the issue is acknowledged. Another policy option would be to increase the recycling targets for packaging waste (in particular plastics). Softer policy options include encouraging greater efforts to prevent packaging at source and encouraging best-practice sharing between Member States on reducing packaging litter eg through litter-picking on coastlines, awareness raising, and the provision of adequate recycling and disposal bins in tourist areas.

The **Landfill Directive** potentially has a direct (although possibly limited) influence on marine litter, as it establishes technical requirements for the operation of landfills, to limit the final disposal of waste through landfill and to reduce the environmental impacts of landfill sites. The European Commission has however acknowledged that around 1,000 landfills in the EU are sub-standard (European Commission, 2012b) and the actual figure is likely to be much higher. Proper implementation of this Directive should therefore be a priority; indeed the Commission is currently undertaking work to develop Roadmaps with country-specific recommendations to improve waste management in the worst performing Member States, including measures to move away from landfill. The location requirements (which must take into consideration the proximity of water bodies and coastal waters) and technical specifications (which must include design features to avoid the pollution of soils and waters from the landfill, including from wind-blown waste) of Annex I should help to

reduce the potential dispersal of plastic packaging waste and other debris into the marine environment. The addition of a specific mention of marine litter or the marine environment could be considered, either in Annex I or in the recitals of the Directive. The cost exemptions that can be allowed for small landfills serving islands and remote settlements may also be worth reconsidering from the marine litter perspective; if such landfills that are also in coastal areas are left inadequately managed following their closure as a result of this exemption, this could lead to leakages or wind-blown waste reaching the marine environment. Another option would be to issue guidance, directed to Member States and/or to landfill operators, to consider the (marine) litter implications of landfills, including post-closure.

As batteries do not tend to make up a large proportion of marine litter items in the EU, the **Batteries Directive** only has a limited influence on marine litter. However, its provisions on improved collection (Article 7), collection targets (Article 10) and recycling rates (Annex III B) for waste batteries, may help to limit the amount of waste batteries being disposed of incorrectly, thereby reducing the risk of them entering the (marine) environment. Similarly its Article 4 provisions to reduce the hazardous content of batteries should help to limit the environmental harm caused by any batteries that do end up as marine litter. One policy option is simply to leave the Directive alone; as it only has minimal impact on marine litter, efforts could more usefully be focussed on improving other legislation. However, the introduction of higher collection and recycling targets for waste batteries, or stricter limits on the chemical content of batteries (if technically feasible), could be considered at the time of the next review of the Directive, and this could have associated, albeit indirect, benefits from the marine litter perspective.

The potential impact of the **ELV Directive** on marine litter is low. The particular requirements in place for the dismantling of vehicles, the provisions on collection systems (Article 5) and recycling rates (Article 7) for ELVs and the valuable nature of some vehicle components make it unlikely that ELVs or their components will reach the marine environment as litter. However, the Directive's provisions on reducing the hazardous content of ELVs (Article 4) and the requirement for ELVs to be treated such that hazardous materials and components are removed and do not cause contamination (Article 6) should help to limit the environmental harm caused by any such waste that does end up as litter in the marine environment. As with the Batteries Directive, the preferable option may be to leave the Directive as it is and to focus efforts elsewhere. However, the introduction of higher reuse, recovery and recycling targets for ELVs, or stricter provisions related to hazardous content, could be considered at the time of the next review of the Directive, and this could have associated, albeit indirect, benefits from the marine litter perspective.

As is the case for ELV, WEEE is a relatively valuable waste stream and as such is unlikely to reach the marine environment as litter. The potential impact of the **WEEE Directive** on marine litter is therefore also low. Through its provisions on improved collection (Article 5 and Article 7), recovery and recycling rates (Article 11 and Annex V), the WEEE Directive should help to limit the amount of WEEE entering the (marine) environment. It should however be noted that there are some risks related to illegal shipments of WEEE for treatment outside the EU, which certainly do occur and may result in disposal of WEEE in non-EU countries with lower environmental standards of treatment than the EU, thereby increasing the risk of environmental pollution outside of the EU. As with the Batteries and



ELV Directives, it may be preferable to leave the WEEE Directive as it is and to focus marine litter efforts elsewhere. However, higher collection and recycling targets for WEEE could have indirect knock-on benefits from the marine litter perspective. It may, however, be worth considering activities to encourage action (guidance, information exchange, joint inspections, environmental certification of facilities, etc) to reduce illegal shipments of WEEE out of the EU to countries with lower environmental standards of treatment.

The **Industrial Emissions Directive** includes waste-related measures intended to reduce the amount of waste generated by industrial installations and to ensure the sound management of waste in accordance with the Waste Framework Directive and the waste hierarchy (Article 11). Article 12 requires applications for a permit to include a description of measures for the prevention, preparation for re-use, recycling and recovery of waste generated by the installation. Article 13 and Annex III provide for the drawing up, review and updating of BAT reference documents to include consideration and criteria on the performance of installations and techniques in terms of generation of waste, including the use of low-waste technology, the use of less hazardous substances, and the furthering of recovery and recycling of substances and of waste. By helping to limit the amount of waste released into the environment (and by extension into the marine environment) from installations, the Directive has the potential to have a limited to moderate influence on marine litter, depending to some extent on the location of industrial installations. Specific provisions are included on prohibition of the disposal of certain types of waste from titanium dioxide plants into water bodies, seas or oceans (Article 67) and limit values for emissions into water of sulphate and chloride (Annex VIII) from such plants. It is unclear whether specific mention of marine litter in the Directive would have any impact; a more useful approach may be to encourage the consideration of impacts of waste on the marine environment in any future development, revision or updating of BAT reference documents.

#### 4.2.2 From riverine and sewage related waste streams

Three pieces of legislation are relevant to the reduction or prevention of marine litter arising from riverine sources or sewage outfalls, the Water Framework Directive, the Urban Waste Water Treatment Directive, and the Cosmetics Product Regulation.

The **Water Framework Directive** (WFD) requires all surface waters (including rivers, estuaries and coastal waters) to meet 'good ecological status'. However, although rivers are a source of marine litter, litter is not a criterion of good ecological status. As a result Member States are not directly required to take measures under the WFD to reduce the amount of litter in suspension in their rivers. The exception would be if the litter causes a particular biological criterion not to be met (i.e. it disturbed the composition and abundance of phytoplankton taxa, or distorted the abundance of disturbance-sensitive fish species) in which case Member States would need to address the pressure.

It must be noted that technically it is possible for Member States to introduce monitoring for and measures to reduce riverine litter under the MSFD. Therefore we should consider whether there would be any added value from modifying the WFD to explicitly include requirements for marine litter. In theory it would be feasible to do so, however the EU water acquis has just undergone a review, and it would therefore have to wait until the next review, expected in 2018. Implementing these measures under the MSFD (as is the

Commission's intention) would be much quicker. In practice, adding requirements for riverine litter would require a step change in the thinking of the WFD, which is aimed at objectives of ecological status, chemical, biological or hydromorphological, rather than itemising specific pressures. Having said this, the Priority Substances Directive (a daughter Directive of the WFD) does establish quality standards for certain substances. Therefore, there is a precedent for including further quality objectives. This could be returned to in the future review of the WFD if litter was clearly shown to be impeding the achievement of WFD objectives or if it were necessary for greater coherence with MSFD objectives.

At present the **Cosmetics Product Regulation** does not regulate cosmetics products on any marine litter or indeed environmental grounds, enabling the widespread use of plastic micro particles in cosmetics products. Several companies have already voluntarily committed to phasing microplastics out of their products (see Box 2). Unfortunately this is a minority. Past experience from campaigns on animal welfare issues relating to the testing of cosmetics on animals has demonstrated that not all industry was willing to voluntarily stop such practices, despite strong pressure from the public. This suggests that industry-led voluntary commitments alone would not be sufficient to enable a universal phase-out. As the regulatory option was deemed necessary for animal testing it, it may also be required for the phasing out of plastics.

The regulatory option would be to amend the Cosmetics Product Regulation to prohibit the use of plastic micro particles in cosmetic products. As the Regulation devolves itself of any environmental regulatory role, this would also have to be amended (i.e. change recital (5) to include environmental concerns specific to cosmetic products and the cosmetics industry to the Regulation). Although this would be a step change in the scope of the policy, and would be likely to meet with opposition from some of the industry, this option is the most obvious and cost-effective way of preventing marine litter pollution arising from cosmetic products.

A softer non-legislative approach would be to introduce an eco-label for cosmetic products to indicate which products are free of plastics. This approach relies on consumer awareness and is not likely to result in the complete elimination of microplastics in cosmetic products, particularly if they are cheaper. Although eco-labels are supposed to raise consumer awareness and expectations and improve environmental performance, assessments have found it challenging to demonstrate a positive impact (Watanatada and Lee, 2011). Also there is growing recognition of the phenomenon of 'eco-label fatigue' where consumers are becoming overwhelmed by the numerous labels on products (Thorpe, 2012). The added value of such a measure is limited further considering that the Cosmetics Regulation already requires all the ingredients of a product to be listed; thereby allowing consumers that are aware of the problem to already avoid the products.

**Box 2 Case study: voluntary ban on micro beads**

In 2012, a campaign to 'Beat the Micro Bead' was started by the Plastic Soup Foundation and the North Sea Foundation. The campaign uses tools such as petitions, social media and a mobile app to enable consumers to make more informed choices about their choice of personal care products. It has been highly successful, starting with a number of retail chains in the Netherlands (HEMA, Trekleister) committing to stop adding micro beads to their products by mid-2013 (Plastic Soup Foundation, 2013). De Tuinen went even further by refusing to trade with any supplier that has plastic in any of its products from 1 June 2013 (Plastic Soup Foundation, 2013). These were followed by Unilever, one of the world's largest consumer product companies, which decided in December 2012 to phase out the use of plastic micro beads as a scrub material in all its personal care products by 2015. In May 2013 L'Oréal, Beiersdorf, Colgate-Palmolive followed suit. Colgate-Palmolive has indicated its products will go plastic free in Europe by the end of 2013 and worldwide in 2014 (Plastic Soup Foundation, 2013). At the time of writing, neither Beiersdorf nor L'Oreal had provided a phase out date for the micro beads.

The **Urban Waste Water Treatment Directive** regulates the discharge of sewage, industrial waste water and rainwater run-off with the aim of reducing pollution to freshwater, estuarial and coastal waters. Urban waste water is a source of marine litter including items such as sanitary towels, tampons, condoms, plastic cotton wool bud sticks, microplastics from cosmetics and fibres from clothes washing. It is also one of the main sources of litter in all regional seas. Given these facts and the unpleasant and unsanitary nature of these items (making them particularly harmful socially and economically) at the very least the Directive should make mention of the marine litter problem in the recitals.

Waste water treatment plants are not capable of removing micro particles and clothes fibres as they are too small to filter out. Thus even if the Directive were to require more stringent levels of treatment, it would still be ineffective in that regard. It would therefore be more effective to reduce microparticles through other means (eg amending the Cosmetics Products Regulation).

With respect to larger items of sewage-related marine litter, it is not known what proportion of these enter the sea because of i) poor compliance or because the requirements have not been implemented yet, or ii) because the requirements under the Directive are not stringent enough.

Some EU-15 Member States still require big efforts to improve their compliance rates on waste collecting systems and/or treatment (secondary and/or more stringent), eg Belgium, Portugal, Luxembourg, Italy and Ireland (European Commission, 2011b). But the Commission has invested significantly in compliance promotion, and is aware that in many cases these Member States have taken steps towards achieving a better level of implementation, and as a consequence expects better results for the reference years 2009/2010 (European Commission, 2011b). Continuing efforts will be required in EU-12 Member States, as some of them have compliance rates below 50 per cent for collection or treatment (European Commission, 2011b).

Assuming full implementation and compliance, the requirements of the Directive would still not be stringent enough to prevent all marine litter items which enter the sewers from reaching the sea. In locations which require primary treatment, only 50 per cent of total suspended solids need to be removed. The treatment level could be raised to secondary treatment to capture more solid waste. Where insufficient urban waste water leads to other environmental problems (i.e. eutrophication) then it might make such a measure more cost effective.

When discussing raising the requirements of the Urban Waste Water Treatment Directive, however, it is important to recognise that the implementation of the Directive as it stands requires significant investments, probably the most substantial in the environmental sector, due to its requirement for providing waste water treatment infrastructure for urban areas (European Commission, 2011b). What would likely be a parallel cost-effective option would be to fund an awareness raising campaign which aims to stop people from disposing of sanitary items down the toilet. Such an awareness raising campaign would be a fraction of the cost of upgrading or installing new waste water collection and/or treatment facilities. It would also yield results much sooner than amending the Directive and implementing stricter requirements. Equally, another cost-effective solution which would be more in line with the polluter-pays-principle would be to improve product standards for sanitary products in order to reduce their harmfulness (eg incentivising biodegradable cotton bud sticks instead of plastic).

#### 4.2.3 From sea-based sources

This study has included one piece of legislation in relation to sea-based marine litter, the Fisheries Control Regulation, due to its role in tackling marine litter in the form of lost and abandoned fishing gear. The Port Reception Facilities Directive for ship-generated waste and cargo residues, which requires ships to discharge their waste to dedicated port reception facilities in the EU, is also a crucial piece of law when it comes to sea-based litter. A separate study has been performed to analyse the implementation of the PRF Directive and make recommendations for its review (see Øhlenschläger et al, 2013). This study found that since it came into force in 2002 there has been an increase in waste delivery to Member State ports, but illegal discharges at sea of ship generated waste still take place. An indirect fee system requiring mandatory waste delivery at port and payment of an indirect fee for port facilities irrespective of the quantities and types of waste delivered has been implemented in Baltic ports, and has been shown to reduce illegal discharges of oily waste significantly. The report therefore recommends that a similar system is applied across the whole of Europe, thereby reducing the risk of illegal discharges and ensuring a level playing field for European ports.

Article 48 of the **Fisheries Control Regulation** requires fishing operators to have the equipment on board to retrieve lost gear and for the master of the vessel to attempt to retrieve it as soon as possible. If for whatever reason the lost gear cannot be retrieved, the operator is required to inform the competent authority in its flag state. Information on rates of gear loss and the impacts of lost gear is scarce, and it is also unknown to what extent this type of marine litter is the result of accidental losses, and how much is due to intentional dumping. Consequently it is difficult to determine how well the Control Regulation is being complied with.

An important step therefore would be to obtain more information on the reasons behind this particular marine litter problem. The EU has funded a series of research projects in the late nineties and mid 2000's which have studied the issue of lost or abandoned fishing gear and the ghost fishing phenomenon (eg DeepNet, FANTARED 1 and FANTARED 2). These studies focused mainly on gillnets, and found that reasons for lost or abandoned gear vary across fisheries, and therefore measures to mitigate need to be fishery specific and technical (Brown et al, 2005). Some of these projects directly led to increased regulation of deep sea shark and red crab fisheries as these were highlighted for having the highest rates of gear loss and ghost fishing. Since then studies have looked at methods for recuperating/retrieving lost gears, providing practical advice on how these should be executed (eg DEEPCLEAN).

With respect to abandoned gear (as opposed to lost gear), the provisions in the Control Regulation are clear, thus mitigation and quantification of abandoned gear is primarily a control and enforcement issue (Graham et al, 2009). One measure that has been suggested to facilitate enforcement would be to introduce marking of fishing gears with coded metal elements or other identification elements issued by fisheries administration, similarly to car plates that prevent theft (WWF Poland, 2011). Alternatively, greater efforts could be made to discourage fishers from this practice, through the provision of incentives, such as through a fishing net deposit scheme. It has been suggested that the cost of fishing gear is in itself great enough to discourage dumping, however there have been reports of cheaper nets being imported from China for which this may not apply (Prędko, P., WWF Poland, personal communication).

In order to reduce the occurrence of accidental fishing gear loss, technical and fishery specific measures would be required (Brown et al, 2005). Nevertheless, the EU could take actions to encourage such measures, through funding more research and pilot projects. It might also be appropriate to consider an action plan to reduce gear loss. It is also important to recognise that overfishing and overcapacity of certain fleet segments leading to greater fishing effort may be causing higher rates of gear loss than would otherwise be the case. This would therefore be another reason to balance fishing capacity with available resources within the framework of the Common Fisheries Policy.

Another area in which the EU could reduce marine litter originating from fishing is through better regulation of the use of Fish Aggregating Devices (FADs). FADs are man-made floating objects – often constructed using plastic nets - used to attract pelagic species such as tuna. If they are not retrieved FADs will constitute a form of lost or abandoned fishing gear, with the potential to lead to entanglement of marine species including juvenile tuna, turtles, rays and sharks. As the fisheries which deploy FADs are generally regulated by Regional Fisheries Management Organisations (RFMOs) (such as the International Commission for the Atlantic Tuna) the EU should continue to highlight the need for and campaign for the adoption of appropriate FAD management in these forums. The types of measures that could feature in FAD management plans include FAD identification to make inventories, FAD monitoring, information and sharing, codes of best practice, measures to prevent the loss of FADs at sea, measures to mitigate catches of juveniles' tuna and non-target species, and so on (EP Intergroup on Climate Change, Biodiversity and Sustainable Development, 2013).

**Box 3 Case study: Fishing net recycling**

In 2009 Frandsen Industri in Jutland, Denmark introduced a pioneering new invention which makes it possible to separate the different types of plastics in used fishing nets, enabling them to be recycled (Frandsen Industri, 2009). The Danish fishing industry generates approximately 500-700 tons of plastic waste from fishing nets every year (World Fishing and Aquaculture, 2009). Since nets and trawls are made from different types of plastic fibre which cannot be mixed if they are to be recycled, prior to this innovation the nets have either been combusted or disposed of in landfill. Frandsen Industri has now entered into contracts with all Danish fishing ports, thereby eliminating the need to dispose of used fishing nets unsustainably.

Fishermen deposit and discard the torn and worn nets together with their regular operating waste when they arrive at the harbour. The deposit is subject to the 'no special fee' principle ie handling of the operating waste is included in the harbour dues which are unchanged irrespective of the volume and type of waste delivered. Since the fishing nets are categorised as green waste, the harbours pay no fee for disposal and delivery to Frandsen Industri, which then takes care of the shredding and the separation of the nets. At the end of the process the ready-to-use fibres come out sorted in fractions of nylon, polythene, etc. This plastic can then be reused for many purposes, from car ventilation systems to district heating pipes (Frandsen Industri, 2009).

**4.3 Qualitative prevention – Reducing the hazardousness of marine litter**

As well as reducing the quantity of litter entering the marine environment, efforts could also be made to reduce the hazardousness of such litter. This would help to minimise the environmentally harmful impacts of any litter that does still enter the marine environment if efforts to prevent it are not successful.

In addition to its quantitative prevention potential, the **Packaging and Packaging Waste Directive** has the potential to have a high impact on marine litter in terms of qualitative prevention. The essential requirements for packaging waste contained in Article 9 and Annex II should facilitate the reuse, recovery and recycling of packaging waste and together with the concentration limits for heavy metals in Article 11 should also help to reduce the harmful environmental impacts of packaging waste that does reach the marine environment. In terms of policy options, it could be useful to make an assessment on the appropriateness of the essential requirements for packaging (Article 9 and Annex II) for reducing the harmfulness of packaging that does become marine litter.

**Integrated Product Policy (IPP)** in itself does not have a direct impact on marine litter, but the guiding principles of IPP are integrated into many pieces of legislation and policy instruments (including various Directives on waste), and therefore its principles may have an indirect impact on a wide range of types of marine litter, in particular the hazardousness of items that become marine litter. The creation of the Retail Forum, which was born from the IPP process, has led to work on packaging and minimising waste, and the Forum has future work planned on waste minimisation, greening the supply chain and environmental management/corporate social responsibility which has potential relevance for marine litter. The discussion of such topics within the Forum could provide an opportunity to raise

awareness on the issue of marine litter with a range of stakeholders, including the European Commission, retailers and NGOs.

Whilst batteries do not tend to make up a large proportion of marine litter items in the EU, the Article 4 provisions of the **Batteries Directive** to reduce the hazardous content of batteries should help to limit the environmental harm caused by any batteries that do end up as marine litter. Whilst it may be preferable to leave the Directive as it is, stricter limits on the chemical content of batteries (if technically feasible) could have associated, albeit indirect, benefits from the marine litter perspective.

The **RoHS Directive** limits the use of hazardous substances in EEE. The Article 4 and Annex II substance restrictions of the Directive, together with the Article 8 and Annex VII treatment requirements of the **WEEE Directive**, reduce the risk of hazardous substances leaking into the marine environment in the event that WEEE does enter the marine environment. Due to the valuable nature of WEEE, however, most of this waste stream is captured by collection systems and is therefore relatively unlikely to be dumped in the marine environment, limiting the potential impact of the Directive. It may be preferable to leave the RoHS Directive alone and to focus marine litter efforts elsewhere, although any stricter limits on the use of hazardous substances in EEE could have indirect knock-on benefits from the marine litter perspective.

As with WEEE, the relatively valuable nature of some vehicle components makes it unlikely that ELVs or their components will reach the marine environment as litter. However, the **ELV Directive's** provisions on reducing the hazardous content of ELVs (Article 4) and the requirement for ELVs to be treated such that hazardous materials and components are removed and do not cause contamination (Article 6) should help to limit the environmental harm caused by any such waste that does end up as litter in the marine environment. Whilst the preferable option may be to leave the Directive as it is and to focus efforts elsewhere, stricter provisions related to hazardous content could be considered at the time of the next review of the Directive, and this could have associated, albeit indirect, benefits from the marine litter perspective.

Chemicals are regulated under the **REACH Regulation** (and related legislation). REACH requires the evaluation of chemicals, including their hazardousness and implications for their authorisation for specific uses. The extent of the inappropriate use of products should be more fully considered within REACH, including items containing chemicals that are introduced to the environment as litter.

#### 4.4 Cleaning up

In addition to measures or policies which have a preventative role in tackling marine litter (whether this is quantitative prevention or qualitative prevention) this study identified several policies which could have a role in clean-up operations, constituting more 'end-of-pipe' solutions. These are the Common Fisheries Policy, the Environmental Liability Directive, the Habitats Directive, and the Bathing Waters Directive.

The current **Common Fisheries Policy** (CFP) and European Fisheries Fund (EFF) do not specifically refer to marine litter, though the EFF provides financial assistance to operators or organisations to remove lost fishing gears from the seabed in order combat ghost fishing.

Moreover, the proposed European Maritime and Fisheries Fund (EMFF) may support operations to collect waste from the sea such as the removal of lost fishing gears and marine litter (Article 38). Therefore the legislation as it stands does not do very much to clean up marine litter, but the reform of the CFP package is a good opportunity to strengthen that, and this is the Commission's intention.

Fishers are in a good position to retrieve marine litter, such as the debris caught in their nets during typical fishing operations and it is therefore efficient to employ them in such operations. It has also been shown to raise awareness of the problem within the industry, and can contribute to changing practices and culture within the sector (OSPAR Commission, 2007). Unlike beach clean ups, fishing for litter collects litter that is at sea, in the water column and on the sea bed, which is a unique advantage. The OSPAR Commission (2007) estimated that if a target of 500 vessels were to be recruited to their fishing-for-litter scheme in the OSPAR region, they could expect a total annual collection rate of 2,000 tonnes. To put this in perspective, this which would be equivalent to 10 per cent of the estimated 20,000 tonnes dumped in the North Sea annually (OSPAR Commission, 2007).

However, some fishing-for-litter projects have received criticism because they pay fishermen for their involvement. The grounds for these criticisms are that extending fishing (for litter collection purposes) outside of the fishing season could increase the environmental damage to the sea floor (if it is done using a bottom trawl), and if fishermen are paid for the practice then it might keep companies afloat that would not otherwise be economically viable, thereby contributing to maintaining the overcapacity of the EU fishing fleet (Seas At Risk, 2011). On the other hand, some argue that if fishermen are providing a service then it is fair and right to pay them for that service, particularly when the plastic retrieved can be sold to the recycling industry.

Given that there are a number of fishing-for-litter schemes already in operation which rely on voluntary efforts by the fishing sector (following the model championed by KIMO International – see Box 4) it does not seem necessary to pay upon delivery. Although the OSPAR Commission (2007) states that the implementation of these initiatives requires considerable effort to firstly encourage the fishing industry to endorse the concept and in particular to persuade individual fishing skippers and crews to actively participate on a day-to-day basis. They also recognise a need to develop support with individual ports and harbour authorities, and the involvement of the appropriate waste disposal authorities, as they are crucial as a collection point for the waste collected in the scheme. Their experience has shown that where it can be demonstrated that there is an economic cost to the sector though increased processing time and damage to equipment the industry will accept the concept and be willing to become partners (OSPAR Commission, 2007). This is also true when the benefits, which arise from the resulting good publicity associated with a scheme, are evident (OSPAR Commission, 2007).

To encourage this practice it would be recommended to adopt Article 38 of the proposed EMFF to support operations to collect waste from the sea, but with some caveats. To alleviate the concerns over perverse payments, it would be appropriate to add some conditions. Funds should be available for the setting up of voluntary, unpaid schemes. Operations that ought to be eligible for funds could include the employment of a full time coordinator at either regional or national level to oversee and manage the projects, and the



reimbursement of any costs to the industry or ports (ie provision of bin bags, waste disposal facilities). The measure could also be used to support actions for the monitoring of marine litter collected through fishing for litter operations (ie developing monitoring methodologies, data management and analysis, identification of sources of items and origins). This would help get the maximum benefit from the clean-up, providing data that would be useful for identifying priorities for prevention.

#### Box 4 Case study: Fishing for litter

KIMO (Kommunenenes Internasjonale Miljøorganisasjon, or Local Authorities International Environmental Organisation) was founded in Esbjerg, Denmark, in August 1990 to protect, preserve and enhance northern Europe's oceans. It represents coastal communities on marine pollution issues and runs a series of fishing for litter projects in Scotland, England, the Netherlands, Belgium and Sweden. They plan to extend the programme in the Baltic Sea region also. In Scotland alone over 170 boats and 17 harbours participate in the initiative, and between 2005 when the scheme started and April 2013 Scottish fishermen have removed a total of 600 tonnes of rubbish from the sea (KIMO International, 2013).

The KIMO fishing for litter concept is very straightforward. Fishermen contribute to the project by voluntarily collecting and landing all the litter that ends up in their fishing gear as part of their normal fishing activity. Operational or galley waste generated on board, and hence the responsibility of the vessel, continues to go through the established harbour waste management system. KIMO provides participating fishing vessels with large (1m<sup>3</sup>) hard wearing bags to deposit marine sourced litter. When full, these bags are deposited safely on the quayside to then be collected for disposal. Harbour personnel assist in weighing and separating the garbage once it has been brought ashore. The projects provide the bags and cover the costs of the waste and the fishermen and the harbours volunteer their time.

In contrast, the **Environmental Liability Directive** is very limited in its ability to mitigate marine litter. This is due to a number of reasons, including:

1. the difficulty in identifying the polluter in order to assign responsibility;
2. the fact that liability applies to operators of occupational activities and not individuals;
3. it applies to waters protected under the WFD and species and habitats protected under the Habitats Directive (and not marine waters generally); and,
4. damage must meet a threshold of significance according to the WFD and Habitats Directive for it to trigger action.

These factors combine to lower the potential of this particular instrument in preventing and triggering restorative action. The first and second limitations are not easily resolved: the first is a fundamental feature of the marine litter problem; the second is in place for good reason (liability rules with respect to littering by individuals should be dealt with at a local or national level).

The third and fourth limitations might be more feasibly addressed. The territorial applicability of ELD, currently limited to the coastal strip and territorial sea, could be extended to cover all marine waters under the jurisdiction of the Member States, and include the MSFD within the scope of the principle of liability. Extending the scope of the ELD to include the MSFD would therefore make relevant any damage affecting the achievement of the MSFD objective of good environmental status. This would be an obvious step for policy coherence, and have benefits for other forms of marine pollution other than marine litter. Furthermore, it would be easier to establish that marine litter is causing significant damage within the thresholds set by the MSFD compared to those set by the other two policies, given that marine litter is a descriptor of the MSFD (in contrast to the WFD) and that the marine litter descriptor takes into account social and economic factors as well as ecological factors when determining 'harm'. Nevertheless, establishing significant 'harm' may still be a challenge (see section and fiche on the MSFD), and the other issues particularly that relating to the difficulty in identifying causality, would still apply, limiting the ELD's potential.

The **Birds and Habitats Directives** have a limited role. In theory, if marine litter was responsible for either the deterioration of a Natura 2000 site protected under the Directives, or the destruction of a protected species' breeding or resting site, then Member States would be required to restore the necessary ecological conditions. This restoration could include any measure to tackle marine litter, be that preventative or end-of-pipe, although implementing a clean-up operation would likely be the most direct route to meeting the Directives' requirements.

In practice the likelihood of these Directives being the driving force behind the implementation of marine litter measures is low. This is mainly due to the difficulty in determining whether marine litter has had a negative impact on the species at a community or population level, but it is also limited by the fact that only certain species and habitats are awarded protection under the Directives. On top of this, the Natura network remains far from complete in the marine environment.

Clearly the Natura 2000 network should be fully implemented in Europe seas. This includes managing Natura 2000 sites properly as well as simply designating them. Nevertheless this would not necessarily lead to the introduction of measures to reduce marine litter. Beyond this, it is doubtful whether there would be any added value from somehow modifying the Birds and Habitats Directives to explicitly include requirements for marine litter, as any measures implemented under the nature conservation directives could already be done under the MSFD, and with a wider scope.

The **Bathing Waters Directive** includes a requirement on Member States to visually inspect bathing waters for polluting items such as glass, plastics, etc, and when such pollution is found, to take adequate measures. The Directive has the protection of human health as its motivation, and as a result its scope is limited to bathing waters and litter items that are visually identifiable as posing a threat to human health, or which are unsightly and reduce the attractiveness of the bathing waters to visitors. This is clearly narrower than the scope of the MSFD, which is concerned with marine litter on environmental as well as social and economic grounds, throughout the marine environment. In addition, the classification of

waters under the Bathing Waters Directive is based on microbiological indicators and does not factor in the cleanliness of waters with respect to litter.

The Bathing Waters Directive provides the context for addressing beach litter and greater consideration should be given to improve monitoring and targeting of this aspect of its application and to factor that in to the classification of beaches, through the setting of a standard for poor, sufficient, good and excellent quantities of litter in bathing waters. Even then it would remain a contributor to the MSFD requirements for litter.

## 5 Conclusion

This study has analysed a host of different pieces of EU legislation to determine their relevance to marine litter, examining the deficiencies and gaps in these policies, and proposing options for improvement. When analysing the gaps in the current acquis, deficiencies certainly became apparent. Generally these consist of a need for better implementation and enforcement, and increased ambition of current requirements. Most importantly, the basic framework for addressing this particular environmental problem appears to be in place. The issue of marine litter could be given greater prominence within the suite of relevant policies, but it is clear that the MSFD provides the framework for driving action on this issue and no gap was identified in terms of the overarching policy structure.

In broad terms, now is a good time to be arguing the case for action on marine litter. Resource efficiency is currently high on the EU policy agenda and the EU's waste legislation is currently subject to a wide-ranging review, the results of which will be published in 2014. The waste review encompasses a review of key targets (including those in the Waste Framework, Landfill, and Packaging and Packaging Waste Directives), a review/'fitness check' of several Directives (including those on Packaging and Packaging Waste, ELVs and Batteries), and an assessment of how best to tackle plastic waste (the follow-up to the Green Paper that was published in March). The review will be informed by the objectives of the Resource Efficiency Roadmap and the proposed 7<sup>th</sup> Environmental Action Programme. Marine litter has obvious synergies with both the resource efficiency and waste agendas, as efforts to tackle it will help to reduce the amount of resources that are wasted. The door is therefore open for the issue of marine litter to be discussed seriously by policy-makers and practitioners in the broader policy context.

Focusing on improving the existing acquis, there are certain policy areas where action might be prioritised. Any prioritisation should be based on such factors as the scale of the potential impacts of the policy option in question, the types of approach taken to addressing marine litter (eg prevention versus end-of-pipe), the feasibility of enabling change, the timing of the policy review cycles and opportunities for influencing. Considering these factors in light of the analysis we can conclude that the highest priorities should be:

- Increasing the ambition of Member States' implementation of the MSFD. Member State implementation of the MSFD is still in development, but despite uncertainties and information shortages, targets can be set and measures can be implemented that will have a significant impact on marine litter, as the precautionary principle dictates and as pilot projects and regional and national case studies have shown. Indeed, this will be required in order to meet the objective of GEnS by 2020. In the longer term an EU wide target for marine litter as required by the 7<sup>th</sup> EAP should be set and incorporated in the Directive.
- Improving waste legislation and its implementation. The concept of litter (in the sense of waste that has been disposed of inappropriately, rather than through formal waste collection mechanisms) is scarcely mentioned within existing legislation. Addressing this by introducing mention of (marine) litter in the Directives with the most potential for impact (notably the Waste Framework and Packaging

Waste Directives) could be an important step towards ensuring that legislation addresses the issue of litter, and marine litter. One option to consider is to insert a reference within waste legislation to the marine litter descriptor – or to a legally binding definition of marine litter – in the MSFD.

- Three specific opportunities for encouraging action on marine litter through waste policy are available at present: the on-going wide-ranging review of EU waste legislation and targets (a stakeholder consultation is open from 3 June to 10 September 2013, and results of the whole review will be published during 2014), the development by Member States of their national waste prevention plans (which must be established by December 2013), and the follow-up to the Green Paper on plastic waste, which launched a public consultation and therefore a period of reflection on plastic waste specifically. If marine litter can be placed on the agenda of these discussions, significant progress could be made on awareness-raising, and also potentially on waste policy, with regards to marine litter.
- Packaging waste makes up a large proportion of marine litter in the EU, and is therefore an important area of focus, both in terms of prevention/reduction of packaging waste generation and in terms of using the essential requirements for packaging waste to help to reduce the harmful environmental impacts of packaging waste that does reach the marine environment.
- Given the momentum behind the ‘Beat the micro bead’ campaign (see Box 2) action should be taken at the EU level to prohibit the addition of microplastic particles into cosmetics products.
- Of great urgency is ensuring that the EMFF includes a measure to fund fishing-for-litter, filling the gap in terms of financing marine litter clean-up operations. This should include safeguards to reduce risk of perverse consequences.
- Attention should also be given to improving regulation of ship-related marine litter particularly in light of the upcoming reform of the PRF Directive. An indirect fee system similar to that currently in place in Baltic Sea ports, requiring mandatory waste delivery at port and payment of an indirect fee for port facilities irrespective of the quantities and types of waste delivered, should be applied across the whole of Europe in order to reduce the risk of illegal discharges and to ensure a level playing field for European ports.

It is also important to recognise some of the interactions between the different policies, and how certain policy options could work nicely in tandem. For example, amendments to the Bathing Waters Directive to introduce monitoring of litter items in bathing waters would complement MSFD initiatives to monitor beach litter and reduce quantities to meet a good standard. Similarly, aligning efforts between the Waste Framework and Packaging and Packaging Waste Directives to drive up the recycling rates of packaging materials may provide significant results in terms of reducing the amount of packaging waste that reaches the marine environment as litter. The coherence of the entire body of legislation might be improved by establishing a legal definition of marine litter into the MSFD, which other policy instruments could make reference to, such as those tackling waste more generally.

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## 1 The Marine Strategy Framework Directive (2008/56/EC)

### Description of legislation

The Marine Strategy Framework Directive (MSFD) (2008/56/EC) is the only piece of legislation specially designed to protect and restore the marine environment. It aims to achieve 'Good Environmental Status' (GENS) in European seas by 2020. In order to achieve its goal, the Directive establishes European marine regions and sub-regions on the basis of geographical and environmental criteria, and requires Member States to develop a strategy for its marine waters. The MSFD outlines 11 descriptors for determining GENS, one of which explicitly identifies marine litter as an issue to be addressed. Its aim is that 'properties and quantities of marine litter do not cause harm to the coastal and marine environment' (Annex I (10)).

The MSFD required Member States to set targets and indicators for reducing marine litter by July 2012, as well as make an initial assessment of the status of their waters. By July 2014 they are expected to have established and implemented a monitoring programme, and by July 2016 at the latest Member states are required to have entered into operation a programme of measures to ensure that their targets are met. The Marine Strategies must be kept up to date and reviewed every six years, the first review being in 2018.

### Relevance, performance deficiencies and potential

The MSFD leaves Member States to take the measures most appropriate to them, therefore allowing any measure, preventative or end-of-pipe, to be implemented, and addressing any type or source of marine litter. It therefore has great potential to make a significant impact to reduce marine litter. This flexibility does have its disadvantages though, as it can result in great variation between Member States, although there should be a degree of coordination by the Regional Seas Conventions to harmonise actions on a regional sea basin scale. It is too early to assess the effectiveness or implementation of the MSFD. However, the first results of the MSFD assessment show a lack of coherence and differing level of ambition among Member States with respect to their target setting, including those sharing a common sea basin (Interwies et al, 2013). The Commission has recognised this and is seeking to improve coherence and increase ambition through stakeholder engagement and best practice sharing (Interwies et al, 2013). With a view to stimulating further reflection and action on marine litter and increasing awareness, the Commission proposes in its 7<sup>th</sup> Environment Action Programme to set an EU-wide quantitative reduction target for marine litter. The most appropriate, effective and feasible options for this EU wide target will be analysed in an impact assessment.

The other issue is that the descriptor requires marine litter action so long as it causes environmental or socio-economic 'harm' to the coastal and marine environment. As it will not be possible to eliminate marine litter entirely, this is a sensible objective. However establishing that marine litter causes 'harm' on a population, community or ecosystem scale is very difficult due to the wide range of factors affecting this level of biological organisation (Piha et al, 2011). Nevertheless an inability to prove harm does not mean that population level effects do not exist. Clearly harm to individuals is must easier to demonstrate, and the marine litter Task Group considers that estimating the numbers of individuals affected is likely to offer the most feasible and representative conclusions about biological impacts (Piha et al, 2011). Nevertheless, considering that any measures proposed by Member States will be required to undergo a cost-benefit analysis, it will be very difficult to establish substantial benefits from reducing harm to a number of individuals, particularly when a population is in good status.

## 2 The water framework directive (2000/60/EC)

### Description of legislation

The Water Framework Directive (WFD) (2000/60/EC) applies to surface waters -lakes, rivers, estuaries and coastal waters (up to one nautical mile from land) and to ground waters, requiring all waters to meet 'good ecological status'. It aims to prevent further deterioration and protect and enhance the status of aquatic ecosystems (and, with regard to their water needs, terrestrial ecosystems) and promote sustainable water consumption.

The Directive requires that good ecological status (GES) is achieved for surface waters by 2015 with exemptions allowing some delay until 2027. GES is determined by a set of ecosystem characteristics, including biological, hydromorphological (i.e. a combination of hydrology and physical structure) and chemical criteria. It requires Member States to undertake extensive analysis of these characters to determine how far the ecology has been affected by human activity and classify waters according to categories of 'status'.

The means to achieve this is through the use of the River Basin Management Plans, which integrate existing EU measures to protect the water environment and identify all remaining human pressures that may result in a failure to achieve 'good status'. Plans should be developed for each river basin, which may include more than one Member State. Each plan will define the character of the waters, where water status is not 'good', identify a programme of measures to rectify any problems and to specify a monitoring programme both for a general assessment of water status and for specific threats to it. The plan also acts as a vehicle for consultation with the public and is used for reporting to the European Commission.

### Relevance to marine litter

Under the WFD good ecological status is determined by a set of ecosystem characteristics, including biotic and chemical criteria. Litter is not included in these criteria, either in the form of macro debris or micro particles. However, were litter to result in particular biological criteria not to be met, then litter would be a pressure that a Member State would need to address. In some respects the WFD and MSFD are companion items of law covering surface waters. However, while the presence of litter is an issue to be addressed under the MSFD, it is not under the WFD, but action is only needed if the litter (including micro particles) causes an impact on WFD objectives. The measures that would be taken if this is the case could be preventative or end-of-pipe, the Directive does not specify what these might be simply that they need to be done in order to improve water status.

Therefore if there was an aesthetic issue of litter in a particular EU river, but it did not impact on the biological criteria against which GES is measured, then it would not be considered a problem and would not require management measures. This would remain the case despite there being a risk that riverine litter might become marine litter upon entering the marine environment.



### 3 The EU Regulation on Cosmetic Products (No 1223/2009)

#### Description of legislation

The EU Regulation on Cosmetic Products (Regulation (EC) No 1223/2009) replaced the Cosmetics Directive (2011/84/EU) in March 2013. It aims to ensure that cosmetic products circulate freely within the EU whilst maintaining a high standard of protection for consumers.

It lays down the rules on the composition, labelling and packaging of cosmetic products. Within the Annexes the Regulation contains lists of substances that may not form part of the composition of cosmetic products, or which may but under certain restrictions (i.e. substances that are carcinogenic, mutagenic or toxic for reproduction). Packaging must be labelled with the name and the address of the responsible person; the country of origin for imported products; weight or volume; a use-by date; precautions for use; the batch number of manufacture; and the list of ingredients, defined as 'any substance or mixture intentionally used in the product during the process of manufacturing' (Article 19).

It is the responsibility of Member States to take measures to ensure only cosmetic products that conform to the Regulation may be put on the market. The Regulation also introduces a ban on animal testing and on the marketing of products that have been tested on animals.

#### Relevance, performance deficiencies and potential

The Regulation is relevant to marine litter due to the growing concern about microplastics (specifically Polyethylene, Polypropylene and Polyethylene terephthalate) being used in cosmetic products. Fendall and Sewell (2009) identified that on average each household uses one or two products containing microplastics or micro beads on a daily basis, which are not captured by wastewater treatment plants and will enter the oceans. Of the brands analysed in the study, over three-quarters had a modal size of less than 100 microns and could be immediately ingested by planktonic organisms at the base of the food chain (Fendall and Sewell, 2009). Over time the microplastics will be subject to UV-degradation and absorb hydrophobic materials such as PCBs, making them smaller and more toxic in the long-term (Fendall and Sewell, 2009).

At present, the Regulation does not contain any restrictions on the use of microplastics in cosmetic products. With the exception of the animal welfare provisions, the Regulation relates to product safety for the protection of consumer health. Recital 5 states that 'the environmental concerns that substances used in cosmetics products may raise are considered through the application of Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)'.

## 4 The Urban waste water treatment Directive (91/271/EC)

### Description of legislation

The **Urban Waste Water Treatment Directive** (91/271/EEC) seeks to reduce the pollution of freshwater, estuarial and coastal waters by domestic sewage, industrial waste water and rainwater run-off, collectively termed 'urban waste water'. It sets minimum standards, and timetables for their achievement, for the collection, treatment and discharge of urban waste water. It introduces controls over the disposal of sewage sludge, and requires the ending of sewage sludge dumping in surface waters. It requires collecting systems (sewers and drains) to be designed, constructed and maintained in accordance with the best technical knowledge not entailing excessive costs, with respect to limiting pollution of receiving waters from storm water overflows. All sewerage discharges serving populations of over 10,000 in coastal areas and 2,000 in estuarine areas must receive secondary (biological) treatment prior to discharge. Article 6 makes provision for Member States in some circumstances to identify less-sensitive coastal and estuarial areas where standards of waste water treatment can be lower, but all waste water destined for marine waters (from communities of more than 2,000 people) must receive at least primary treatment (a physical and/or chemical process) to remove 50 per cent of solid waste prior to discharge, and the environment must not be adversely affected. Higher, or tertiary, standards of treatment are required for discharges to particularly sensitive areas (which are to be determined by Member States on the basis of criteria set out in Annex II). Article 12 also states that treated waste water shall be reused whenever appropriate; Article 14 requires the same for sludge arising from waste water treatment. The two deadlines of 31 December 2000 and 31 December 2005 for meeting the main requirements of the UWWTD have now passed for EU-15 countries (those states that joined the European Union before 2004), while transitional periods and later deadlines have been agreed for EU-12 countries (states that acceded to the EU in 2004 and 2007).

### Relevance, performance deficiencies and potential

Whilst the Directive makes no specific mention of litter, urban waste water is a source of marine litter including items such as sanitary towels, tampons, plastic cotton wool bud sticks, microplastics from cosmetics and fibres from clothes washing. The Directive is therefore very relevant. It requires all waste water destined for marine waters (from communities of more than 2,000 people) to receive at least primary treatment to remove 50 per cent of solid waste prior to discharge. Such treatment should help to reduce the number of larger items of sanitary waste discharged into the marine environment. Improved waste water treatment should also help to prevent sewage related debris entering the sea from sewage outlets. However, some microplastics and fibres from clothes washing will still pass through waste water treatment plants. Although individually small, such items have a cumulative effect within the marine environment. In addition, run-off rain water and storm water overflows can carry with them items of litter that may reach the marine environment if not captured by urban waste water treatment systems. The Directive does not specify any targets or measures to reduce storm water overflows. Given the high costs of such measures the impetus for action is more likely to come from the Water Framework or Marine Strategy Framework Directives.

## 5 The Fisheries Control Regulation (Regulation (EC) No 1224/2009)

### Description of legislation

Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the Common Fisheries Policy (known as the Fisheries Control Regulation) seeks to ensure a Community system for fisheries control, inspection, and enforcement. The Fisheries Control Regulation consolidated and simplified several previously overlapping and complex legal texts, by putting the principles in place while defining the details in a single implementing regulation. The regulation covers licensing, transport, markets, traceability, surveillance and inspection procedures.

### Relevance, performance deficiencies and potential

With respect to marine litter, the Fisheries Control Regulation currently contains provisions intended to reduce marine debris in the form of lost fishing gear. Therefore, at present, this Regulation aims to prevent a specific type of marine litter once it has been created. Article 48 requires fishing operators to have the equipment on board to retrieve lost gear and for the master of the vessel to attempt to retrieve it as soon as possible. If the lost gear cannot be retrieved, the operator is required to inform the competent authority in its flag state of the incident within 24 hours, stating the identification of the vessel, the type of gear lost, the time and position of the incident and the measures taken to try and retrieve it. If the competent authorities of a Member State retrieve gear that has not been reported as lost, the authorities may recover the cost from the vessel that lost the gear.

Lost or abandoned fishing gear is one of the most significant sources of marine litter, particularly in the North East Atlantic and Mediterranean, and it can cause great harm to marine organisms and humans. However, information on rates of gear loss and the impacts of lost gear is scarce. It is unclear how much lost or abandoned fishing gear has accumulated from historic incidents, and how much is being lost currently. It is also unknown to what extent this type of marine litter is the result of accidental losses, and how much is due to intentional dumping. Without this information it is difficult to determine how well Article 48 is being complied with.

## 6 The Common Fisheries Policy (Regulation (EC) No 2371/2002)

### Description of legislation

The Common Fisheries Policy (CFP) is the main framework for managing the EU fisheries sector, covering most aspects of the fish production chain, from capture/farming through to landing, processing and marketing. The basic objectives and instruments that can be used to manage EU fisheries are set out in the CFP Framework Regulation: Council Regulation No 2371/2002 on the conservation and sustainable exploitation of fisheries resources under the CFP. The broad objective of the CFP is to ensure exploitation of living aquatic resources that provides sustainable economic, environmental and social conditions.

The main tools used for managing fisheries include Total Allowable Catches and effort restrictions, technical measures (eg gear restrictions), fleet capacity ceilings and subsidies to remove vessels from the fleet as well as promote environmental protection, strengthen the competitiveness of the sector, etc. The latter are established in the European Fisheries Fund (Regulation (EC) No 1198/2006), the financial instrument which supports the objectives of the CFP.

### Relevance, performance deficiencies and potential

The current CFP and European Fisheries Fund (EFF) do not specifically refer to marine litter. However the fisheries policy is relevant in a number of ways, and the proposed European Maritime and Fisheries Fund (COM(2011)804) (to replace the EFF) does make explicit mention to marine litter.

The CFP is supposed to provide for coherent measures for resource conservation and management purposes, including measures to limit the environmental impacts of fishing (Art 1). Given that lost and abandoned fishing gear is a source of marine litter that originates from fishing activities, it is clearly within the scope of the policy to address this specific litter source (see Fisheries Control Regulation for discussions over mitigation of lost fishing gear). In addition, the European Fisheries Fund (EFF) provides financial assistance to operators or organisations for measures to remove lost fishing gears from the seabed in order combat ghost fishing (Art 37). Furthermore, the proposed European Maritime and Fisheries Fund (COM(2011)804) may support operations to collect waste from the sea such as the removal of lost fishing gears and marine litter (Art 38). If this provision is adopted it would therefore broaden the scope of the Regulation from lost or abandoned fishing gear to marine litter more generally.

Unlike beach clean ups, fishing for litter collects litter that is at sea, in the water column and on the sea bed, which is a unique advantage. The EMFF could provide much needed funding for systematic fishing for litter operations. There are concerns about perverse effects of such schemes, although these could be addressed through greater precision within the EMFF.

## 7 The Environmental Liability Directive (2004/35/EC)

### Description of legislation

The Directive on environmental liability with regard to the prevention and remedying of environmental damage (2004/35/EC) is intended to establish a framework of environmental liability rules, based on the polluter pays principle, with the aim of preventing and remedying environmental damage. Under the Directive, environmental damage refers to damage to the aquatic environment, damage to species and habitats protected under the Birds and Habitats Directives, and contamination to land.

The principle of liability applies to environmental damage or the threat of damage resulting from occupational activities, where it is possible to establish a causal link between the damage and the activity. The Directive distinguishes between different types of occupational activities. There are those listed in Annex III, which includes activities that require a license under the Directive on Integrated Pollution Prevention and Control; activities that discharge heavy metals and dangerous chemical substances; and waste management activities (eg landfill and incinerators). Then there are all other activities which are not listed within the Directive specifically, but where there is damage (or an imminent threat of damage) to protected species and habitats. In the latter case the operator will be liable only if he or she is at fault or negligent. In addition, the threshold for damage to species and habitats is further qualified by definitions of conservation status (to determine what would count as a significant adverse effect on favourable conservation status).

There are exceptions to the Directive, which include damage or threat of damage caused by armed conflict and natural disasters (Art. 4) or when liability falls within the scope of certain international conventions. This includes activities covered by international conventions on oil pollution damage and damage in connection with carriage of hazardous and noxious substances by sea (Annex IV). In addition, the Directive does not apply to marine waters; it only extends as far as coastal waters under the jurisdiction of the Water Framework Directive.

When there is an imminent threat of damage, the Member State authority may require the polluter to take preventative measures, or take the measures itself and then recover the costs incurred. Equally, if the damage has already occurred, the authority may require the operator to take restorative measures or take them itself and recover the costs. For damage affecting water or protected species or habitats the Directive requires the environment to be restored to how it was before it was damaged. Provisions allowing direct legal action by private parties for harm in the form of personal injury, property damage or economic loss, which appeared in earlier drafts of the Directive are expressly excluded, as are any private parties' claims to an interest in the wider environment (IEEP, 2011).

As part of its review of the EU's regulatory frameworks and practices for offshore oil and gas exploitation, the Commission is considering to extend the scope of the Directive to fully cover the marine environment, ie all marine waters under the jurisdiction of EU Member States, up to 200 or 370 nautical miles. The extension of the scope of the Directive to fully cover the marine environment has been put forward in the Commission's proposal for a Regulation on safety of offshore oil and gas prospecting, exploration and production activities (COM(2011)688), which was issued in September 2011.

## Relevance, performance deficiencies and potential

The ELD does not explicitly refer to marine litter, or damage resulting from litter or waste in the marine environment. In its current form it is unlikely to be particularly useful in tackling marine litter, for a number of reasons.

Firstly there is a fundamental issue in that marine litter is generally a diffuse pollution problem, arising from a large number of sources. This characteristic means that it is intrinsically difficult to identify the polluter and assign responsibility. Secondly, the legislation applies to operators undertaking occupational activities – not individuals going about their daily lives. So littering by individuals would not fall under the scope of the Directive, which accounts for a significant proportion of marine litter.

Third, damage to the aquatic environment in the Directive refers to waters within the remit of the Water Framework Directive (ie fresh water, groundwater, estuaries, and coastal waters). Therefore ecological or chemical damage to waters beyond ‘coastal waters’ are currently outside of the scope of the Directive. Marine species and habitats protected under the Birds and Habitats Directives fall within the Directive’s scope, but this leaves out the majority of marine aquatic organisms.

Finally, the ELD only regulates against damage meeting a certain threshold of significance. This threshold relates to the conservation status of the EU legislation in question. Therefore not only would causality have to be proved, but damage must be significant according to the EU legislation. For example, mortality of a protected species such as a cetacean through entanglement in a fishing net would only be relevant if the mortality was significant to the conservation status of the species as a whole (ie the population).

## 8 The Habitats (92/43/EEC) and Birds (2009/147/EC) Directives

### Description of legislation

The Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) – known as the **Habitats Directive** - aims to maintain or restore natural habitats and species of wild fauna and flora at favourable conservation status. Together with the Birds Directive (2009/147/EC) it forms the cornerstone of Europe's nature conservation policy. The measures required of Member States fall into two main categories: the conservation of sites for habitats and species of Community interest; and the strict protection of selected species.

The Directive requires the establishment of a coherent European ecological network known as Natura 2000, in which Member States must establish the 'necessary conservation measures', for each site to maintain or restore the necessary ecological conditions for the habitats and species of Community interest that are present (Article 6.1). These habitats and species are listed in Annex I and II respectively. The Directive also requires Member States to take 'appropriate steps' to avoid the deterioration of the habitats concerned and any disturbance of those species for which the sites have been designated, in so far as such disturbance could be significant in relation to the objectives of the Directive (Article 6.2).

The Directive also requires Member States to take the requisite measures to establish a system of strict protection for certain species (which are listed in Annex IV). For animal species, strict protection basically means that it is prohibited to deliberately capture or kill an individual or that species; deliberately disturb the species, particularly during breeding, rearing, hibernation and migration; deliberately destroy or take eggs from the wild; or destroy breeding sites or resting places. Similarly for plant species the Directive prohibits the deliberate picking, collecting, cutting, uprooting or destruction of such plants in their natural range in the wild, or the keeping, transport and sale or exchange of specimens of such species taken in the wild. Member States are required to establish a legal framework to prohibit these actions and to enforce such provisions. Member States are also required to establish a system to monitor the incidental capture and killing of the animal species listed in Annex IV, and in light of the information found, take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned (Article 12.4). The marine species listed include several species of cetaceans (whales, dolphins and porpoises), turtles, sturgeons, etc.

### Relevance, performance deficiencies and potential

In theory the Habitats Directive could be highly relevant to the marine litter problem although it does not refer to it explicitly. For example, if marine litter was responsible for deteriorating the ecological status within a Natura 2000 site, Member States would be required to put in place measures to restore the necessary ecological conditions. Such measures are left up to Member States to design, and they could be either preventative or end-of-pipe. The Directive's provisions to strictly protect certain species could also play a role but this would be less clear: it is prohibited to deliberately kill such species, but this is not relevant to marine litter as it is not deliberately targeting any individual species. However, the deterioration or destruction of these species' breeding or resting sites is also prohibited, and this is something which marine litter could feasibly do, in which case Member States would be obliged to act. It is important to emphasise that the Directive only relates to species deemed to be of Community importance (though many species which are not protected at the EU level are nonetheless protected

nationally). In addition, there is a potential relevance to marine litter in the requirement on Member States to monitor the incidental capture and killing of protected animal species, and take conservation measures to ensure these deaths do not result in a significant negative impact on the species in question. Deaths clearly resulting from marine litter ingestion or entanglement might therefore be monitored (for the listed species) under the Directive, and if this information were to show a significant negative impact on the species then Member States would be required to take conservation measures. However the Directive itself does not specify any detailed monitoring requirements, leaving this up to Member States. Consequently any details related to cause of death and source of litter may not be recorded, or recorded consistently. Moreover, it requires there to be sufficient evidence that marine litter is causing a significant negative impact on the species.

One benefit of the Directives' potential ability to tackle marine litter is that it does not discriminate between sources of litter or the types of measures to address them. The disadvantages are that it only protects certain species (species of Community importance) and certain areas (Natura 2000 sites). Furthermore, the Directive is limited due to the challenge of determining whether marine litter has a negative impact on the ecological status of a Natura 2000 site, or whether it has led to the deterioration or destruction of a protected species' breeding or resting site. As the causality linking marine litter to harm is difficult to prove this is likely to limit the potential of the Directive in practice. On top of this, the Natura 2000 network, despite being largely complete on land, needs extending in the marine environment, particularly in offshore waters. Until the network is complete and coherent this hampers the Directive's potential even further.



## 9 The Bathing Water Directive (2006/7/EC)

### Description of legislation

The Bathing Water Directive (2006/7/EC) sets quality standards for bathing waters, applying to surface waters that can be used for bathing except for swimming pools and spa pools. The purpose of this Directive is to 'preserve, protect and improve the quality of the environment and to protect human health by complementing the Water Framework Directive'. It focuses on microbiological indicators of faecal contamination, *Escherichia coli* and intestinal Enterococci.

The Directive requires Member States to draw up a management plan for each bathing site to minimize risks to bathers, based on an assessment of the sources of contamination that are likely to affect it. Member States must monitor the bathing waters every year. The Directive requires that classification of water quality as bathing water is determined on the basis of a three-year trend instead of a single year's result, and classifies waters as poor, sufficient, good and excellent.

Where bathing waters have a history of poor water quality, preventive measures should be taken to close the bathing area when such conditions are forecast. If the water quality standards are not met, remedial measures must be taken. Information on bathing water quality classification, the results of water quality monitoring and the management plan is to be made available to the public, both through displays at the site and through the media and internet.

### Relevance, performance deficiencies and potential

Clearly the primary focus of this Directive is the danger to human health from microbiological contamination. Although other polluting items, including glass, plastics, rubber or other waste aren't completely omitted: the Directive states that bathing waters shall be inspected visually for pollution such as this and when such pollution is found adequate measures shall be taken, including if necessary, information to the public (Art. 9). The classification of waters is however based on the microbiological indicators.

As the Directive approaches the marine litter issue from a human health and bathing waters perspective, it is somewhat restricted in its scope compared to the MSFD. For example, only certain types of litter will be of relevance, ie those identified through the visual inspections on beaches. Other items are likely to be ignored, such as microplastics or small pieces of plastic which aren't so noticeable or unsightly, and of course any items which remain at sea.

This Directive provides a driver for the cleaning up of certain beaches, but given the potential for lost tourism revenue that would result from high litter quantities on beaches, the economic driver may be as important as the regulatory one. It is therefore unclear how big of an impact the Directive is currently having in driving beach clean-up activity.

## 10 The Waste Framework Directive (2008/98/EC)

### Description of legislation

The Waste Framework Directive (2008/98/EC, formerly 2006/12/EC and originally 75/442/EEC) is intended to provide a basis for coherent Member State action to address the challenge of waste management. The Directive is the central coordinating measure for EU waste laws, acting as a framework Directive under which other waste laws sit. It sets out key definitions, principles and requirements for the environmentally responsible management of waste and attempts to move treatment up the waste hierarchy (as set out by Article 4, with an order of preference for waste of prevention > preparing for re-use > recycling > other recovery e.g. energy recovery > disposal). Under Article 29, Member States must establish waste prevention programmes no later than 12 December 2013. Article 11 requires all Member States to put in place the separate collection of paper, metal, plastic and glass by 2015, and sets targets for the reuse and recycling of paper, plastics, metal and glass from households and similar origins (50 per cent by 2020). Article 8 introduced extended producer responsibility (EPR) requirements, empowering Member States to make producers responsible for managing and financing the treatment of associated waste; the wider application of EPR could help to reduce the amount of waste generated, for example through better design and labelling of products to enhance reuse and recycling. Article 36 requires Member States to take the necessary measures to prohibit the abandonment, dumping or uncontrolled management of waste. Article 13 requires waste management to be carried out in a way that does not pose risks to water. Article 6 of the Directive introduced a procedure for defining end-of-waste criteria, ie when a waste ceases to be waste.

### Relevance, performance deficiencies and potential

As the Waste Framework Directive sets out the essential conditions for the management of all types of waste, it has a direct influence on marine litter. There is however no specific mention of litter or the marine environment (although preventing risks to water is mentioned). Given the Directive's provisions, if fully implemented it should both help to prevent litter and deal with it once it has been created.

The Directive's provisions encourage improved collection and treatment infrastructure for the recycling and reuse of waste materials, including plastic, which is the largest component of marine litter. Better infrastructure for the recycling and reuse of such materials will help to reduce the amount of such materials that become waste. The Article 11 requirement for Member States to put in place separate collection for plastic by 2015, and the target for the reuse and recycling of 50 per cent of waste (including paper, metal, plastic and glass) from households and similar origins by 2020 should also help to reduce the amount of waste generated. This should by extension help to reduce the amount of marine litter, even though this is not a specified aim of the Directive.

In addition, the wider application of extended producer responsibility (EPR) as a result of the Directive may help to reduce the amount of waste generated (and by extension the amount of marine litter). EPR can lead to producers investing in material efficiency (thus reducing the eventual quantity of waste) and in ecodesign (thus extending the lifespan of products/materials) to reduce the fees they pay into EPR schemes.

Article 29 requires Member States to establish waste prevention programmes no later than 12 December 2013. In October 2012, the European Commission published a guidance document<sup>1</sup> to support Member States in developing these programmes, directing them to the most suitable waste prevention options for given types of waste and different administrative levels. With regards to plastic waste specifically, the guidance suggests that one type of waste that can be targeted effectively by waste prevention activities is plastic bags, eg through awareness campaigns that promote the use of canvas bags instead of plastic bags. The guidance suggests the use of voluntary agreements (eg to reduce packaging), clean consumption initiatives (eg for the use of reusable shipping and packaging materials), promotion of R&D, use of EPR and green public procurement (GPP) and eco-design measures, all of which could be applied to plastic waste.

The Article 36 requirement for Member States to take the ‘necessary measures’ to prohibit the abandonment, dumping or uncontrolled management of waste could be interpreted broadly to include the dumping of waste into the marine environment. This provision, together with the Article 13 requirement for waste management to be carried out in a way that does not pose risks to water, could therefore be used to encourage Member States (and ports) to ensure that measures are in place to address marine litter.

In response to Article 6, a Technical Working Group (TWG) to define end-of-waste criteria for plastic waste has been established. Two meetings have so far been held (22 November 2011 and 22 May 2012<sup>2</sup>) and a second version of the working document<sup>3</sup> was circulated for comments in early summer 2012. The criteria proposed suggest that waste plastic should cease to be waste when: it meets a quality grade for which there is a market or demand; there is precise information about its polymer(s) and additives, and it has a known maximum content of non-plastic components and unusable plastic types; it is not hazardous; it was not in contact with certain cross-contaminating waste types during processing (egbiowaste, oil waste, waste solvents, health care waste or mixed municipal solid waste); and the producer of waste plastic provides documentation of the fulfilment of these conditions. The document suggests that robust but reasonable end-of-waste criteria for plastic will support the image of waste plastic as a recyclable resource and therefore likely stimulate more collection and recycling of plastic waste, a higher market value for plastic waste, and treatment of such waste to a higher standard in the EU. EoW criteria will also raise awareness of the need to comply with REACH obligations for EoW material, and the need to trace potentially problematic substances in plastics, which may help to reduce the harmfulness of any plastics do reach the marine environment. The document recognises that a higher quality of EoW plastic will reduce the risk of exports (to non-EU countries where plastic waste is not recycled or not recycled to high human health and environmental standards), but that if quality thresholds are too strict, little waste plastic will become EoW and the potential benefits of EoW criteria will be limited. It is also recognised that costs of treatment of plastic waste may initially increase. A third version of the technical document is now being prepared, and will be subject to a final written consultation by the TWG.

### *Green Paper on plastic waste*

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<sup>1</sup>BioIntelligence Service (October 2012). Preparing a Waste Prevention Programme, <http://ec.europa.eu/environment/waste/prevention/pdf/Waste%20prevention%20guidelines.pdf>

<sup>2</sup> Technical Working Group workshop presentations available at: <http://susproc.jrc.ec.europa.eu/activities/waste/EoWplastics22may2012|PTS.zip>

<sup>3</sup><http://susproc.jrc.ec.europa.eu/activities/waste/documents/Plastics2ndworkingdoc23may2012.pdf>

A public consultation was launched on 7 March 2013 with the publication of a Green Paper<sup>4</sup> inviting stakeholder views on how to deal with the challenges posed by plastic waste which are not currently specifically addressed in EU waste law. The consultation is open until 7 June 2013. The Green Paper recognises the significant problem of marine litter, and suggests that poor waste management on land, in particular low plastic waste recovery rates, aggravates plastic marine pollution, around 80 per cent of which originates from land-based sources (including storm water discharges, sewer overflows, tourism-related litter, illegal dumping, industrial activities, improper transport, consumer cosmetics, synthetic sandblasting media and polyester/acrylic fibres from washing clothes). The Green Paper calls in particular for capacity building in waste management, and actions by Regional Seas Conventions (such as the Mediterranean strategy on marine litter that was endorsed in February 2012). It also points out that the European Commission is (under a separate initiative) assessing options to reduce single-use plastic carrier bags, which add to the plastic waste load in the marine environment. The Green Paper invites stakeholders to make suggestions for additional actions that could reduce marine litter, asks whether some marine litter related actions should be coordinated at EU level (eg by setting up a coordinated European Coastal Clean-up Day), and asks how an EU wide quantitative reduction target for marine litter can be developed and established.

#### *Roadmap to a Resource Efficient Europe and Draft 7th Environment Action Programme*

The 2011 Roadmap to a Resource Efficient Europe<sup>5</sup> states that whilst overall waste generation in the EU is stable, marine litter is still increasing. It calls for marine litter strategies in all four EU marine regions. The Commission's proposal for a 7th Environment Action Programme<sup>6</sup> explicitly recognises the risk to the Marine Strategy Framework Directive's target to achieve 'good environmental status' by 2020 that is posed by the presence of marine litter in Europe's seas. It also makes a call for 'an EU-wide quantitative reduction target for marine litter'.

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<sup>4</sup> European Commission, GREEN PAPER On a European Strategy on Plastic Waste in the Environment, COM(2013) 123 final, 7 March 2013, [http://ec.europa.eu/environment/waste/pdf/green\\_paper/green\\_paper\\_en.pdf](http://ec.europa.eu/environment/waste/pdf/green_paper/green_paper_en.pdf)

<sup>5</sup> COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, Roadmap to a Resource Efficient Europe, COM(2011) 571 final, 20 September 2011, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0571:FIN:EN:PDF>

<sup>6</sup> European Commission, Proposal for a DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on a General Union Environment Action Programme to 2020, "Living well, within the limits of our planet", COM(2012) 710 final, 29 November 2012, [http://ec.europa.eu/environment/newprg/pdf/7EAP\\_Proposal/en.pdf](http://ec.europa.eu/environment/newprg/pdf/7EAP_Proposal/en.pdf)

## 11 The Landfill Directive (1999/31/EC)

### Description of legislation

The **Landfill Directive** (1999/31/EC) establishes technical requirements for the operation of landfills with the aim of reducing their impact on the environment, including the pollution of surface water. It aims to tackle methane emissions by limiting the amount of biodegradable waste sent to landfill (Article 5 sets targets of 75 per cent of 1995 levels by 2006, 50 per cent of 1995 levels by 2009 and 35 per cent of 1995 levels by 2016). It also aims to encourage the prevention, recycling and recovery of waste by limiting its final disposal through landfill. Article 5 also lists wastes which may not be accepted in landfills (including liquid, explosive, corrosive, oxidising, flammable, infectious hospital/clinical waste and tyres). The Directive intends to safeguard human health and the environment by ensuring the proper permitting, monitoring and aftercare of new and existing landfill sites. In so doing, it also aims to limit the shipment of waste between Member States by ensuring that adequate standards are applied to landfill in every country, thereby preventing the cheap dumping of waste in Member States with poor controls. In addition, Article 10 requires the charges levied by operators to reflect the continuing costs of landfill, including clean up and aftercare for at least 30 years following closure; in this way the Directive seeks to make other, apparently more expensive, methods of waste treatment (ie recovery, recycling, reuse and prevention) more attractive to waste producers. Annex I of the Directive sets out requirements for the location (including taking into consideration the proximity of water bodies and coastal waters) and technical specifications (including design features to avoid pollution of soils and waters from the landfill, including from wind-blown waste) of landfill sites. Article 3 allows Member States to exempt from certain provisions of the Directive landfills for non-hazardous or inert waste below a certain capacity serving islands or isolated settlements.

### Relevance, performance deficiencies and potential

The Landfill Directive potentially has a direct (although possibly limited) influence on marine litter, as it establishes technical requirements for the operation of landfills, with the aim of reducing environmental impacts and to reduce the amount of waste sent to landfill. Specific mention is made of coastal areas with regards to the siting of landfills, and indirect mention is made of litter through a reference to wind-blown waste from landfills. The Directive's provisions therefore suggest it could help to prevent marine litter.

The Directive aims to limit the final disposal of waste through landfill, and therefore to encourage the prevention, recycling and recovery of waste. In this way, it may help in reducing the amount of waste sent to final disposal and drive up recycling and recovery, which may in turn reduce the amount of waste reaching the marine environment. However, it is worth noting that around 1,000 landfills have been identified by the European Commission as sub-standard landfills to be upgraded or closed as soon as possible<sup>7</sup>, indicating that the Directive is not always adequately implemented by the Member States.

Measures contained within the Directive, in particular those in **Annex I** that set out location requirements and technical specifications, should help to reduce the potential dispersal of

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<sup>7</sup> European Commission, COMMISSION STAFF WORKING DOCUMENT Overview of policies, legislation and initiatives related to marine litter, SWD(2012) 365 final, 31 October 2012, [http://ec.europa.eu/environment/marine/pdf/SWD\\_2012\\_365.pdf](http://ec.europa.eu/environment/marine/pdf/SWD_2012_365.pdf)

plastic packaging waste and other debris into the marine environment. Location requirements must take into consideration the proximity of water bodies and coastal waters, and technical specifications must include design features to avoid the pollution of soils and waters from the landfill, including from wind-blown waste.

Some of the exemptions that can be allowed for small landfills serving islands and remote settlements have potential impacts for marine litter. For example, such landfills can be exempt from Article 10 on cost of the landfill of waste. This could potentially mean that such landfills that are also in coastal areas could be left inadequately managed following their closure, which could lead to leakages or wind-blown waste reaching the marine environment. Such landfills may also be exempt from the requirements of Annex III on emission data and sampling for surface water, leachate and groundwater, which leaves open the possibility for unchecked emissions of this kind.

## 12 The Packaging and Packaging Waste Directive (1994/62/EC, as amended)

### Description of legislation

The **Packaging and Packaging Waste Directive** (1994/62/EC, as amended) has three main objectives: to reduce the impact of packaging on the environment; to harmonise national measures in order to prevent distortions to competition; and to ensure the free movement of packaged goods. The environmental objective is to limit the amount of packaging waste going to final disposal by prioritising prevention of the production of packaging waste, for example through national programmes and extended producer responsibility (EPR), and by encouraging re-use, recovery and recycling. The Directive seeks to achieve its objectives in three main ways. Firstly, Article 6 sets a number of targets for recovery and recycling of packaging waste. By 2008 at least 60 per cent by weight of packaging waste to be recovered (including energy recovery) and 55-80 per cent recycled. Also by 2008, the following recycling targets had to be attained for specific materials contained in packaging waste: 60 per cent by weight for glass, 60 per cent for paper and board, 50 per cent for metals, 22.5 per cent for plastics and 15 per cent for wood. Secondly, Article 7 requires Member States to establish return, collection and recovery systems. Thirdly, Article 9 and Annex II set essential requirements on the manufacturing and composition of packaging waste placed on the market to enable its reuse, recovery and recycling. These include provisions to limit the weight and volume of packaging to a minimum, to reduce the content of hazardous substances and materials, and to design reusable or recoverable packaging. In addition, Article 11 sets limit values for the concentration levels of heavy metals present in packaging.

### Relevance, performance deficiencies and potential

As the Packaging Directive has the environmental objectives of preventing the production of packaging waste and limiting the amount sent to final disposal, it has a direct influence on marine litter. Whilst there is no specific mention of litter or the marine environment in the Directive, studies suggest that a large amount of marine litter and litter found on beaches is packaging (eg cans, bottles, food wrappers). The Directive's measures will therefore help to reduce the amount of packaging waste reaching the marine environment as litter, and also to reduce its harmfulness. Taking these factors into consideration, the Directive potentially has a high level of impact on marine litter.

The targets in **Article 6** aim to drive up the recovery and recycling of packaging waste, thereby reducing final disposal and the risk of packaging ending up in the marine environment. Specifically with regards to plastic, which is a major component of marine litter, the target was for 22.5 per cent by weight of plastics contained in packaging waste to be recycled by 2008. The return, collection and recovery systems required by **Article 7** should also contribute to capturing more packaging waste and reducing its potential to reach the marine environment. The essential requirements for packaging waste contained in **Article 9** and **Annex II** should not only facilitate the reuse, recovery and recycling of packaging waste (thereby limiting its final disposal), but together with the concentration limits for heavy metals in **Article 11** should also help to reduce the harmful environmental impacts of packaging waste that does reach the marine environment (eg through reduced hazardous content). With regards to plastic in particular, full implementation of the Packaging Directive by the Member States is important for closing loopholes in the plastic packaging cycle, and should have significant associated benefits for the quantities of marine litter generated.

## 13 The Batteries and Accumulators and Waste Batteries and Accumulators Directive (2006/66/EC)

### Description of legislation

The **Batteries and Accumulators and Waste Batteries and Accumulators Directive (2006/66/EC)** has the primary aim of minimising the negative impact of batteries and waste batteries on the environment. It does this by seeking to improve the environmental performance of batteries and of the activities of economic operators involved in the life cycle of batteries, including in particular those involved in the treatment and recycling of waste batteries. Article 4 prohibits the placing on the market of batteries with mercury or cadmium content above a fixed threshold, to cut the amount of hazardous substances in the environment. Article 10 promotes a high rate of collection of waste batteries (at least 25 per cent by September 2012 and 45 per cent by September 2016) and Annex III B sets recycling efficiencies of between 50 and 75 per cent by average weight, depending on the chemical content, by September 2010. Article 7 requires Member States to maximise separate collections for waste batteries and to minimise the disposal of batteries as mixed municipal waste. Article 8 requires Member States to ensure that collection schemes are in place for waste batteries, and that end-users of batteries should be able to discard spent batteries at collection points in their vicinity and have them taken back by the producers at no charge.

### Relevance, performance deficiencies and potential

The Batteries Directive does not contain specific mention of litter or the marine environment. As batteries do not tend to make up a large proportion of marine litter items in the EU, this Directive only has a limited influence on marine litter. However, through its provisions on improved collection and recycling rates for waste batteries, the Directive should help to limit the amount of waste batteries entering the (marine) environment, and its provisions on reducing the hazardous content of batteries should help to limit the environmental harm caused by any batteries that do end up as litter in the marine environment.

The **Article 4** prohibition on batteries with over 0.00005 per cent mercury content by weight (2 per cent for button cells) or over 0.0002 per cent of cadmium content by weight reduces the risk of these hazardous substances leaking into the marine environment in the event that batteries do become marine litter.

The **Article 10** targets for collection of waste batteries (25 per cent by September 2012 and 45 per cent by September 2016) and the **Annex III B** recycling efficiency targets (between 50 and 75 per cent by average weight, depending on the chemical content, by September 2010) encourage the collection and recycling of waste batteries. **Article 7** requires Member States to maximise separate collections for waste batteries and to minimise the disposal of batteries as mixed municipal waste. These provisions of the Directive therefore increase the amount of batteries that are captured and treated/disposed of in an environmentally sound manner, reducing the risk that batteries and the hazardous materials they contain will enter the (marine) environment.

In addition, **Article 8** applies producer responsibility to waste batteries, requiring the creation of schemes that collect used batteries at no cost to end-users. In this way the Directive may help to reduce the amount of waste batteries generated.



## 14 The End-of-Life Vehicles Directive (2000/53/EC)

### Description of legislation

The Directive on End-of-Life Vehicles (ELV) (2000/53/EC) seeks to reduce the amount of waste, and therefore the adverse environmental effects, resulting from the disposal of vehicles at the end of their useful life. It also aims to improve the environmental performance of all the economic operators involved at each stage of a vehicle's life, particularly those involved in the treatment of ELVs. Article 7 sets targets for the reuse, recovery and recycling of ELVs (85 per cent by weight of all ELVs should be reused and recovered and at least 80 per cent reused and recycled by January 2006; and 95 per cent reused and recovered and 85 per cent reused and recycled by 1 January 2015). Article 5 requires Member States to ensure that systems are set up for the collection of ELVs and used parts, and to ensure that the delivery of vehicles to an authorised treatment facility is done at no cost to the last holder/owner. Article 4 requires Member States to encourage vehicle manufacturers to limit the use of hazardous substances (including lead, mercury, cadmium and hexavalent chromium) in vehicles, and to design them to be as recyclable as possible (the regularly updated Annex II provides a reviewed list of exemptions from this provision). Article 6 requires treatment of ELVs to be undertaken in such a way that hazardous materials and components are removed and do not cause contamination of shredder waste.

### Relevance, performance deficiencies and potential

The ELV Directive does not contain specific mention of litter or the marine environment. The particular requirements in place for the dismantling of vehicles, the provisions on improved collection and recycling rates for ELVs and the valuable nature of some vehicle components make it unlikely that ELVs or their components will reach the marine environment as litter. As a result, this Directive only has a limited influence on marine litter. However, the Directive's provisions on reducing the hazardous content of ELVs should help to limit the environmental harm caused by any such waste that does end up as litter in the marine environment.

The Article 7 targets for the reuse, recovery and recycling of ELVs together with the Article 5 requirement for collection systems should ensure that the vast majority of ELVs and components are captured and treated/disposed of in an environmentally sound manner, reducing the risk that they and the hazardous materials they contain will enter the (marine) environment.

The Article 4 requirement to limit the use of hazardous substances and to maximise the recyclable nature of vehicles, together with the Article 6 requirement for ELVs to be treated in such a way that hazardous materials and components are removed and do not cause contamination, reduce the risk of hazardous substances such as lead, mercury, cadmium and hexavalent chromium leaking into the marine environment in the event that ELVs or their components do become marine litter.

## 15 The Waste Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU) & the Restriction of Hazardous Substances (RoHS) Directive (2011/65/EU)

### Description of legislation

The recast **Directive on Waste Electrical and Electronic Equipment (WEEE)** (2012/19/EC)<sup>8</sup> seeks to prevent or reduce the environmental and health impacts of WEEE by increasing the rates of collection, recovery and recycling of WEEE and by improving the environmental performance of producers, distributors and consumers involved in the life cycle of electrical and electronic equipment (EEE). The **Directive on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment** (2011/65/EU) contributes to the objectives of WEEE Directive by restricting the use in electrical and electronic equipment (EEE) of substances that cause risks to human health or the environment, including during the recovery and disposal phases.

The **WEEE Directive**, in Article 4, requires Member States to encourage producers to design EEE with a view to facilitating its reuse, dismantling and recovery. Article 5 requires Member States to minimise the disposal of WEEE in unsorted municipal waste and to achieve a high level of separate collection of WEEE, including by setting up collection facilities. The return of WEEE from private households should be free of charge to final holders/distributors. Article 7 sets minimum collection rates for WEEE (from 2016, 45 per cent of the average weight of EEE placed on the market in the three preceding years in the Member State, rising to 65 per cent from 2019, or alternatively 85 per cent of WEEE generated on the territory of the Member State. Until 2015, the provision of the previous WEEE Directive to collect at least 4kg of WEEE on average per inhabitant per year – or the same amount that was collected in the three preceding years, if that is higher – still stands). Article 8 and Annex VII set requirements for treatment, including the removal of certain substances (such as PCBs, mercury, batteries, plastics, CFCs, LCDs and others). Article 10 states that exported WEEE can only count towards the fulfilment of obligations and targets if it is treated to the standards required by the Directive. Article 11 and Annex V set minimum recovery targets for WEEE (depending on the category of WEEE, recovery of between 70 and 80 per cent and recycling of between 50 and 75 per cent by weight collected until August 2015; and recovery of between 75 and 85 per cent and preparation for reuse and recycling of between 55 and 80 per cent from August 2015 to August 2018 and beyond).

Article 4 and Annex II of the **RoHS Directive** prohibit the placing on the market of EEE containing lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDEs) or cadmium. These substances will however be tolerated in homogeneous materials to a maximum of 0.01 per cent by weight of cadmium and 0.1 per cent by weight of all the other substances. (A long list of exemptions to these provisions is listed in Annexes III and IV.) The restricted substances in Annex II will be periodically reviewed. Article 9 applies the provisions of the Directive to imports of EEE into the EU, thereby ensuring that the same product standards are applied to EU and imported goods.

In combination the ROHS and WEEE Directives aim to reduce the hazardousness of the EEE supply chain and to better manage waste that ultimately results.

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<sup>8</sup> The recast WEEE Directive entered into force on 13 August 2012, and must be transposed by the Member States by 14 February 2014, when the previous WEEE Directive (2002/96/EC) will be repealed.

## Relevance, performance deficiencies and potential

The WEEE and RoHS Directives do not contain specific mention of litter or the marine environment. WEEE is a relatively valuable waste stream and is therefore less likely than some other waste streams to be dumped in the marine environment. For this reason, these Directives are likely to have only have a limited influence on marine litter. However, through its provisions on improved collection, recovery and recycling rates, the WEEE Directive should help to limit the amount of WEEE entering the (marine) environment, and the provisions of the WEEE and RoHS Directives on reducing the hazardous content of EEE should help to limit the environmental harm caused by any WEEE that does enter the marine environment as litter.

The **Article 5** requirement of the **WEEE Directive** to minimise disposal of WEEE and to achieve a high level of separate collection, together with the **Article 7** minimum collection rates, encourage the collection of WEEE. The **Article 11** and **Annex V** minimum recovery and recycling targets encourage the environmentally sound collection and recovery/recycling of WEEE. These provisions of the Directive therefore increase the amount of this waste stream that is captured and treated/disposed of in an environmentally sound manner, reducing the risk that WEEE and the hazardous materials it contains will enter the (marine) environment.

The **Article 8** and **Annex VII** treatment requirements of the **WEEE Directive**, together with the **Article 4 and Annex II** substance restrictions of the **RoHS Directive**, reduce the risk of hazardous substances leaking into the marine environment in the event that WEEE does enter the marine environment as litter.

It should be noted that there are some risks related to illegal shipments of WEEE for treatment outside the EU. Whilst **Article 10** states that exported WEEE can only count towards the fulfilment of obligations and targets if it is treated to the standards required by the Directive, it is certain that illegal shipments do still occur, eg when WEEE is designated as being shipped for reuse but is in fact destined for disposal in third countries with lower environmental standards than the EU.

## 16 The Industrial Emissions Directive (2010/75/EU)

### Description of legislation

The **Industrial Emissions Directive (2010/75/EU)** requires the operating conditions of certain industrial activities to be established in permits in order to attain ‘a high level of protection for the environment’. This can be achieved by preventing or reducing emissions to air, water and land, including measures concerning the prevention of waste generation in accordance with the Waste Framework Directive (2008/98/EC; see separate information sheet). The conditions are to include emission limit values and other parameters based on Best Available Techniques (BAT). Installations are to be inspected and permits reviewed. The Directive also establishes a series of conditions specific to certain types of installation, including waste incinerators and co-incinerators, combustion plants, solvent emission activities and titanium dioxide plants. As such, it brings together a wide range of pre-existing EU industrial pollution control law.

### Relevance, performance deficiencies and potential

The Industrial Emissions Directive does not contain specific mention of litter, and only specifically mentions the marine environment in relation to emissions of waste from titanium dioxide installations. The waste-related measures of the Directive, which are intended to reduce the amount of waste generated by industrial installations and to ensure the sound management of waste in accordance with the Waste Framework Directive and the waste hierarchy, should help to limit the amount of waste released into the environment (and by extension into the marine environment) from installations. The Directive therefore has the potential to have a limited to moderate influence on marine litter.

**Article 11** requires Member States to take the necessary measures to provide that installations are operated such that all appropriate preventative measures are taken against pollution, that the generation of waste is prevented in accordance with the Waste Framework Directive, and that waste which is generated is dealt with in the following order: prepared for re-use, recycled, recovered or, disposed of while avoiding or reducing any impact on the environment. **Article 12** requires Member States to ensure that applications for a permit include a description of measures for the prevention, preparation for re-use, recycling and recovery of waste generated by the installation.

**Article 13** states that the process to draw up, review and update BAT reference documents should include exchange of information between Member States, industry, environmental NGOs and the Commission, including on the performance of installations and techniques in terms of generation of waste. Related to this, **Annex III** states that the criteria for determining BAT should include (amongst others) the use of low-waste technology, the use of less hazardous substances, and the furthering of recovery and recycling of substances and of waste, where appropriate.

All of these provisions of the Directive should help to ensure that the waste generated by industrial installations is both minimised and dealt with in an environmentally responsible manner, by extension limiting the amount of waste reaching the marine environment.

**Article 67** specifically prohibits the disposal of certain types of waste from titanium dioxide plants into any water body, sea or ocean, whilst **Annex VIII** sets annual average emission limit values for emissions into water (550kg of sulphate per tonne of titanium dioxide produced, and between 130 and 450kg of chloride per tonne of titanium dioxide produced).

## 17 Integrated Product Policy (COM(2003)302)

### Description of legislation

The EU's Integrated Product Policy (IPP) aims to bring about a coherent product dimension in environmental policy, to ensure that environmental impacts are considered effectively throughout a product's life cycle and to minimise the environmental degradation caused by products during all phases of their life-cycle (manufacturing, use and disposal). IPP seeks to achieve a balance between the need to provide products for consumption with the need for environmental protection, to simultaneously promote environmental improvements and better product performance. The five key principles of the IPP approach are: life-cycle thinking, working with the market, stakeholder involvement, continuous improvement to products, and the use of a variety of policy instruments that make up the IPP 'toolbox' (including voluntary agreements, (environmental) product standards, eco-design, product labelling, green public procurement, green technologies, environmental management systems, State Aid and legislation).

IPP was intended to complement EU legislation and policy on waste, products, resource efficiency, sustainable development and so on. It was also intended to trigger additional voluntary improvements in products whose characteristics do not require, or are not covered by, legislation, and to promote stronger coordination and coherence between existing and future environment-related product policy instruments.

A 2009 report<sup>9</sup> on the state of implementation of IPP concluded that the five key principles were embedded in many initiatives, and that the IPP tools were being widely used, including through the EU's Sustainable Consumption and Production/Sustainable Industrial Policy (SCP/SIP) and the revised Waste Framework Directive (see separate information sheet), through product-specific actions and voluntary agreements in individual Member States, and through eco-design actions by businesses.

### Relevance to marine litter

IPP in itself does not have a direct impact on marine litter, and the IPP Communication and implementation report do not specifically mention litter or the marine environment. The guiding principles of IPP are however integrated into many pieces of legislation and policy instruments (including various Directives on waste), and therefore its principles have the potential to have an indirect impact on a wide range of types of marine litter, in particular the hazardousness of items that become marine litter. The individual pieces of legislation are dealt with in separate information sheets.

One practical outcome of the IPP process was the creation of a Retail Forum<sup>10</sup> with the aim of reducing the environmental footprint of the retail sector, including promoting more sustainable products and better informing consumers. The Retail Forum holds quarterly meetings which allow the discussion of best practice amongst representatives from DG Environment and other Commission DGs, retailers and other relevant stakeholders. Since 2009 it has undertaken work on optimising packaging, minimising waste, timber, labelling, fish, textiles, energy efficiency and efficient distribution. During 2012-14 it expects to undertake further work on waste minimisation and new work on greening the supply chain, environmental management/corporate social responsibility, animal welfare and deforestation.

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<sup>9</sup> Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, On the State of Implementation of Integrated Product Policy, COM(2009)693, 21.12.2009, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0693:FIN:EN:PDF>

<sup>10</sup> Retail Forum for Sustainability, [http://ec.europa.eu/environment/industry/retail/index\\_en.htm](http://ec.europa.eu/environment/industry/retail/index_en.htm)

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