



Brussels, 31.10.2012
SWD(2012) 365 final

COMMISSION STAFF WORKING DOCUMENT

Overview of EU policies, legislation and initiatives related to marine litter

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1. INTRODUCTION

Our seas and oceans are increasingly becoming the waste dump of the planet. Plastic waste is floating in huge quantities on the sea surface before it sinks to the seabed or degrades into micro plastics. Marine habitats worldwide are contaminated with man-made litter and coastlines are filled with waste and debris which can pose environmental, economic, health and aesthetic problems.

Marine litter covers a wide range of materials which have been deliberately discarded, or unintentionally lost on beaches and on shores or at sea, including such materials transported into the marine environment from land by rivers, draining or sewage systems or winds. It includes any persistent, manufactured or processed solid material, whether it is plastic, glass, metals or others.

The issue has received variable but increasing international attention since the early eighties when the first international marine debris conference was held. It was recognized as one of the major source categories for the Global Programme of Action of the protection of the marine environment from land-based activities (Washington declaration of 1995) and as a priority issue by UNEP's Governing Council in 2004. More recently, at Rio + 20, the UN Sustainable Development Conference, commitments were made to significantly reduce marine debris by 2025.

The European Commission has been a very active player in addressing this issue for a number of years. To foster an informed debate, this Commission Staff Working Document describes the EU policies, strategies and legislation that are currently in place to address the problem of marine litter, as well as new initiatives still at the planning stage. Furthermore, it highlights the extent to which these policies and initiatives are linked, and indicates areas where increased dialogue and cooperation would be beneficial.

This document should form the basis for a discussion with Member States and stakeholders with a view to defining an appropriate policy agenda over the coming years.

2. THE PROBLEM OF MARINE LITTER

2.1. Types and sources of marine litter

Marine litter or debris consists of a *range of materials* including plastic, metal, wood, rubber, glass and paper. Although the relative proportions of these materials vary according to the regional sea concerned, there is clear evidence that plastics are by far the most abundant type of debris in terms of the number of items (Ryan et al, Browne et al). In some locations, plastics amount to 80 % of marine litter on shorelines (OSPAR 2007; STAP 2011). A similar predominance of plastic is reported from sampling at the sea surface and the sea bed (Barnes *et al.* 2009; STAP 2011).

Most plastics are extremely durable materials and are likely to persist in the marine environment for a considerable period, possibly as much as hundreds of years. However, plastics also deteriorate and fragment in the environment as a consequence of exposure to sunlight (photo-degradation) in addition to physical and chemical deterioration, which is likely to result in numerous tiny plastic fragments called micro-plastics.

As a material type, plastics debris consists of a wide range of items with *diverse sources* from different applications including (nylon) fishing gear, food and beverage packaging, smoking related items (disposable lighters, filters, cigar tips), transport packaging waste (pallets, plastic sheeting and straps), feedstock for plastic production (pre-production pellets and powders) and sewage related debris (sanitary towels, tampons, plastic cotton wool bud sticks) (Kershaw et al. 2011; OSPAR 2007; STAP 2011).

Litter from *land-based activities* is washed by rain or by snowmelt, is blown by the wind, or is discharged into nearby waterways or seas. A variety of pathways have been identified including material carried by rivers or flood water, or discharged via industrial and municipal outfalls.

Marine litter inputs are also associated with poor solid waste management practices, especially where material is dumped or abandoned in or adjacent to rivers or the sea.¹ Waste management facilities, including waste transport to such facilities, may also act as sources of debris where such sources are inadequately constrained and confined – by burial and fences for example – in order to prevent it being blown into water courses.

There may even be direct inputs from industry, where for example there has been a spillage of pre-production pellets used as feed stock for plastic production or in cases of debris associated with the decommissioning of ships on or near the shoreline.

Moreover, visitors to our coasts leave a considerable amount of litter on the shore (Barnes *et al.* 2009; OSPAR 2007; STAP 2011; UNEP 2006).

Various human *activities at sea* generate litter, including shipping² and fixed installations such as mining and oil extraction platforms as well as aquaculture facilities. The types of litter include illegally dumped waste, commercial and recreational fishing related debris (e.g. fishing gear) and discharges from toilets and showers, which include sewage related debris such as tampons, sanitary towels and condoms.

Marine litter is found in a wide range of locations. Items washed ashore are the most prominent signs of marine litter but most of the litter entering the water is found on the sea floor, both in shallow and deep water while the remainder floats on the surface.³ It is estimated that 15% of marine debris floats on the sea surface, 15% remains in the water column and 70% rests on the seabed (UNEP, 2005). It is also important to underline that marine litter transcends national borders. The international dimension is crucial because Europe's seas are shared and marine litter can travel long distances.

Despite international, EU and national efforts to reduce the quantity of litter released into our seas over last two decades, in many regions such as the North Sea, quantities of litter, especially plastic, are increasing. This is due in part to an exponential increase in the quantity of end-of-life plastic that has

¹ A MED POL assessment identified direct waste disposal by households, followed by the impact of tourist facilities and run-off from waste dumps, as the main sources of litter in the Mediterranean. Regional Seas Coordinating Office, UNEP, Nairobi of April 2005.

² Shipping for transport of cargo or passengers (commercial, recreational or military), for fishing (commercial or recreational) or for research.

³ The “garbage patches” in the North Pacific, but also in the Atlantic Ocean are areas of marine debris concentration that are often referred to. The name “garbage patch” is a misnomer, as there is no island of debris that can be seen with satellite or aerial photographs, because much of the debris is small bits of floating plastic.

been generated and the low recycling and incineration rate thereof⁴, coupled with exceptionally slow degradation of plastic litter, if at all.

2.2. Environmental impacts

Environmental impacts relate primarily to marine fauna. Threats to marine wildlife are mainly due to ingestion and entanglement, resulting in direct physical damage, and possibly toxicological harm. Over 180 species are known to ingest plastic debris. This can occur as a consequence of plastic being mistaken for food or being ingested accidentally⁵. Ingestion can impair digestion and cause internal injuries or even death. It is also likely to impair growth and reproduction (European Commission, 2010). Moreover, concerns have been raised about the potential for chemicals associated with plastics to be released upon ingestion, with possible toxicological effects.

A wide range of marine animals, including whales, seals, turtles and fish, can also be entangled in marine litter, causing suffocation, strangulation or drowning. Items of litter commonly associated with entanglement include discarded fishing gear, items of packaging such as “six-pack” rings and ribbons from balloons. In extreme cases debris can smother the seabed and influence organisms living within sediments (Gregory 2009).

Marine litter can also be a vector of transport of non-native species, with the consequent potential to disrupt the ecological balance in the communities they ‘invade’ (Barnes 2002; Gregory 2009; GESAMP 2010).

Marine litter adds another stress factor to oceans which are already facing the adverse impacts of climate change, such as rising sea levels, increase in water temperature and acidification. The resilience capacity of marine organisms and ecosystems to adapt to climate change can be negatively affected.

Finally, mechanical beach cleaning, involving raking and use of heavy machinery, may compact beach sediment, disturbing fauna and potentially hindering nesting activities of birds and turtles (Gregory 2009).

2.3. Economic and social impacts

Information on the *economic impacts* of marine debris is relatively scarce. Some reports indicate the economic impacts of marine litter on coastal communities (Brink *et al.* 2009; Mouat *et al.* 2010). For example, UK municipalities spend approximately €18 million each year removing beach litter; a 37% increase in cost over the past 10 years. Similarly, removing beach litter costs municipalities in the Netherlands and Belgium approximately €10.4 million per year. One of the major economic issues driving the need for clean-up operations is the aesthetic impact on tourist beaches.

⁴ Plastic Waste in the Environment, revised final report, European Commission, April 2011, <http://ec.europa.eu/environment/waste/studies/pdf/plastics.pdf>

⁵ To measure marine pollution, the OSPAR convention for example inspected the stomach contents of Northern Fulmars found dead on the Northern Sea coastline. The Fulmar is a bird that only feeds at sea and usually does not regurgitate indigestible items. Almost every Fulmar had plastic in its stomach, with an average of around 0.3 grams per bird. Fulmars beached in the most polluted parts of the southern North Sea had double this amount.

The direct costs to the fishing industry are also important, including: loss of fish stocks due to ghost fishing⁶; spoiled catches through contamination with debris such as paint and oil; damage to nets and to propellers, entangled in litter, resulting in lost operating time and time spent cleaning nets.

Given that the coasts and oceans provide food and tourism opportunities, aesthetic, economic and environmental issues caused by marine debris can have wider social impacts, especially where the livelihood and health of local coastal communities are affected.

In particular, marine debris can affect human health and safety (Brink et al. 2009; Mouat et al. 2010):

- Solid waste associated with sewage such as sanitary towels, condoms and cotton buds, degrades the quality of the bathing water and may present a health risk;
- Hazardous materials such as medical wastes, syringes, glass and other sharp and/or dangerous (munitions) items that are washed-up on beaches result in direct risks to beachgoers. Swimmers, divers and snorkelers can become entangled in submerged or floating debris;
- Contamination of food is a concern where commercially important fish and shellfish have ingested (micro) plastics. At present however, there is no evidence of an associated risk for human health;
- Entanglement of propellers and other direct damage to vessels has resulted in a substantial number of marine rescues: marine litter therefore also presents a safety issue for mariners.

3. POLICIES/LEGISLATION IN PLACE WITHIN EU

A broad range of EU policies and legislation relate to marine litter, addressing both its sources and impacts. This includes EU environmental legislation relating to waste management, urban wastewater or pollution from ships. Waste management legislation should be seen in the broader context of enhanced resource efficiency, now a key cross-cutting policy goal. The EU's resource efficiency policy should have a beneficial upstream impact by influencing the use and design of plastic products and particularly of packaging. In terms of legislation dealing with the impacts of marine litter on the coastal and marine environment, the EU Integrated Maritime Policy (IMP) and the Marine Strategy Framework Directive as its environmental pillar address the development of sea-related activities in a sustainable manner.

3.1. Legislation and policies addressing sources

3.1.1. *Resource efficiency and waste prevention*

Resources need to be managed more efficiently throughout their life cycle, with a view to minimising impacts and use of goods and services across all life cycle stages. This begins with raw material extraction and conversion, then manufacture and distribution, use and/or consumption, through to re-use, recycling of materials, energy recovery and ultimate disposal.

The European Commission published a report on the Member States' performance in the prevention and recycling of waste showing that in most Member States overall waste generation seems to be increasing only but at a lower rate than economic growth. More could be done, therefore, to reduce the

⁶ 'Ghost fishing' is the term used for lost or abandoned fishing gear that continues to catch fish. It is environmentally detrimental and the fish caught is wasted.

absolute generation of waste. In order to move closer to absolute decoupling of economic growth and waste generation, under the EU's Waste Framework Directive⁷, Member States must establish waste prevention programmes by December 2013. The European Commission is currently finalizing guidelines for the Member States to assist them in creating such programmes.

Avoiding waste (and thus the loss of raw materials) and using the remaining waste as a secondary resource, will help to make Europe a 'resource efficient economy', which is one of the objectives of the Europe 2020 Strategy. That Strategy incorporates seven flagship initiatives, including one on resource efficiency, for which the Commission Communication "A resource efficient Europe" provides a long-term framework for action. Concrete actions are set out in the European Commission's Roadmap to a Resource Efficient Europe. Contributing to marine litter strategies in all four EU marine regions is among these actions. Furthermore, a reduction in material usage during product manufacture will lead to a direct reduction in the amount of end-of-life material accumulating in the environment (see also below in box in section 3.2.2).

The issue of plastic bags in the environment has received particular attention. In March 2011 EU Environment Ministers discussed the highly negative impact on the environment of single-use plastic bags. They recognised that effective EU action is needed and the Commission was invited to analyse possible regulatory action with regard to the use of plastic bags. Subsequently, from May to August 2011 the Commission ran a public consultation concerning the reduction of plastic bag use. At present, different possible policy options are considered in an impact assessment.

Another strategy that supports the objective of resource efficiency is the Raw Materials Initiative. The Commission Communication proposes a number of measures to improve how recycling markets work, thus contributing to a reduction of materials ending up in the waste stream.

Finally, in February 2012 the Commission published a Communication on the bio-based economy for Europe, contributing to the Europe 2020 flagship initiatives "Innovation Union" and "A Resource Efficient Europe". This communication encompasses, amongst others, the conversion of waste streams into value added products and it recognizes the need to provide to citizens more information about product properties and impacts of consumption patterns and life style in order to enable response and informed choices. Some bio-based products can be bio-degradable or highly bio-degradable (by micro-organisms) or compostable or highly compostable (under composting conditions). The accompanying Action Plan for Bio-based Products foresees actions ranging from improving the implementation of the present targets for bio-based products over standardisation, labelling and certification to ensure the quality and consumer information on the new products to harnessing the purchases of public authorities to set the example. Moving to a bio-based economy may hold the potential of creating less waste that ends up in the marine environment and may increase the use of products with less lasting impacts on our oceans.

3.1.2. Waste management

Given that in most sea regions, approximately 80% of marine litter is estimated to come from land, marine litter is part of the broader problem of waste management. Plastics are a key component of marine litter, and most plastics are used for packaging: thus, EU legislation in this area is important, and improving its implementation has a major potential to reduce the marine litter problem.

⁷ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, *OJ* 2008 L 312/3.

The Waste Framework Directive

The Waste Framework Directive sets out essential conditions for waste management and concerns all waste. It has thus a direct influence on marine litter.

The Directive introduces a binding waste hierarchy, defining the order of priority for treating waste. Top of the list is waste prevention, followed by re-use, then recycling and then other recovery operations, with disposal such as landfill to be used only as the last resort. Beyond establishing waste prevention programmes by 2013, Member States must set up separate collection systems by 2015 as a minimum for paper, metal, plastic and glass. Member States must prepare for re-use and recycle 50 % by weight of at least paper, metal, plastic and glass from households, and possibly also from other origins as far as these waste streams are similar to waste from households and 70% of construction and demolition waste by 2020. This Directive thus establishes key principles and requirements for the management of plastic packaging waste. The Directive introduces a procedure for defining end-of-waste (EoW) criteria: criteria that a given waste stream must fulfill in order to cease to be defined as waste. The Commission, supported by the Technical Working Group on Waste Plastic, composed of experts from Member State administrations, industry, NGOs and academia, is also preparing end-of-waste criteria for plastic waste. Setting standards of equivalency between virgin material and recycled material through these criteria, is expected to provide a strong stimulus to industry to attune plastic production to achieving high recycling rates.

The Packaging and Packaging Waste Directive

The Directive⁸ sets a range of requirements to reduce the impact of packaging and packaging waste on the environment. It contains provisions on the prevention of packaging waste, on the re-use of packaging and on the recovery and recycling of packaging waste. Prevention of the production of packaging waste is the first priority.

The Directive requires Member States to ensure that preventive measures are implemented by, for example, national programmes, extended producer responsibility programmes, and to develop packaging reuse systems for the reduction of the impact of packaging and packaging waste on the environment. In addition, the Member States must introduce systems for the return and/or collection of used packaging to attain a set of targets (see the box below).

Packaging waste targets and requirements

- by no later than 30 June 2001, between 50 and 65% by weight of packaging waste to be recovered or incinerated at waste incineration plants with energy recovery;
- by no later than 31 December 2008, at least 60% by weight of packaging waste to be recovered or incinerated at waste incineration plants with energy recovery;
- by no later than 30 June 2001, between 25 and 45% by weight of the totality of packaging materials contained in packaging waste to be recycled (with a minimum of 15% by weight for each packaging material);
- by no later than 31 December 2008, between 55 and 80% by weight of packaging waste to be recycled;
- by no later than 31 December 2008, recycling targets for materials contained in packaging waste must be attained, *inter alia* 22.5% for plastics.

Moreover, the Directive sets requirements on the manufacturing and composition of packaging waste to enable its reuse, recovery and recycling. Member States must ensure that packaging placed on the market complies with the essential

⁸ European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, *OJ* 1994 L 365/10, as amended.

requirements of Annex II:

- to limit the weight and volume of packaging to a minimum in order meet the required level of safety, hygiene and acceptability for consumers;
- to reduce the content of hazardous substances and materials in the packaging material and its components;
- to design reusable or recoverable packaging.

Full implementation of the Directive by the Member States will play an important role in closing loopholes in the plastic packaging cycle, with important attendant benefits for the generation of marine litter.

The Landfill Directive

The Landfill Directive⁹ establishes technical requirements for the operation of landfills, with the goal of reducing their impact on the environment, including the pollution of surface water. This Directive, for example, requires that the location of landfill sites takes into account factors such as the proximity of water bodies and coastal waters and that wind-blown materials are minimised. Such measures should reduce potential dispersal of plastic packaging waste and other debris in the marine environment.

3.1.3. Implementation of the Directives

EU waste law is poorly implemented and enforced in many Member States, in particular with regard to the Waste Framework and Landfill Directives¹⁰. Problems include the lack of waste treatment infrastructure and of separate waste collection as well as heavy reliance on landfilling (especially in the newer Member States) and a high number of inappropriate landfills in the EU¹¹. As for packaging recycling, the EU target for Member States to achieve 22.5% by 2008 remains in effect today. Several Member States already achieve much higher targets (up to 80 %), while others do not yet meet the 2008 target. Another indicator of poor implementation is that on average about 20% of all environmental infringement cases are waste-related, including a number of horizontal cases covering a sometimes high number of individual cases of non-compliance, e.g. thousands of illegal landfills.

The Commission will therefore continue to support the Member States in improving implementation. Support given by the European Commission consists of awareness-raising and information exchange events, guidance documents for Member States and inspection activities in Member States in close co-operation with the EU network for the implementation and enforcement of environmental law (IMPEL). The European Commission is also financing the closure of sub-standard landfills and the construction of new landfills. The European Commission will consider what other means could be applied to foster progress in achieving and exceeding the requirements and targets.

To address all relevant public policy challenges resulting from the rapid growth of the volume of plastic waste in the environment and its disposal, the Commission will continue to reflect on ways which will help reassessing the environmental and human health risk of plastic products when they become waste, addressing their environmentally sound design, both, functionally and chemically, and

⁹ Council Directive 99/31/EC of 26 April 1999 on the landfill of waste, OJ 1999 L182/1.

¹⁰ The overall state of implementation of EU waste legislation is outlined in the latest Commission implementation reports, published in November 2009 and referring to the period 2004-2006 (the latest period for which Member State implementation reports are available).

¹¹ Approximately 1000 substandard landfills have been identified by the Commission as sub-standard landfills to be upgraded or closed as soon as possible.

launch a reflection process on how to tackle the problem of plastic waste in the environment avoiding its uncontrolled disposal.

A European Commission study to assess the environmental threats stemming from plastic waste (European Commission, 2011) presents five policy options that could be pursued to address them, analysing the most promising three of these in more detail, that is sustainable packaging guidelines, agricultural plastic recovery and recycling guidelines and recycled plastics and bioplastics phasing targets.

3.1.4. *Urban Wastewater Treatment*

The *Urban Waste Water Treatment Directive*¹² requires that all sewerage discharges serving populations over 10,000 in coastal areas and 2,000 in estuarine areas, must receive secondary (biological) treatment prior to discharge. This Directive is relevant because discharge of urban waste water is one of the sources of marine litter. Sewage related marine debris includes, among other things, sanitary towels, tampons and plastic cotton wool bud sticks. In pre-treatment, stones, sand and other relatively large elements are removed; in this particular case, retained particles may range between 200 µm and even be above 100 mm of diameter. Micro-plastics and fibers from clothes washing might pass the waste water treatment plant. Also storm water overflows may be a significant source.

3.1.5. *Pollution from ships*

The EU has adopted a set of rules to reinforce maritime safety and help prevent pollution from ships:

- the Ship-source Pollution Directive (2009/123/EC);
- the Port Reception Facilities Directive (2000/59/EC).

These Directives also aim to incorporate international ship-source pollution standards into EU law. These international standards are described in the box below.

MARPOL 73/78 (The International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto) is the main international convention for the prevention of pollution from ships. It forbids dumping at sea, as does the London Convention. MARPOL 73/78 regulates operational vessel-source pollution generated during normal operation of ships, including pollution by garbage through its Annex V Regulations. These Regulations include a ban on discharge of all garbage into the sea, except if expressly provided otherwise¹³. MARPOL 73/78 imposes an obligation on the Parties to provide facilities for the reception of ship-generated residues and garbage (that cannot be discharged into the sea) and includes requirements on the delivery of ship-generated waste and cargo residues, at port reception facilities. In 2006, the IMO launched its "Action Plan on tackling the inadequacy of port reception facilities".

The London Convention 1972 and the 1996 Protocol thereto aims to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping at sea of wastes and other matter generated on land.

¹² Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment, *OJ* 1991 L 135/40, as amended.

¹³ The discharges permitted in certain circumstances include food wastes, cargo residues and water used for washing deck and external surfaces containing cleaning agents or additives which are not harmful to the marine environment, as amended in July 2011.

The European Maritime Safety Agency (EMSA)¹⁴ assists the Commission and Member States in monitoring the proper implementation of EU legislation on pollution by ships.

¹⁴ Regulation 1406/2002 of the European Parliament and of the Council of 27 June 2002, *OJ* 2002 L 208/1, as amended.

The Ship-source Pollution Directive

The Ship-source Pollution Directive¹⁵ transposes into EU legislation the standards introduced by MARPOL 73/78 relating to the prohibition of polluting discharges into the sea, and specifies the sanctions to be imposed. The Directive requires Member States to consider discharges of polluting substances from ships in all sea areas, including the high seas, as a criminal offence if they are committed with intent, recklessly or by serious negligence. Minor discharges are infringements, but shall not automatically be considered as criminal offences, except where their repetition leads to deterioration in the quality of the water, including in the case of repeated discharges. Ship-source polluting discharges relate to discharges of substances covered by Annexes I (oil) and II (noxious liquid substances in bulk) to MARPOL 73/78.

The Directive provides for co-operation between port State authorities, which should make it possible for proceedings to be initiated in the next port of call. Furthermore, it aims at enhancing co-operation among Member States to detect illegal discharges and develop methods to identify a discharge as originating from a particular ship.

The Port Reception Facility Directive

The Port Reception Facility Directive¹⁶ (PRFD) aims to reduce discharges of ship-generated waste and cargo residues into the sea, especially illegal discharges, by improving the availability and use of port reception facilities in all EU ports. The Directive applies to all ships, including fishing vessels and recreational craft, irrespective of their flag¹⁷.

The Directive brings international requirements (MARPOL 73/78) into EU law and provides for additional obligations and mechanisms, especially the obligation on ports to develop and implement waste reception and handling plans, and the obligation on ships to deliver their waste at each port call within the EU.

This Directive addresses the legal, financial and practical responsibilities of the different operators involved in the delivery of waste and residues in ports. It provides for the implementation of a cost recovery system (applying a waste fee), that should provide no incentive for ships to discharge their waste at sea. All ships calling at a Member State port will bear a significant part of the cost (which the Commission interprets as meaning at least 30%), whether they use the facilities or not. This cost recovery system comprises this built-in, fixed element and, possibly, a variable element according to the amount and type of waste actually delivered.

The Commission is currently reviewing the PRFD with a view to achieving the objective of ‘zero discharges at sea’ from ships calling at EU ports, a key objective to further reduce ship-borne debris¹⁸. As part of the review of the Directive, EMSA was tasked to collect information on its implementation. The conclusions were overall positive but found that the current system is not optimal and that further progress could be achieved to achieve a greater protection of the marine environment. EMSA also

¹⁵ Directive 2009/123/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements, *OJ* 2009 L 280/52.

¹⁶ Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues, *OJ* 2000 L332/81

¹⁷ With the exception of any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service

¹⁸ Strategic goals and recommended actions for the EU's maritime transport policy until 2018, COM(2009) 8 final

conducted a study into the availability and use of port reception facilities to support the revision process¹⁹. A new legislative proposal is planned for 2013.

3.1.6. Enhancing enforcement of marine pollution related legislation

Enforcement of marine pollution rules is a challenging and complex task, given that it is physically impossible to inspect all ships (and thus to catch offenders red handed). It is also very difficult at sea to detect whether a ship has dumped plastic and other waste illegally. Surveillance activities are carried out by Member States but most of the activities and threats they address are transnational by nature. Enforcement can be strengthened by increasing co-operation between the national enforcement authorities, including national coastguard services, creating ways to exchange information and data.

Synergies at EU level regarding certain coastguard functions. In order to meet the objectives of the Integrated Maritime Policy, the Commission is promoting improved cooperation between Member States' coastguards and appropriate agencies. The Commission's feasibility study regarding European coastguard functions provides preliminary conclusions to support EU level reinforcement of synergies between certain coastguard functions, notably maritime safety and maritime law enforcement, including environmental protection and pollution control laws.

Integrated maritime surveillance aims to provide authorities active in maritime surveillance with ways to exchange information and data. For example, improved information sharing between environmental and pollution prevention and response authorities with maritime traffic or control authorities, would enable better prevention, interception or clean-up of different pollution at sea. Sharing data would also help avoid duplication of data collection.

Six coastal EU Member States have already joined BLUEMASSMAED, an EU funded project to enhance co-operation and information exchange among national authorities responsible for monitoring and surveillance at sea, which will contribute to more coherent maritime surveillance throughout the Mediterranean. Another pilot project, MARSUNO, encompasses the Northern Sea basin. The project initiated by the Commission counts 24 authorities from ten countries as partners.

3.1.7. Building cooperation with stakeholders

The European Commission is developing partnerships with specific industries, for example with the tourism industry. The Commission adopted an 'Agenda for sustainable and competitive European Tourism, which builds on the February 2007 recommendations of the Tourism Sustainability Group (TSG). One of the challenges identified by the TSG, which gathered also experts from industry associations, was the reduction and management of litter. Further work in this area will be carried out under the Blue Growth Strategy and its focus area of maritime, coastal and cruise tourism.

Other examples of such partnerships include the Retail Forum and the European Food Sustainable Consumption and Production Roundtable.

The Retail Forum was launched in 2009 and is co-chaired by the European Commission and retailers, represented by Eurocommerce and the European Retail Round Table (ERRT). Retailers are in an exceptional position to promote more sustainable consumption not only via their daily contact with millions of European consumers but also through their own actions and their partnerships with suppliers. The first 3 year period of the forum is nearing its end and its functioning and results will be

¹⁹ EMSA/OP/06/2011

evaluated. Issues discussed in 2011, on which issue papers were published, include “waste minimisation” and “packaging optimisation”. Marine litter could be one of the topics covered in the next phase of the Retail Forum. Synergies between these aspirations and targets to reduce marine litter could be utilised to help facilitate progress in the next phase of the Retail Forum. The European Retail Action Plan will build on the experience of the Retail Forum to develop some initiatives for a more sustainable retail supply chain.

The European Food Sustainable Consumption and Production Roundtable is an initiative co-chaired by the Commission and food supply chain partners and supported by the UN Environment Programme and the EEA. It counts 24 member organisations representing the European food supply chain as well as consumer organisations and environmental NGOs. Working Group 3 focuses on ‘continuous environmental improvement’ to ensure the environmentally sustainable production and consumption of food and drink products. It is preparing a report to give particular recommendations on food waste and food packaging.

3.2. Legislation and policies addressing impacts

3.2.1. *The Integrated Maritime Policy (IMP)*

The prime objective of the Integrated Maritime Policy (IMP)²⁰ for the EU is to maximise the sustainable use of the oceans and seas while enabling growth of the maritime economy and coastal regions. Environment is a key component of the IMP. The European Commission commits, among other things, to take steps against discharges into the sea. A European network for maritime surveillance is one of the tools that can help to address such discharges and that the Commission will further develop jointly with the Member States. Other tools that the IMP refers to are Maritime Spatial Planning and Integrated Coastal Zone Management which can help through integrated planning to reduce the negative environmental impact of economic activities carried out in the marine and coastal areas. These activities include tourism, fishing and maritime transport, all sources of marine litter. The marine knowledge 2020²¹ initiative aims to improve access to data on the sea, including the distribution and composition of marine litter. Work is underway to provide an initial service by the end of 2014.

3.2.2. *The Marine Strategy Framework Directive*

The EU’s Marine Strategy Framework Directive (MSFD) 2008/56/EC²² is a key element in Europe’s actions to address marine litter. It is also the environmental pillar of the IMP. The Directive calls for the development and implementation of strategies by Member States so that all of the EU’s marine regions and sub-regions attain ‘Good Environmental Status’ (GES) by 2020. GES is defined by means of eleven qualitative ‘descriptors’. Descriptor 10 relates directly to marine litter: “*Properties and quantities of marine litter do not cause harm to the coastal and marine environment*”.

²⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on an *Integrated Maritime Policy for the European Union*, COM(2007) 575 final of 15 October 2009

²¹ Green Paper Marine Knowledge 2020 from seabed mapping to ocean forecasting COM(2012) 473 final

²² Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ 2008 L164/19.

The MSFD also urges the creation of a network of marine protected areas by 2012. As such, the MSFD is providing the overarching framework for a number of other key Directives, including the Habitats Directive²³, the Birds Directive²⁴ but also the Water Framework Directive²⁵.

To achieve GES, each Member State must progressively put in place its own Marine Strategy to protect the seas. By 15 July 2012, Member States had to make an initial assessment on the state of the marine environment and define 'Good Environmental Status' (GES) together with environmental targets and associated indicators. By 15 July 2014, they should have put a monitoring programme in place and by 2015, they should have their Marine Strategies in place.

On 1 September 2010, the European Commission adopted a Decision (2010/477/EU) outlining the criteria to be used by Member States in the context of the MSFD to assess the environmental status of their seas. The two criteria and four indicators relating to marine litter are:

10.1 Characteristics of litter in the marine and coastal environment

- *Trends in the amount of litter washed ashore and/or deposited on coastlines, including analysis of its composition, spatial distribution and, where possible, source (10.1.1)*
- *Trends in the amount of litter in the water column (including floating at the surface) and deposited on the sea-floor, including analysis of its composition, spatial distribution and, where possible, source (10.1.2)*
- *Trends in the amount, distribution and, where possible, composition of micro-particles (in particular micro-plastics) (10.1.3)*

10.2 Impacts of litter on marine life

- *Trends in the amount and composition of litter ingested by marine animals (e.g. stomach analysis) (10.2.1).*

A dedicated task group for Descriptor 10 was among the expert groups organised by the European Commission together with the International Council for the Exploration of the Sea (ICES), which compiled needs and recommendations in preparation of the Commission Directive 2010/477/EU (Galgani et al. 2010).

GES means that marine litter should not harm the coastal and marine environment. This includes impacts on the environment but also social and economic impacts. It is recognised that there is still a need for further development of several indicators, notably those relating to biological impacts and micro-particles, as well as for the enhanced assessment of their potential toxicity.

Co-operation

Member States must co-operate among themselves and also with neighbouring countries, where possible within Regional Sea Conventions. The implementation of the MSFD is closely linked to these Conventions (see the box below).

²³ Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora of 21 May 1992, *OJ* 1992 L 206/7.

²⁴ Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds, *OJ* 2010 L 20/7.

²⁵ Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy, *OJ* 2000 L327/1.

Europe's four regional seas are each governed by a regional sea convention:

The Mediterranean Sea: Parties to the 1995 Barcelona Convention are: Albania, Algeria, Bosnia/Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Montenegro, Slovenia, Spain, Syria, Tunisia, Turkey and the EU.

The Baltic Sea: Parties to the "Convention on the Protection of the Marine Environment of the Baltic Sea Area" (the Helsinki Convention or HELCOM) are: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden and the EU.

The North-East Atlantic: The 15 countries that are Parties to the 1992 OSPAR Convention, together with the EU, are all EU Member States, with the exception of Switzerland and Iceland.

The Black Sea: Parties to the 1992 Bucharest Convention for the Black Sea are Romania, Bulgaria, Georgia, Russia, Turkey, and Ukraine. The EU is an observer, but not yet a contracting party to the Bucharest Convention.

The Regional Seas Conventions together with the Action Plans adopted by them, also play a fundamental role in the implementation of the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). Litter is one of eight contaminant categories of the GPA-Marine. The Barcelona and the Bucharest Conventions have Protocols to address land-based activities and sources of pollution (LBS/A). The COP of the Barcelona Convention recently (February 2012) adopted a strategy on marine litter which will be translated into an action plan. OSPAR is also developing a regional action plan on marine litter.

Within OSPAR, two years ago a discussion was held on a proposal by one of the stakeholders to reduce marine litter by 40 % in 2020. The final version of the Ministerial declaration of OSPAR 2010 states: 'We note that quantities of litter in many areas of the North-East Atlantic are unacceptable, and therefore we will continue to develop reduction measures and targets, taking into consideration an ambitious target resulting in a reduction in 2020' (OSPAR 2010).

Supporting the implementation of the MSFD

The Technical Subgroup on Marine Litter (TSG ML)²⁶ was established in 2010 to support Member States in harmonizing monitoring protocols and streamlining monitoring strategies across the EU. The TSG ML has developed an overview of existing data and methodologies for the monitoring of marine litter, as required by the MSFD. This 'Toolbox' of monitoring tools provides a first set of methodologies for application by the Member States for starting marine litter data collection. It underlined both the seriousness of the issue and the urgent need for further coordinated research to ensure a common approach to monitoring and mitigation. The group continues to work on, amongst others, the standardisation of monitoring, estimating the costs involved and assessing the harm done by marine litter.

In order to prevent items becoming marine litter, it is important to tackle the problem at the source (see section 3.1). In the first two of the four indicators under Descriptor 10 (litter on coastlines, litter in the water column and on the sea floor), sources of litter are referred to. These indicators are important for source identification because monitoring of these compartments of the marine environment will

²⁶ The experts of the TSG ML are nominated by the Member States and stakeholders and report to the WG GES, the Marine Strategy Co-ordination Group, and the European Marine Directors.

provide the greatest amount of information on individual litter items that can be linked back to sources of litter. In order to develop operational targets, linked to measures, it is important to identify the main sources of litter in a region or sub region so that they can be addressed by appropriate measures.

Targets could be useful to allow monitoring the success of the measures to prevent marine litter from entering the seas. In particular, they could become an effective success indicator for the implementation of relevant EU policy, on particular on waste management. One element which often appears in this discussion is the lack of a proper baseline. According to the TSG ML, for litter on beaches appropriate monitoring is already in place in some regions. The group proposed that a measurable and significant reduction goal for marine litter by 2020 is adopted. Reductions in the amount of marine litter reaching the sea in the order of 50% per decade may be a feasible target when adequate measures are taken (JRC 2011).

The European Commission has recently launched three studies to gather information, help implement the MSFD requirements on marine litter and further develop the policy framework for marine litter. The results from all three studies should be available early 2013. These studies complement the initiatives taken by the Commission to support more fundamental research funded under the 7th Research Framework Programme in order to increase the knowledge base on marine litter as detailed in chapter 4.

The *Feasibility study on introducing instruments to prevent littering* will identify best practices for the prevention of plastic litter as well as its clean-up, and assess the feasibility of options to prevent littering and increase public awareness.

The *Study on the largest loopholes within the flow of packaging material* will look at the stages of the plastic packaging cycle where waste could become litter in the marine environment. It will focus on Member States where the recycling of plastic packaging lags behind EU targets, as well as several third countries in the southern Mediterranean.

The third study is entitled *Pilot project - plastic recycling cycle and marine environmental impact - Case studies on the plastic cycle and its loopholes in the four European regional seas areas*. Case studies will be carried out in four marine regions to identify the types of marine litter and their possible sources.

3.2.3. Integrated Coastal Zone Management

The Integrated Coastal Zone Management (ICZM) Recommendation²⁷ defines the principles of sustainable management and use of coastal zones. These include the need to base planning on sound and shared knowledge, the need to take a long-term and cross-sector (e.g. tourism, fisheries) perspective, to pro-actively involve stakeholders and the need to take into account both the terrestrial and the marine components of the coastal zone. ICZM can help reducing the negative environmental impact of activities carried out in the coastal areas, including those activities which are sources of marine litter. The European Commission carried out a review of the ICZM Recommendation, with a view to presenting a follow-up proposal, together with an initiative on Maritime Spatial Planning in 2013.

²⁷ Recommendation 2002/413/EC of the European Parliament and of the Council of 30 May 2002 concerning the Implementation of Integrated Coastal Zone Management in Europe, OJ 2002 L 148/24.

The European Commission's ICZM Database²⁸ compiles over 350 case studies of successful application of ICZM tools throughout Europe, including case studies related to marine litter management.

In 2010, the EU took a significant step forward in strengthening the legal framework for ICZM in the Mediterranean, with the ratification of the ICZM Protocol to the Barcelona Convention.

3.2.4. *Water Management*

The Water Framework Directive (WFD)²⁹, adopted in 2000, calls for surface water bodies (including coastal waters) to be ecologically sound by 2015 thus contributes to the goal of the MSFD.

The *WFD* requires that Member States establish river basin districts together with a river basin management plan for each of them. The Directive envisages a cyclical process in which river basin management plans are prepared, implemented and reviewed every six years. There are four distinct elements to the river basin planning cycle: characterisation and assessment of impacts on river basin districts; environmental monitoring; the setting of environmental objectives, and; the design and implementation of the programme of measures needed to achieve them. Measures could relate to litter as it has an impact on water quality. A Communication on the assessment of the river basin plans is expected at the end of 2012.

The *Bathing Water Directive* aims to guarantee bathing water quality, which may be threatened by pollution. In particular, the Directive provides that bathing waters must be inspected visually for pollution such as tarry residues, glass, plastic, rubber or any other waste as part of the beach profile. In case such pollution is identified, adequate management measures must be taken. All bathing waters in the EU must be at least of sufficient quality by the end of the 2015 bathing season. If quality is poor and/or when waste is visually detected, Member States must adopt the necessary measures to manage and reduce pollution, and to protect and inform bathers.

4. RESEARCH AND AWARENESS RAISING

In addition to the range of initiatives and projects directly aimed at reducing marine litter by supporting implementation and enforcement of policies and legal requirements, a number of initiatives and projects encouraging synergies and coordination, focusing on improving the knowledge base and raising awareness through information are underway in the EU. Annex 1 provides information on some financing opportunities for funding projects addressing the issue of marine litter.

4.1. Building co-operation, co-ordination and synergies

The European Commission organised a workshop on marine litter in Brussels on 8 November 2010, bringing together the main players, such as policy-makers, NGOs, the science community and the (plastics) industry. In a results-oriented and open discussion, stock was taken of the state of the marine environment with regard to marine litter and the latest scientific insights of its (potential) effects. Possible solutions to the marine litter problem were also explored. A high level follow-up meeting is planned for 2013.

²⁸ <http://ec.europa.eu/ourcoast>

²⁹ Directive 2000/60/EC of the European Parliament and of the Council for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater, *OJ* 2000 L 327/1, as amended.

4.2. Increasing the knowledge base

The Strategy for Marine and Maritime Research³⁰ aims to provide the interdisciplinary knowledge base necessary to underpin the EU Maritime Policy. One of the drivers of the Strategy is the increasing environmental pressures of pollution. The 7th Research Framework Programme (FP7) is the main EU instrument to support achievement of the objectives of the Strategy. One of the key initiatives regarding seas and oceans in FP7 is ‘The Ocean of Tomorrow’, which promotes a cross-cutting approach to marine and maritime research and in 2012 focused on research gaps in the definition and monitoring of the Good Environment Status (GES) of EU waters. Projects directly relevant for marine litter, and expected to start in autumn 2012, include the following:

- A project on contaminants in seafood and their impact on public health will have marine litter, especially micro-plastics, as one of its components (ECsafeFOOD).
- A project will look at biotechnological solutions for the degradation of synthetic polymeric materials (BIOCLEAN).
- A project on the management and potential impacts of litter in the marine and coastal environment will provide estimates of the quantities of marine litter and develop descriptions of its composition and distribution, including the rates of fragmentation of micro-particles (CLEANSEA). The project will also contribute to the identification of barriers to achieving GES and to the development of policy options and management strategies.
- Another project will synthesise scientific knowledge to improve the understanding of GES, including the descriptor 10 on marine litter (STAGES).

Furthermore, the FP7 projects HERMIONE (Hotspot Ecosystem Research and Man's Impact On European Seas) and ‘PERSEUS’ (Policy-oriented marine environmental research for Southern European seas) have identified the problem of marine litter in respectively European deep-water ecosystems and the Southern European Seas, and will provide a clearer picture of the extent and severity of the problem as well as public campaigns in order to raise the attention to marine debris and coastal litter.

4.3. Raising awareness, information and education

4.3.1. Fishing for litter

Beyond efforts to reduce the input of plastic to the ocean, action also needs to be taken to clean up what is already in the seas. Efforts currently underway are largely the preserve of fishermen since the marginal costs to them of picking up litter that appears in their nets during the course of fishing, storing the litter on board and returning them to port are low. This type of activity started as an awareness raising exercise and has now further developed into a more structural picking up of marine litter although it should be recognized that its capacity is still limited compared to the amounts flowing into and discharged at sea. Bottom trawling operations collect most litter, which is often also related to fishing activities (nets, ropes, chains, boots, etc.). Fishing boats targeting species that live near the surface have collect less. Furthermore it is clear that this scheme is not appropriate for the small

³⁰

Commission Communication A European strategy for marine and maritime research: a coherent European research area framework in support of a sustainable use of oceans and seas, COM(2008) 534 of 3 September 2008.

fragments of plastic that can be ingested by marine life. The fishermen's nets are far too coarse-meshed.

The European Commission is promoting Fishing for Litter initiatives, which are taking place in many locations and which are recommended under the OSPAR Convention. As such, it has financed a 'Fishing for Litter' initiative through the INTERREGIIIb³¹ project 'Save the North Sea', whose final report was published in 2007. NABU, a German environmental NGO, launched its first 'Fishing for Litter' project in the Baltic Sea in 2011 in which fishing vessels bring ashore litter caught in their nets as part of their fishing activities. While the quantities removed are generally trivial in relation to inputs, these initiatives have significant merits in terms of raising awareness.

Other types of fishing for litter projects are picking up discarded fishing nets and specific litter fishing trips. There are a number of pilot projects, mainly in the Mediterranean Sea for these specific fishing trips which focus on collecting floating litter in hot spots. The effectiveness and environmental impacts of these activities are as yet unknown. These schemes are eligible for funding from the European Fisheries Fund and indeed some have been. However, it is entirely the decision of the Member State concerned whether or not to take up this offer. The Commission's proposal for a European Maritime Fund for 2014 onwards maintains this possibility. A study assessing the different types of litter fishing and determining the conditions under which they would be most effective and efficient, is in preparation for implementation in 2012/2013. Annex 2 gives more information on this type of activity.

4.3.2. *Promotion of green purchasing of products and services*

Green purchasing is the practice of choosing environmentally-friendly products and services, but it is also about influencing the market. By promoting green purchasing, the European Commission can provide industry with real incentives to cut solid waste.

The **Ecolabel Scheme** is a voluntary scheme, established in 1992 to encourage businesses to market products and services that meet certain environmental criteria. Packaging aspects are also included among the award criteria and as such, the Ecolabel Scheme can help to reduce the negative environmental impact of packaging, which is an important component of marine litter. Products and services awarded the Ecolabel carry the flower logo, allowing consumers - including public and private purchasers - to identify them easily.

The Commission is developing a harmonized methodology to enable Member States and the private sector assess, display and benchmark the environmental performance of products, services and companies based on a comprehensive assessment of their 'environmental footprint'. Performance criteria could include the recycled content and the recyclability of the product, including of plastic products. Information on the environmental footprint of a product could be incorporated into the Ecolabel Scheme.

Green Public Procurement (GPP) is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured.³² The

³¹ Under the European Regional Development Fund (ERDF).

³² Commission Communication *Public procurement for a better environment*, COM (2008) 400 of 16 July 2008.

European Commission has undertaken extensive action to promote GPP, including among other the development of a web-based toolkit³³ designed for use by public purchasers and by GPP trainers or for integration in general public procurement training courses and workshops. The European Commission has also successfully encouraged Member States to draw up publicly available National Action Plans for greening their public procurement. Public authorities are major consumers. By using their purchasing power to choose products and services with lower impacts on the environment (for example cutlery and crockery which can be used more than once), they can make a contribution to solving the marine litter problem.

The Commission is also promoting **green purchasing by private consumers**, through Dolceta, an on-line consumer education site with 27 country versions in 21 languages, financed by the European Commission. It offers information on a range of consumer issues in a user friendly and accessible way, including the environmental impact of disposable products and one-way packaging.

4.3.3. Other initiatives to raise awareness and facilitate dialogue between stakeholders

There is a pressing need for education to prevent waste generation and reduce littering. Waste reduction is the responsibility of the authorities but also of the citizens. In this regard, the European Commission launched an EU campaign on 17 October 2011: 'Generation Awake. Your choices make a world of difference!' aiming to raise awareness about the need to use scarce natural resources wisely and to encourage citizens to think about their impact on the planet when purchasing.

Specifically on marine litter, MARLISCO (MARine Litter in Europe Seas: Social Awareness and CO-Responsibility) is a Mobilisation and Mutual Learning Action Plan, which aims to increase the awareness of the consequences of societal behaviour in relation to waste production and the management of marine systems and to promote co-responsibility among different actors. MARLISCO engages 20 partners from 15 countries and is running from 2012 to 2015. The project is financed under the 'Science in Society' programme in the Seventh Framework Programme for Research (FP7).

Clean-Up Day could be a good way to raise public awareness and collect data on the abundance of debris on shorelines. The European Commission is looking into ways to organise an annual European Clean-Up day that builds upon existing initiatives. An overview of existing clean-up activities is provided in Annex 2.

4.3.4. Eye on Earth

The recent European Environment Agency report on the *State of the Environment 2010* briefly reviewed marine litter in its thematic assessment of the marine and coastal environment. With the objective of improving information and knowledge sharing on marine litter across Europe, the EEA is establishing in 2012 an indicator on trends in marine litter. It will focus initially on beach litter, building on existing and available data and information at a regional sea level, but with the purpose of it being further updated or expanded (e.g. floating litter or on the seabed) once new and relevant data or information are available (in particular from the Marine Strategy Framework Directive monitoring activities).

With the purpose of exploring new and innovative tools to help fill environmental data gaps around Europe, the EEA is planning to offer the Eye on Earth (EoE) Global Public Information Network

³³ http://ec.europa.eu/environment/gpp/toolkit_en.htm

(www.eyeeonearth.org) and its environmental watches, to explore and test a citizen-science based approach to collecting quality assured marine litter data. EoE is the result of a partnership between EEA together with technology leaders, representing a good practice for implementing the principles of a Shared Environmental Information System (SEIS) for Europe

The main aims are: 1) To help filling data gaps by delivering beach litter monitoring data sets that can be used for the Marine Strategy Framework Directive (MSFD) monitoring purposes and EEA State of the Environment Assessments; 2) To explore the benefits of involving citizens in the collection and monitoring of marine litter, especially from a cost-effectiveness perspective; and 3) To involve and engage government bodies, industry and citizens in a collective approach to managing marine litter, and raising awareness at appropriate levels. The development of the watch will build on the work developed by the TSG ML.

5. INTERNATIONAL ACTIONS

The EU promoted an ambitious and forward looking outcome³⁴ of the Rio +20 UN Sustainable Development Conference, which was held in Rio de Janeiro in June 2012. On the issue of marine litter, the Conference adopted (para 163) the following text relevant to marine litter: ' *We note with concern that the health of oceans and marine biodiversity are negatively affected by marine pollution, including marine debris, especially plastic. We further commit to take action to, by 2025, based on collected scientific data, achieve significant reductions in marine debris to prevent harm to the coastal and marine environment*'³⁵. The Commission is currently preparing proposals on the follow-up to the Rio Conference.

At regional level, the European Commission and the Member States are very active in the relevant Regional Sea Conventions (see section 3.2.2). The RSCs play a key role in facilitating harmonisation of monitoring approaches used to quantify marine debris and in disseminating good practices to reduce the quantity of debris entering the environment.

The EU also works directly with neighbouring countries through the European Enlargement Policy, the European Neighbourhood Policy and the Northern Dimension.

As a pre-cursor to the Rio+20 Summit, in 2011 the Honolulu Strategy was developed in the course of and after the 5th International Marine Debris Conference, organized by UNEP and the US National Oceanic and Atmospheric Administration (NOAA) Marine Debris Programme. No quantified targets are proposed but a more generic reduction objective is envisaged:

- Reduce the amount and impact of land-based sources of marine debris introduced to the sea.
- Reduce the amount and impact of sea-based sources of marine debris, including solid waste, lost cargo, abandoned, lost or otherwise discarded fishing gear (ALDFG) and abandoned vessels, introduced into the sea

Furthermore, the EU and its Member States participate in international technical bodies such as the working group on marine litter by GESAMP, the UN expert advisory group on marine matters. International dialogue is essential to address the transboundary dimension of marine litter. Besides, it

34 <http://www.uncsd2012.org/rio20/content/documents/240contribution%20of%20the%20EU%20and%20its%20MS%20to%20the%20UNCSD.pdf>

35 http://www.un.org/disabilities/documents/rio20_outcome_document_complete.pdf

is also critical for the EU to be conversant with and where appropriate to adopt good practices developed elsewhere and share ours.

6. CONCLUSIONS AND OUTLOOK

This overview shows the complex nature of the marine litter problem due to the fact that marine litter originates from a wide and diverse range of sea-based and land-based activities and sources. The international dimension is also crucial because Europe's seas are shared and marine litter can travel long distances. Today, marine litter is already a problem in all EU marine waters and negative environmental and socio-economic impacts are expected to increase throughout the EU in the years to come if no further action is taken.

There is already a broad range of instruments dealing with prevention and remedial measures (see chapter 3). Their main deficiency is their lack of implementation.

Considering that marine litter has very diverse economic, environmental, health and social impacts, a wide range of stakeholders are affected. Actions at all levels will be required: from local initiatives, awareness raising and clean-ups via legislative and policy support measures at national and regional level to commitments at a global level.

Furthermore, given the multiple sources of marine litter, many stakeholders are responsible for its generation and distribution: their awareness and engagement is key in tackling this problem effectively. In some cases it is difficult to identify and to assign responsibilities and to ensure that the costs associated with marine litter are largely borne by those parties which have caused the problem.

There is a lack of knowledge on the amounts, sources, pathways and distribution trends and impacts of marine litter, due to limited systematic regional measurements. A number of initiatives are underway to address this knowledge gap, in particular:

- On-going studies on the feasibility of introducing instruments to prevent littering, on the largest loopholes within the flow of packaging material and on the plastic recycling cycle and marine environmental impact looking at the types of marine litter and their possible sources in the four marine regions;
- Projects funded under the 7th Research Framework programme (see chapter 4.2);
- An EEA report on the state of Europe's coasts by the end of 2012, which will include an assessment of marine litter at the EU and regional level, based on existing information.

Together with the reports of the Member States in the context of the Marine Strategy Framework Directive³⁶ on the initial assessment and the determination of Good Environmental Status and environmental targets, this should allow developing a baseline for the EU in 2013 which could be used in further reflections about an EU-wide reduction target.

Furthermore, there is sufficient knowledge for Member States to set national targets, establish effective monitoring programmes and identify appropriate and cost-effective solutions in the next implementation steps under the Marine Strategy Framework Directive. The Commission will analyse

³⁶ http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/scoreboard_en.htm

the Member States reports and make recommendations if Member States do not take adequate action as part of its Implementation Report under Article 12 of the MSFD. Following this report, the progress in the implementation of the MSFD requirements will be monitored by the Commission and complemented with activities within the Common Implementation Strategy where Member States, through the Marine Directors, work together with the Commission on technical implementation questions and exchange of best practices.

In addition, there is a need for continued coordination at EU level which brings together ideas, initiatives, actions and knowledge of all relevant stakeholders, increases the efficiency and the effectiveness of the fight against marine litter and discusses progress made.

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ANNEX 1: FUNDING OPPORTUNITIES FOR MARINE LITTER PROJECTS

LIFE+

Between 1996-2008, LIFE+ funded several projects relevant for marine litter. These include 32 projects in the area of packaging, ranging from setting up a selective collection and recovery system for different packaging waste materials, application of new technologies for re-use and recycling of materials, awareness-raising campaigns or development of sustainable management strategies for the packaging and packaging waste industry. The current phase of the Programme LIFE+ runs from 2007-13. Examples of relevant projects include 3R FISH (Integral Management Model of recovery and recycling of the proper solid wastes from the fishing and port activities) (2009-2011) or the European Week for Waste Reduction,³⁷ which promoted the organisation of Clean-Up Days in November 2011.

FP7 and Horizon 2020

As already mentioned in section 4.2 Increasing the knowledge base, the FP7 programme and its follow up, Horizon 2020, provide possibilities to also address MSFD related topics, including marine litter.

The Competitiveness and Innovation Framework Programme (CIP)

Opportunities for funding for environmentally-friendly packaging are offered under the Entrepreneurship and Innovation Programme (EIP), a sub-programme of the CIP³⁸. This initiative is intended to help organisations that have developed an environmental product, service, management practice or process to penetrate the market and deploy it on a commercial scale.

Structural Funds

The structural funds comprise the Cohesion Fund, the Instrument for Pre-Accession Assistance (IPA), the European Social Fund, the European Regional Development Fund (ERDF) and the European Fisheries Fund (EFF).

The European Fisheries Fund (EFF) (2007-2013) provides funding to all sectors³⁹ of the fishing industry and coastal communities. Particular attention is given to fishing communities most affected by recent changes in the industry, including those related to reducing fish catches. The Commission has analysed how the present fisheries fund can support fishing for litter and the outcome of this analysis was presented to the European Fisheries Fund Committee on 20 October 2011. The main pathways are:

- (1) Axis 1: Measures for the adaptation of the Community fishing fleet which in Article 27 refers to activities funded including the diversification of activities with a view to promoting multiple jobs for fishers;

³⁷ www.ewwr.eu/en/

³⁸ <http://ec.europa.eu/cip>

³⁹ The fishing industry comprises the following sectors: sea and inland fishing, aquaculture (the farming of fish, shellfish and aquatic plants), and processing and marketing of fisheries products

(2) Axis 3: Measures of common interest with Article 37 on removing lost fishing gear from the sea bed in order to combat ghost fishing and Article 39 on supporting investments to restructure landing sites, including the storage and treatment of waste;

(3) Axis 4: Sustainable development of fishing areas with in Article 44 protecting the environment in fisheries areas to maintain its attractiveness, regenerating and developing coastal hamlets and villages with fisheries activities and protecting and enhancing the natural and architectural heritage.

There are a number of constraints in obtaining this funding – the main one being that the support is restricted to fishermen and fishing areas. Integration with funding from other sources is highly recommended and in most cases compulsory. Decisions as to whether or not these funding possibilities are in fact used are made at a Member State level.

There have been a number of initiatives under which fishermen have been encouraged to collect marine litter through financial incentives from regional or national authorities or on a voluntary basis. The EFF has supported some of these activities. The scope of the EFF for the purpose of fishing for litter has been widened in the proposal for the European Maritime and Fisheries Fund (EMFF) (2014-2020) recently adopted by the Commission. It is expected that marine litter initiatives will remain eligible for support.

INTERREG IVC (2007-2013), under the ERDF, provides funding for projects that promote exchange and transfer of knowledge and best practices among the European regions. The areas of support are innovation and the knowledge economy, environment and risk prevention. Four projects in the framework of the INTERREG IVC programme share good practices on waste prevention and on natural resources management. The Cradle to Cradle Network (C2CN) for instance, aims to reduce raw material utilisation, to generate less waste and less environmental pollution. The SufalNet4EU project identified best practices to support European countries in managing landfills in a document called the ‘Model Strategy for Landfill Redevelopment’. The Waste to Energy (W2E) project focuses on the potential to improve the sustainable management of waste in Europe’s regions, and to produce energy from waste. Finally, Pre-waste has developed a comprehensive approach to improve the effectiveness of waste prevention policies in EU territories in order to significantly reduce waste production and hazardousness through guidelines for planning, implementing and monitoring regional waste prevention policies and a web tool allowing for the assessment of the efficiency and monitoring of waste prevention actions.

Funding opportunities for projects in neighbouring third countries

The Instrument for Pre-Accession Assistance (IPA)⁴⁰ channels assistance to the candidate countries and potential candidates to the EU. It helps candidate countries to develop transport networks and improve environmental infrastructure. Component III of IPA helps candidate countries to develop transport networks and improve environmental infrastructure, and this component covers Iceland, FYROM, Croatia, Montenegro, and Turkey. The last three border the Mediterranean. In addition, Turkey borders the Black Sea. IPA projects could cover marine litter relevant investments.

⁴⁰ IPA is one the 3 major funds managed by DG Regional Policy (DG Regio), the other two being the the European Regional Development Fund and the Cohesion Fund (co-financing transport and environment projects in Member States whose GNP is less than 90% of the Community average) .

The European Neighbourhood Policy (ENP) is about working together with States that share a land or sea border with the EU on various issues, including the environment. The ENP framework is proposed to the 16 EU's closest neighbours⁴¹. The relationship with Russia takes the form of a Strategic Partnership. The ENP, which is mainly a bilateral policy between the EU and each partner country, is further enriched with regional and multilateral co-operation initiatives: the Eastern Partnership, the Union for the Mediterranean and the Black Sea Synergy.

Of the four conventions that govern Europe's regional seas, three have ENPI Partner countries as Parties. All 17 partner countries, with the exception of Belarus, share at least one regional sea with the EU. Projects financed for those countries could thus focus on marine litter, in particular the projects on waste management, sustainable production and consumption, integrated water management and ICZM. The ENP and Strategic Partnership with Russian Federation are since 1 January 2007 financed through a single instrument – the European Neighbourhood and Partnership Instrument (ENPI). A range of ongoing and planned projects are relevant for marine litter, such as:

- Under the Horizon 2020 Capacity Building/Mediterranean Environment Programme, a training was delivered to Turkish officials on 'Integrated Sustainable Waste Management – Focussing on minimising marine litter', from 7 to 9 March 2011 in Istanbul.
- Waste Governance – European neighbourhood and partnership instrument (ENPI) East” (Azerbaijan, Armenia, Belarus, Georgia, Moldova, Russia, and Ukraine) (2007-2013)

A new project will be launched in 2012 in the Eastern partner countries, which will include an inventory of uncontrolled dumpsites that do not meet basic environmental requirements. As landfills in coastal areas are an important source of marine litter, this project will be directly relevant to marine litter.

⁴¹ Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Occupied Palestinian Territory, Syria, Tunisia and Ukraine, however, the full benefits of the ENP can currently not be extended to Belarus, Libya and Syria.

ANNEX 2: COASTAL CLEAN UP AND FISHING FOR LITTER ACTIVITIES

1. Clean-ups/campaigns

Public participation in beach clean-ups can increase general understanding of the litter issue. Such schemes enable people to become actively involved in practical measures to reduce marine litter and raise awareness of the need to prevent coastal pollution. Listed below are a selection of initiatives and campaigns.

1.1 Worldwide

Blue Flag: Initially Europe-wide, now Europe, southern Africa, and the Caribbean. The originally (1985) French concept of the Blue Flag was developed on a European level to include also other areas of environmental management, such as waste management and coastal planning and protection.

Clean Up the World is a community based environmental program that invites community groups, schools, businesses, and local governments to join as Members and carry out community-based activities that address local environmental issues. It engages an estimated 35 million volunteers in 130 countries each year. Clean Up the World is held in partnership with UNEP and is held over the 3rd weekend in September.

International Coastal Cleanup (ICC) is a global project co-ordinated by the Ocean Conservancy, a U.S. non-governmental organization. The project involves over 70 countries worldwide in litter surveys and beach cleans over the same weekend in September.

Project AWARE Foundation: International Cleanup Day events involve thousands of dive volunteers removing trash from more than 900 global dive locations in 100 countries and territories. Project AWARE coordinates the underwater portion of International Cleanup Day in cooperation with the Ocean Conservancy.

World Environment Day, celebrated each year on 5 June is one of the principal vehicles through which UNEP stimulates worldwide awareness of the environment and focuses political attention and action. Each year, Clean Up the World Members participate in a range of activities to celebrate World Environment Day.

1.2 In Europe

Clean Up the Mediterranean: The event has been running since 1995. In 2009, over 100,000 volunteers took part in over 1,500 locations. Over 400 organisations spread across almost every country that borders the Mediterranean Sea have been involved.

Coast watch is an international educational network in 23 European countries with the aim to train and educate volunteer and students in field work, basic reporting methods and relevance of results obtained to policy legislation.

European Week for Waste Reduction: The EWWR is a project supported by the European Commission's LIFE+ Programme. The Week took place for the third time from 19-27 November 2011. It promotes the organisation of Clean-Up Days during that week, which get as such a European dimension.

Keep Baltic Tidy is a network of environment organisations around the Baltic Sea aiming at increasing co-operation, giving environmental education and co-ordinating joint campaigns to improve environmental protection as related to leisure boating and spare time at the seaside.

Mediterranean Coast Day 2010 is a key event of the Awareness Raising Campaign on the value of the coast that is to be launched and implemented in the framework of the SMAP III MAP/METAP project that was completed in 2008. In 2010, central celebrations were hosted Slovenia, on Saturday 25th September, organised by UNEP/MAP, PAP/RAC and the Ministry of the Environment and Spatial Planning of Slovenia. In 2011, the central regional celebration was organized in Algiers, in 2012 in Croatia (Split).

Ocean Initiatives⁴²: (beaches and rivers clean-up weekends) has been organised every year by Surfrider Foundation Europe (SFE) for the past 15 years. Over 40 000 citizens and 7500 schoolchildren participated in March 2010 in over 950 clean-ups of beaches, lakes and rivers in 34 countries.

Operation Clean Sweep: The British Plastics Federation launched ‘Operation Clean Sweep (OCS)-Plastic Pellet Loss Prevention’ on World Environment Day 5th June 2009. A Guidance Manual lays down suggested procedures on Prevention, Containment and Clean up to prevent pellets being accidentally washed down factory drains or lost in transportation.

Surfrider Foundation Europe is an environmental association, set up in 1990 in France. Gathering a community of ocean-lovers and enthusiasts, SFE is fighting for the defence, the maintenance, the improvement and the sustainable management of the oceans, the coastlines, the waves, and the population that benefit from these. The fight against marine litter is at the forefront of its mission. In 2011, they gathered 40,000 participants in over 1200 operations for coastal clean-ups.

1.3 Estonia

Keep the Estonian Sea Tidy (HEM) is a non-profit organization that aims to conserve the sea around Estonia, coastal areas, islands and inland waters from pollution.

1.4 France

Les Mains Vertes⁴³: the organisation promotes the clean-up of all types of sites, and not just beaches.

1.5 Finland

Keep the Archipelago Tidy: This Finnish organisation is a nationwide non-profit organisation active in environment protection in many fields: waste collection in marina's, recycling, information and education. The organisation has approximately 13 000 members, mainly boaters. Keep the Archipelago Tidy Association is best known for its nearly 200 Rubbish Seal waste recycling bins in different parts of Finland, where boaters can bring their waste.

42 <http://www.initiativesoceanes.org/index.php?&lang=2>

43 <http://www.lesmainsvertes.org>

1.6 Germany

Several clean-up initiatives associated to the ICC, and organised by a range of NGOs, including **NABU** and **Deepwave**. In 2011 5 coastal areas have been cleaned.

1.7 Italy

Puliamo il Mondo is a three days environmental campaign organized by Legambiente. At the end of September a voluntary army worked all around Italy to free roads, squares, parks, beaches and rivers from waste away. Legambiente is the most widespread environmental NGO in Italy, with 30 years of history, 20 regional branches, in excess of 1,000 local groups and 115,000 members throughout the country. It is a member of Clean Up the World.

1.8 The Netherlands

The North Sea Foundation (SNZ), an environmental NGO, works on Marine Litter in several areas: they participates in the OSPAR Beach Litter Monitoring program and monitors 4 Dutch beaches. They recently organised a competition for young professional to imagine a solution for the litter on beaches. MyBeach Do It Yourself was the winning concept, which aims at raising awareness of beach go-ers,

Coastwatch is a multidisciplinary project for secondary schools, that is being coordinated by the SNZ. It is being financed by, among other, the Ministry of Agriculture, Nature and Food (LNV). Under the project, teachers and students are being encouraged and supported to clean beaches, to collect data on waste and marine life during field trips. Coastwatch was initially set up in Ireland.

The Wadden Foundation: The Wadden Foundation organizes beach clean ups in the Wad area. In 2009, 140 participants of the Wadden-work-weekend collected 20 cubic marine litter on the Boschplaat, the east point of Terschelling.

1.9 Portugal

AMO Portugal - Associação Mãos à Obra Portugal. This non-profit organization is aimed at the cleanness and preservation of environmental ecosystems in Portugal, mostly forestry land but also beaches and estuaries. They organize volunteers at local level and promote activities. The latest campaign Mãos à Obra! Limpar Portugal 2012 was integrated within the worldwide initiative "Let's do It! World Cleanup 2012.

InforNature.org, a non-profit organization launched Projecto Natureza Pura which is aimed at the enhancement of environmental sites in Portugal, estuaries and beaches included. Activities include the cleaning-up, the sowing of native dune species and environmental education, among others.

1.10 Spain

The national foundation **Fundación Biodiversidad** coordinates a project for the enhancement and protection of beaches, landscapes and other natural and cultural values. In order to achieve it, agreements among landowners, custody entities (NGO's) and other public and private agencies are promoted.

It has also launched a campaign to promote that snack bars at beaches are responsible for the cleaning-up, conservation and other good environmental practices where they are settled in. A Decalogue of

Good Environmental Practises was issued and so far almost 500 snack bars have signed for this. Recently, the 1st edition of "Responsible snack bar award" was launched.

1.11 United Kingdom

Marine Conservation Society (MCS) co-ordinates a range of projects that encourage public participation in marine conservation, including Adopt-a-Beach and Beachwatch, the biggest beach clean and litter survey projects in Europe. MCS also works alongside Project AWARE and PADI (Professional Association of Dive Instructors) dive centres to organize underwater beach cleans.

Adopt-a-Beach is a national environmental initiative involving, since 1999, under which groups and individuals all over the U.K. are given the opportunity to adopt their favourite stretch of coast and take part in beach cleans and surveys to monitor coastal pollution. There are currently over 400 beaches registered for Adopt-a-Beach.

Beachwatch is a campaign organized by the Ocean Conservancy, since 1993. Thousands of volunteers from all across the U.K. visit their chosen beach, remove all the litter from it, record what they find and send the data back to the MCS. It is analysed and reported in the Beachwatch report, published every February and available from the MCS. Beachwatch provides data for the International Coastal Clean-up.

Bag it & Bin it Campaign was launched as a national initiative in 1995 include the U.K. Environment Agency, Tidy Britain Group, Women's Environmental Network, Anglian Water, Northumbrian Water, North West Water, and the Department of the Environment. The aim of the Campaign is to solve the problem of protecting beaches and rivers from sanitary waste by spreading the message of a simple solution: "Bag It and Bin It - Don't Flush It".

2. Fishing for litter

2.1 General

Fishery practices that help reduce marine litter includes activities that are aimed at curbing fishing-related wastes, by bringing ashore the litter that is gathered in nets during fishing (KIMO) or by activities that encourage fishermen to undertake specific fishing trips to deliberately fish for litter.

The second type is practiced under a KIMO lead initiative, the third type is practiced under a Waste Free Oceans (WFO) lead initiative. Picking up discarded nets is a third type of fishing for litter.

2.2 Specific initiatives

CETMAR⁴⁴ (Centro Tecnológico del Mar) has developed the project 3RFISH on an integral management model of recovery and recycling of proper solid wastes from fishing and port activities. The main objective was to improve the quality of marine waters and seabed through the correct use of the devices and equipment that are handling in the fishing sector, together with the proper solid waste management and recycling from those activities. They also developed the project 'Nada pola borda' aimed at monitoring the waste coming ashore in order to establish its typology, origin and trends along

44 <http://www.cetmar.org/?lang=en>

Galician coasts. At the same time, a secondary aim was the physical removal of marine waste from the seabed, and the raising of awareness among the fishing industry.

European Waste Free Oceans is an initiative led up by the European Plastics Converters, an EU-level Trade Association, with the aim of reducing floating marine debris on Europe's coastlines by 2020. Fishermen are purposely making trips with fishing boats outfitted with a special trawl. It is a project set up as foundation, steered by chairwoman Mrs. Anna Rosbach MEP (Denmark). Commissioner Maria Damanaki (Maritime Affairs and Fisheries) has lent her support to the Waste Free Oceans initiative in September of 2010. They have conducted practical trials to assess the feasibility of collecting surface litter as it reaches the sea from rivers and large conurbations. The aim is to collect it before it can reach open water and degrade into smaller hard-to-recover fragments. The aim is to identify hotspots and the nature of the litter so that appropriate disposal mechanisms can be identified.

Fishing For Litter-Denmark is part of the Save the North Sea campaign which encourages fishermen to 'fish for litter', so that debris can be returned to a marine litter recycling unit in Skagen Municipality. These include activities aimed at removing marine litter (marine debris) and collection of valuable information on the amounts and types of litter in beaches, waterways, parks, markets, roadsides and schools.

KIMO International⁴⁵ coordinates a project called Fishing for Litter. It is an active environmental response to the progressive increase of marine litters in the seas around Great Britain, Scandinavia and Western Europe. The aim of the original Dutch project was to clear the North Sea from litter by bringing ashore the litter that is trawled up as part of fishing activities and disposing of it on land by providing large hard wearing bags to the boats so that the waste can be easily collected and deposited on the quayside. In South West England six harbours are participating, in the Netherlands 12 harbours and 94 fishing boats.

Seas without Plastic: NABU (Nature and Biodiversity Conservation Union): NABU has launched a first "Fishing for Litter" project in the Baltic Sea in May 2011 in Heiligenhafen and Burgstaaken (Fehmarn), two fishery harbours in north-west Schleswig-Holstein. About 20 vessels are joining this Baltic Sea pilot scheme. Several other harbours and vessels might join. Similarly to what is being done under the KIMO initiative to which it is associated, NABU provides fishing vessels with big bags to deposit marine litter.

45 <http://www.kimointernational.org/FishingforLitter.aspx>