



Chapter 13

The need for a global plastic strategy

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13.1 THE ENVIRONMENTAL PROBLEM

Plastic pollution in freshwater and marine areas has been widely recognized as one of the most crucial global concerns of our time. It has been estimated that in the last six decades, 8,300 million metric tonnes (Megatonnes; Mt) of plastic has been produced, most of it for the creation of disposable products. Of this, 6,300 Mt of plastic became waste, around 9% of which has been recycled, 12% incinerated and 79% accumulated in landfills or disposed in the natural environment (Geyer *et al.*, 2017) and the world's oceans: the final sink (Pham *et al.*, 2014; Ryan, 2015), causing environmental, economic, health and aesthetic implications (Engler, 2012; Rochman *et al.*, 2013a, b; Sheavly & Register, 2007; Silva-Iñiguez & Fischer, 2003).

Barring some local fluctuations, marine litter sources can be separated into sea-based (considered to contribute around 20% in total marine litter pollution) and land-based sources (which account for 80%) (UNEP, 2006). Sea-based

marine litter originates from fisheries and aquaculture, shipping (transport, military and tourism), offshore oil and gas exploration, and from illegal dumping at sea, etc., whilst, millions of tonnes of litter enter the marine environment from land-based sources through floodwaters and discharges from storm water drains, through rivers, streams, the littering of beaches and coastal areas, industrial facilities, landfills and illegal waste dumps located in proximity to the coast and/or water bodies, and via untreated municipal sewage.

Plastic is the most abundant litter material, accounting for 60–95% of marine litter pollution worldwide (Derriak, 2002; Galgani *et al.*, 2015) and sometimes accounting for up to 100% of floating litter (Galgani *et al.*, 2015). It was recently estimated that 8 Mt of plastic ends up in oceans every year (Jambeck *et al.*, 2015) and more than 5 trillion (5×10^{12}) plastic pieces weighing over 250,000 tonnes are afloat at sea (Eriksen *et al.*, 2014), whilst plastic particles and fibers are found today in tap water, beer and salt (Kosuth *et al.*, 2018; Karami *et al.*, 2017) with yet unknown impacts on public health. Plastic is persistent and lightweight. These two properties that make it so popular as a material are also the reasons that make it a threat to marine ecosystems and to wildlife. If their shape and size allows it (e.g., in the case of plastic cotton swabs), plastic litter is easily blown by high winds or drifted by heavy rainfall to waterways, from streets and poorly designed bins in population centers, from landfills and waste dumps, tourist beaches or through sewage water and from wastewater treatment plants (Mourgkogiannis *et al.*, 2018). Microplastics (GESAMP, 2015) and nanoplastics (Rios Mendoza *et al.*, 2018) – either as the product of fragmentation resulting from the exposure of macroplastics to the marine environment or directly produced – reach the marine environment through sewage waters (e.g., microfibers and microbeads from cosmetics) and runoffs (e.g., pellets), and accumulate with a disturbingly accelerating pace (Figure 13.1).

The ten most commonly found single-use plastic items in the marine environment together with lost and abandoned fishing gear account for at least 70% of total marine litter (Cau *et al.*, 2018; Fortibuoni *et al.*, 2019; Galgani *et al.*, 2015; Koutsodentris *et al.*, 2008; Thiel *et al.*, 2013; Topçu *et al.*, 2013). These items include plastic bags, water bottles, plastic cups, plastic cutlery, straws, etc.

The impact of marine litter on coastal and marine ecosystems and marine wildlife is reflected worldwide in the literature (Bernardini *et al.*, 2018; Green *et al.*, 2015; Green, 2016; Mordecai *et al.*, 2011; Panti *et al.*, 2019; Rochman, *et al.*, 2015). Impacts include the risk of entanglement and ingestion of litter by marine animals and birds (Bjorndal *et al.*, 1994; Campani *et al.*, 2013; De Pierrepont *et al.*, 2005; Tourinho *et al.*, 2010; Wilcox *et al.*, 2016), whilst microplastics and the fragmentation of plastics in the marine environment are a special risk to marine life (Gregory, 2009; Rochman *et al.*, 2013b). Microplastics and nanoplastics attract persistent organic pollutants (POPs) (Karapanagioti & Klontza, 2008; Takada & Karapanagioti, 2019), reaching up to one million times



Figure 13.1 Beach stranded microplastics produced from fragmentation due to the exposure of macroplastics to the marine environment and plastic pellets were among the various items of plastic litter found during beach litter monitoring surveys for the LIFE DEBAG project. (Photo: Stavroula Kordella, 2018).

higher concentrations than seawater (Rios Mendoza *et al.*, 2018). According to one study, it has been estimated that European citizens ingest up to 11,000 plastic fragments per year with their seafood (Van Cauwenberghe & Janssen, 2014). However, little is yet known relating to the impact this has on human health.

If current plastic production coupled with waste management trends continue, roughly 12,000 Mt of plastic waste will be disposed of in landfills or in the natural environment by 2050 (Geyer *et al.*, 2017). Remedial actions to improve plastic pollution, such as cleaning, have been tried and have been found to be insufficient and cost ineffective. These facts emphasize the important need for drastic preventive action aiming at the sources of marine plastic litter pollution (UNEP, 2009). Such actions include comprehensive, binding, global strategies and policies. A lot of effort has been made towards the development and implementation of such strategies and policies around the globe. In this chapter, existing actions are explored and the gaps to be filled that may pave the way for successful implementation, judged by results, are identified.

13.2 REVIEW OF KEY STRATEGIES AND POLICIES

Looking at the current status of plastic marine litter pollution, it is self-evident that there is an urgent need to react. The only known way to approach this issue is through development and implementation of strategies and policies reinforced by expanded information and education campaigns, and by the employment of green levies and economic incentives. Several countries have acted to confront the marine litter crisis but the situation is still not improving significantly at a global level (UNEP, 2009; Xanthos & Walker, 2017).

13.2.1 International strategies and policies on marine litter pollution

Strategies and policies on single-use plastics at a regional or country level, as levies or bans on single-use plastic bags may be increasing (Heidbreder *et al.*, 2019; Saidan *et al.*, 2017; Xanthos & Walker, 2017) but there are only a few international strategies and policies that address plastic, marine pollution directly. These amount to four main international strategies and policies: MARPOL, the Honolulu Strategy, the Global Partnership on Marine Litter, and the United Nations Environmental Program (UNEP) Clean Seas campaign, which are each described below.

13.2.1.1 MARPOL 73/78

The *International Convention for the Prevention of Pollution from Ships* is the main international convention concerning prevention of pollution of the marine environment by ships from operational or accidental causes. MARPOL entered into force on 2 October 1983 and has been updated by amendments over the years.

Annex V, *Prevention of Pollution by Garbage from Ships*, entered into force on 31 December 1988 and deals with different types of garbage, and specifies the distances from land and the ways in which they may be disposed. The most important trait of the Annex is the complete ban that is imposed on the disposal into the sea of all forms of plastics (IMO, 2019).

Even though, since January 2018, 156 states and member nations have been subject to MARPOL requirements, regardless of where they sail, research has shown that marine litter has increasingly risen since MARPOL 73/78 was signed (Borrelle *et al.*, 2017; Jambeck *et al.*, 2015; Koutsodentris *et al.*, 2007; Xanthos & Walker, 2017). The deterioration of the marine environment stems from the fact that MARPOL Annex V, the oldest strategy directly concerning marine litter, is restricted to litter originating from ships (marine-based) which accounts for less than 20% of the total marine litter pollution (as fishery related litter is also classified as marine-based), while (as noted above) the large majority (80%) of marine litter originates from land-based sources (UNEP, 2006).

13.2.1.2 *The Honolulu Strategy*

The *Honolulu Strategy* is a framework document created by the National Oceanic and Atmospheric Administration (NOAA) and United Nations Environment Programme (UNEP) in 2011, concerning a global, comprehensive effort to reduce marine litter and its ecological, public health and economic impacts. The aim of this document is to help improve collaboration among groups and countries from around the globe concerning marine litter pollution, and to serve as a framework as well as a tool to develop and monitor marine litter projects.

The Honolulu Strategy is intended for use as:

- a planning tool for developing spatially or sector-specific marine litter projects;
- a common frame of reference for collaboration and sharing of best practices and lessons learned;
- a monitoring tool to measure progress across multiple programs and projects (UNEP & NOAA, 2015).

Two parts of the Honolulu Strategy are highly important: the part that focuses on market-based instruments (e.g., levies on bags) for minimizing waste; and the part that concerns the development of policies and regulations to reduce marine litter (e.g., bans on plastic bags and microbeads in cosmetics) (Xanthos & Walker, 2017).

13.2.1.3 *The global partnership on marine litter*

In June 2012, at the Rio+20 conference in Brazil, the Global Partnership on Marine Litter (GPML) was launched. The GPML is a voluntary, open-ended partnership engaging international agencies, governments, businesses, academia, local authorities and NGOs. It is hosted by UNEP and aims to achieve a significant reduction of marine litter, with a deadline of 2025. The GPML seeks to protect public health and the global environment by the reduction and management of marine litter through the following specific objectives:

- to enhance international cooperation and coordination through the promotion and implementation of the Honolulu Strategy (see 13.2.1.2) as well as the Honolulu Commitment (a multi-stakeholder pledge);
- to promote knowledge, management, information sharing and monitoring of progress on the implementation of the Honolulu Strategy;
- to promote resource efficiency and economic development through waste prevention e.g., by promoting the 4Rs (reduce, re-use, recycle and re-design) and by recovering valuable materials and/or energy from waste;
- to increase awareness of the sources and fate and impacts of marine litter; and
- to assess emerging issues related to the fate and implications of marine litter, including (micro)plastics uptake in the food web and the associated transfer of pollutants and impacts.

13.2.1.4 UNEP clean seas campaign

In February 2017, UNEP launched the Clean Seas campaign, engaging governments, the general public and the private sector, and persuading them to voluntarily commit to actions to reduce plastic pollution. Fifty governments – accounting for more than half the world’s coastlines – have signed up to the Clean Seas campaign with many making specific commitments to protect the oceans, encourage recycling and cut back on single-use plastics. The campaign contributes to the goals of the Global Partnership on Marine Litter.

Pledges that have been made in the framework of the UNEP Clean Seas campaign include:

- Belgium, Brazil, the Dominican Republic, Panama and the Philippines are developing and/or adopting national plans and legislation to combat marine litter;
- Canada, which is the country with the world’s longest coastline, is funding community-based programmes such as beach clean-ups and continuing research into the impact of microplastics. It is also developing regulations to ban the manufacture and sale of cosmetics containing microbeads;
- Indonesia has committed to reduce plastic waste by 70% by 2030;
- Kenya, Jordan, Madagascar and Chile have banned or pledged to ban single-use or non-biodegradable plastic bags;
- Nigeria, one of the world’s top 10 plastic polluters, has pledged to open 26 plastic recycling plants;
- Denmark, Finland, Iceland and Sweden have committed to implement the “Nordic programme” on a sustainable approach to plastics by preventing plastic waste, encouraging recycling and promoting a circular economy;
- New Zealand prohibited the sale and manufacture of wash-off products that contain plastic microbeads from 7 June 2018 and the Ministry of Environment has confirmed that single-use plastic shopping bags up to 70 microns in thickness will be phased out with regulations to come into force from 1 July 2019.

The Clean Seas campaign monitors these pledges and aims to get more countries to commit to action. It also aims for the increasing cooperation of businesses. To date, many European retailers have committed to plastic-free aisles and products while some restaurants have pledged to phase out plastic straws.

13.2.1.5 The Basel convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal entered into force on 5 May 1992 and has 187 parties (countries from around the world). The Convention aims to minimize the

generation of hazardous wastes and “other wastes” (i.e. household waste and incinerator ash), to control their transboundary movements, and promote their environmentally sound management.

Under the Convention, some plastics are listed as “hazardous wastes” and household wastes may also include plastics. Therefore the provisions of the Convention already applied to plastic waste but, during the recent Basel Conference of the Parties (held from 29 April–10 May 2019), a major step forward was taken when the Convention was amended to include plastic waste in a legally-binding framework which “will make global trade in plastic waste more transparent and better regulated, whilst also ensuring that its management is safer for human health and the environment” ([Secretariat of the Basel, Rotterdam and Stockholm Conventions, 2019](#)). On the basis of transboundary movements of hazardous waste, plastic considered contaminated, mixed and unsuitable for recycling will be subject to controls and the consent of importing countries will be required, thus promoting recycling within the boundaries of the countries that are major plastic waste generators and providing an important tool for developing countries to deny unrecyclable plastic.

13.2.2 European strategies and policies on marine litter pollution

13.2.2.1 *The marine strategy framework directive*

Based on its adverse effects, marine litter pollution has been included in the 11 qualitative descriptors set by the European Marine Strategy Framework Directive (MSFD) (Directive 2008/56/EC) ([European Parliament, 2008](#); [Galgani et al., 2013a](#); [Galgani et al., 2010](#)). The MSFD requires each descriptor to maintain or reach Good Environmental Status (GES) for all European marine waters by 2020 at the latest (Article 1). Concerning Descriptor 10 (marine litter), the MSFD requires EU Member States to ensure that, by 2020, “properties and quantities of marine litter do not cause harm to the coastal and marine environment”. At EU level, the above-mentioned MSFD is the dedicated binding legal instrument for assessing, monitoring, setting targets and reaching GES about marine litter; appointed by the Member States to support them in reaching GES for marine litter, it is co-chaired by the Joint Research Center (JRC) and has developed, inter alia, ‘Guidance on Monitoring of Marine Litter in the European Seas’ ([Galgani et al., 2013b](#)). The last report published by the JRC on the top 10 litter items most frequently found on European beaches reflects monitoring results from the EU Member States and the Regional Seas Conventions and the analysis which was the basis for the Commission proposal on single-use plastic items (see [13.2.2.3](#) below). Through the adoption of the MSFD in 2008, the EU established a framework to protect and sustainably use its seas and oceans, requiring implementation of marine strategies from EU member countries.

13.2.2.2 EU Directive 2015/720 on plastic bags

On 29 April 2015, the European Parliament introduced Directive 2015/720/EC for the reduction on the consumption of lightweight (15–50 microns wall thickness) plastic carrier bags, many of which end up as waste in the marine environment (European Parliament, 2015). Lightweight plastic bags represent most of the total number of plastic carrier bags in the EU and are less frequently reused than thicker plastic carrier bags. Consequently, lightweight plastic carrier bags become waste more quickly and are more prone to littering due to their light weight. Plastic bags account for almost 5% of litter found on beaches but their abundance rises to a 30% of the litter found on the seabed around the European coastline (Galgani *et al.*, 1995, 2000; Ramirez-Llodra *et al.*, 2013). Member States were bound to take measures to achieve a sustained reduction in the consumption of lightweight plastic carrier bags in their countries.

The measures taken by Member States should include either or both of the following: (a) the adoption of measures ensuring that the annual consumption level does not exceed 90 lightweight plastic carrier bags per capita by 31 December 2019 and 40 lightweight plastic carrier bags per capita by 31 December 2025; and (b) the adoption of instruments ensuring that, by 31 December 2018, lightweight plastic carrier bags are not provided free of charge at the point of sale of goods or products, unless equally effective instruments are implemented. The Directive gave the option of exclusion from these measures of very lightweight plastic carrier bags (wall thickness below 15 microns) provided as primary packaging for loose food when required for hygiene purposes or when their use helps prevent food wastage.

As a complement to EU preventive measures and strategies, EU funds (including from the EU LIFE programme) support action to assist the EU in fighting for the preservation of the environment and the effective implementation of EU policy. Concerning marine litter, LIFE projects have helped implement EU policy in areas such as the circular economy, single-use plastics, etc., and have involved awareness campaigns and clean-up operations on beaches or at sea, with the active participation of citizens, fishermen, businesses and other stakeholders. One example is the LIFE DEBAG project (LIFE14 GIE/GR/001127) which implemented an integrated information and awareness-raising campaign for the reduction of plastic bags in the marine environment of Greece, both at local and national levels. The LIFE DEBAG project contributed heavily to the integration of EU Directive 2015/720 into Greek legislation through recommendations developed within a series of consultation fora. The Greek legislation imposed a green levy on lightweight plastic bags from 1 January 2018 for the first time, leading to a 60–80% decrease in plastic bag consumption across the country, after one year of enforcement of the law. For the implementation of a local and more intensive information campaign, the island of Syros, located in the Aegean Sea, was selected as a pilot area. A reduction in the accumulation of

plastic bags of 85% on beaches and 60% on the seafloor around Syros had occurred by the end of the project, which was induced directly from the LIFE DEBAG intensive awareness campaign on the island, a fact that was made evident through an exhaustive monitoring of Syros's marine environment before and during the realization of the campaign. The positive results on the marine environment of the pilot area of the campaign proved that information campaigns can be effective. This is true only if free reusable alternatives are provided, if all relevant stakeholders in decision-making processes are involved, and if the campaign impact is exhaustively monitored before, during and after the activities. The participation of citizens and the communication of the results to the public as a positive feedback of changing consumer habits and positive reinforcement were the key elements of this campaign (EU DG Environment, 2018).

Monitoring of a strategy's impact on the marine environment is crucial and really proves the effectiveness of measures taken. In the case of the UK, Maes *et al.*, (2018) estimated a 30% decrease in plastic bags on the seabed around the UK's coasts in the same period as green levies were introduced in European countries, highlighting the effectiveness of economic disincentives as tools for reductions in numbers of single-use plastic bags.

13.2.2.3 *The EU strategy for plastics in a circular economy*

Pollution of the seas from plastics and microplastics is one of the three major areas of the Strategy for Plastics adopted by the European Commission on 16 January 2018 (European Commission, 2018a). Most of the proposed actions are directly or indirectly related to marine litter.

According to the EU Strategy for Plastics, "by 2030, all plastics packaging placed on the EU market is either reusable or can be recycled in a cost-effective manner" (European Commission, 2018a). Consumption of single-use plastics, including over-packaging, will be reduced and the intentional use of microplastics will be restricted.

The Commission will revise the legislative requirements for placing packaging on the market focusing on defining the concept of design for recyclability. The goal is to decrease the quantity of waste generated and to avoid packaging materials ending up as litter, being incinerated or landfilled instead of recycled. The Commission invited the plastics industry to take an active part in the process by supporting innovation in this domain through a pledging exercise which is being launched by the strategy which aims to see 10 Mt of recycled plastics in new products by 2025.

The Commission will propose harmonised rules for defining and labelling compostable and biodegradable plastics, which may be used as an alternative to conventional plastics, but the lack of clear labelling and waste collection and treatment may lead to plastics leakage. The Commission aims to reduce discharges of waste from ships at sea by ensuring the availability of adequate port

reception facilities and the use of those facilities by ships visiting EU ports through the new Port Reception Facilities Directive ([European Commission, 2018b](#)). The Directive, which was proposed on 16 January 2018, is based on the international obligations in the MARPOL Convention (see [13.2.1.1](#) above).

The new Plastics Strategy of the European Union aims to curb plastic waste by targeting single-use plastics and fishing gear, supporting national awareness campaigns and determining the scope of new EU-wide rules that were proposed in 2018 and constitute the Single-Use Plastics Directive (see [13.2.2.4](#) below) based on stakeholder consultation and evidence.

Finally, the Commission has started work to restrict the use of microplastics that are intentionally added to products through the Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) regulation ([European Commission, 2018a](#)). Regarding unintentional release of microplastics, the Commission is examining options such as labelling, minimum requirements for product design and durability, methods to assess quantities and pathways of microplastics in the environment, and funding for targeted research and innovation.

13.2.2.4 The single-use plastics directive

On 19 December 2018, the European Parliament and the Council of the European Union reached a provisional political agreement on the ambitious new measures ([European Commission, 2018c](#)) proposed by the European Commission to tackle marine litter at its source, targeting the ten plastic products most often found on EU beaches as well as abandoned fishing gear, which account for at least 70% of total marine litter ([Figure 13.2](#)), and oxo-degradable plastics.

These measures, which are part of the EU Strategy for Plastics (see [13.2.2.3](#) above), were adopted by the European Parliament on 27 March 2019, constituting the new EU Directive on Single-Use Plastics: the most ambitious legal instrument at a global level addressing marine litter. It envisages different measures to apply to different product categories. Where alternatives are easily available and affordable, single-use plastic products will be banned from the market (such as plastic cotton buds, cutlery, plates, straws, drink stirrers, sticks for balloons, products made of oxo-degradable plastic, and food and beverage containers made of expanded polystyrene). For other products, the focus is on limiting their use and/or abundance in the marine environment through:

- setting national reduction targets for consumption (of food containers and drinks cups);
- enforcing design and labelling requirements (sanitary towels, wet wipes, balloons);
- establishing waste management/clean-up obligations for producers (food containers, crisps and sweets packaging, drinks containers, cigarette butts, wet wipes, balloons and lightweight plastic bags);



Figure 13.2 Classification of beach stranded litter for the LIFE DEBAG project showing the abundance of single-use litter such as water bottle caps and straws etc., together with fishery related litter, which accounts for more than 70% of the total marine litter on European coasts. (Photo: Stavroula Kordella, 2019).

- encouraging collection, e.g. through deposit refund schemes, of 90% of single-use plastic drinks bottles by 2025;
- introducing awareness-raising measures about the negative impact of single-use plastics and fishing gear, and the re-use systems and waste management options for these products.

13.2.2.5 The Barcelona convention and its protocols

The Convention for the Protection of the Mediterranean Sea Against Pollution ('MAP', or 'Barcelona Convention') was adopted on 16 February 1976 by the Conference of Plenipotentiaries of the Coastal States of the Mediterranean Region for the Protection of the Mediterranean Sea, held in Barcelona, in conjunction with two Protocols addressing the prevention of pollution by dumping from ships and aircraft and cooperation in combating pollution in cases of emergency.

Seven Protocols addressing specific aspects of Mediterranean environmental conservation complete the MAP legal framework but those related to marine litter are:

- The Dumping Protocol: The Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (adopted in 1976); and

- The Land-Based Sources (LBS) Protocol: The Protocol for the Protection of the Mediterranean Sea against Pollution from LBS and Activities (adopted in 1980).

In the framework of the LBS Protocol, a marine litter management strategy was developed in 2012 which was accompanied by the Regional Action Plan on Marine Litter. The Action Plan was adopted during the 18th Conference of the Contracting Parties to the Barcelona Convention and its Protocols held in Istanbul in 2013 and entered into force – and thus became legally binding – on 8 July 2014. Its aim is to reduce the impact of marine litter on the environment, human health and on the Mediterranean economy by enhancing cooperation, promoting and implementing international and regional marine waste initiatives, and raising awareness and knowledge.

13.2.3 National and local initiatives

More than 60 countries around the globe have taken measures on plastic bags, microbeads, products, straws and plastic cutlery and plastic cotton swabs, and the number is constantly rising. Policies against microbeads and other single-use plastics are more recent (2014 in the case of microbeads) but initiatives for plastic bags began in 1991 (Xanthos & Walker, 2017). According to a UNEP (2018) report that analysed over 140 regulations at national and local levels concerning bans and levies on plastic bags, there is not enough information to draw safe conclusions on their environmental impacts, although in 30% of the cases there was a reduction in plastic bags either in the consumption or in the marine environment. In 50% of the investigated cases, there is no information on impact, partially due to lack of monitoring and reporting, and partially because many of the measures analysed have been implemented recently (UNEP, 2018). In 20% of the cases of countries that have banned plastic bags, no to little impact was reported; this was attributed to lack of enforcement and lack of affordable alternatives (UNEP, 2018).

13.3 CONCLUSIONS

Plastic marine pollution is an international issue, which knows no boundaries (Politikos *et al.*, 2017; Villarrubia-Gómez *et al.*, 2018). Therefore, in order to tackle this fast growing problem, there is a need for a global governance approach (Vince & Stoett, 2018). Countries should join to set reduction targets and develop policy schemes combined with exhaustive monitoring both in the marine environment and in the consumption of plastic packaging, single-use products and products that generate microplastics, etc. There are many regional/national policies that concern single-use plastic production prevention and plastic pollution mitigation but fewer international policies, none of which

have yet achieved results that compensate for the global enormity and accelerating growth of the problem (Borrelle *et al.*, 2017; UN Environment, 2017).

Binding agreements for countries and industry (Borrelle *et al.*, 2017), integrated global strategies (Dauvergne, 2018) that include actions on solid waste management, collection and treatment of wastewater and rain-storm water, extended producer responsibility for single-use plastics and packaging, economic incentives or disincentives for citizens and industry, and public awareness-raising campaigns combined with affordable reusable alternatives can all boost implementation levels and mitigate the plastic pollution problem dramatically.

Although existing international policies and strategies acknowledge marine litter as a global, multi-parametric threat, they lack binding commitments for countries as well as monitoring schemes to evaluate their effectiveness and measure their impact not only on plastic product consumption but most importantly on the marine environment itself. Therefore, the solution may lie within a global strategy containing three axes: policies, awareness-raising and marine litter monitoring, with binding targets that should come in effect shortly, as the magnitude and rapidity of the issue calls for immediate action.

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