



Marine debris and the Sustainable Development Goals

What is marine debris?

Marine debris extends to every ocean and coast and causes enormous economic cost, ecological damage and social impact. Predominantly consisting of improperly disposed of plastic waste and mismanaged plastic materials, it poses one of the biggest threats to marine species and marine ecosystems.

Marine debris knows no geographical borders and ocean currents can carry it far from where it originated from. These ocean currents are also responsible for 'bundling-up' debris in 'giant garbage patches'. Recent studies show that the Great Pacific Garbage Patch, located between Hawaii and Portugal, is up to 16 times larger than originally thought, covering an estimated surface area of 1.6 million square kilometres which is three times the size of France, and still thought to be rapidly growing¹. The durability of plastic means that it does not readily degrade and can persist in the environment for decades or even hundreds of years. As plastic slowly breaks up into smaller and smaller pieces, known as microplastics, it is ingested by marine animals, such as fish, and eventually can end up in the human food chain. Plastic can be full of hazardous substances, and also attracts chemicals that are in the environment, causing it to be toxic when ingested. Some types of marine debris, particularly fishing gear, packing bands, plastic bags and other packaging material entangles marine wildlife causing severe injuries and death. Marine species also mistake marine debris as food, accidentally ingesting plastic items such as drinking straws, cups, plastic bottles and caps which can cause their intestinal tracts to block and eventual death through starvation or internal injury.

There are many land and sea-based sources of plastic entering the marine environment and significant

regional differences in the relative importance of different sources and pathways to the ocean². However, it is clear that 'leakage' of plastics into the ocean can occur at all stages of the production-use-disposal cycle³.

Despite internationally agreed actions to address marine debris existing in the form of UN General Assembly Resolutions, UN Environment Assembly Resolutions and other relevant international resolutions and decisions, the actual implementation of these actions remains slow. The most recent studies estimate that between 4.8 and 12.7 million metric tonnes (an average of around 8 million tonnes) of plastic waste enters the ocean from land every year⁴. Quantities of other sources of plastic, in particular sea based sources and natural disasters are less well documented, particularly at a global level, however, the harmful impacts of all types of marine debris are widely recognised. The priority must now be to 'turn off the tap' and prevent further plastic from entering the ocean.

Marine debris and the UN 2030 Agenda for Sustainable Development

Central to the United Nation's 2030 Agenda for Sustainable Development are the 17 Sustainable Development Goals (SDGs)⁵ which will shape national development plans until 2030.

OceanCare welcomes SDG 14 to conserve and sustainably use the oceans and advocates for urgent action to be taken by all stakeholders to ensure achievement of its various targets. Increased consideration of the socioeconomic and cultural benefits of marine environment protection and the interconnection between SDG 14 and the other SDGs is also strongly encouraged, particularly with regard

to the wide range of ecosystem services that humans derive from the oceans.

This briefing describes the relevance of marine debris across the different SDGs and OceanCare's recommendations for further action.

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture and SDG 3: Ensure healthy lives and promote well-being for all at all ages

The impact of plastic pollution on marine ecosystems is a direct threat to the health and productivity of the oceans and consequently to fisheries. Abandoned, lost or otherwise discarded fishing gear (ALDFG) in particular has a very direct impact on fish stocks due to 'ghost fishing' and therefore needs to be considered in the context of food security and sustainable fisheries⁶. Numerous studies have shown microplastics to be found in the bodies of invertebrates, fish, birds and mammals. There is a concern that these particles, and the toxins they contain may be a risk to human health via consumption of seafood. The digestive tract of marine organisms contains the largest quantities of microplastics so consumption of species that are usually eaten whole, such as bivalves (e.g., mussels), some echinoderms (e.g., sea urchins and sea cucumbers) and small species of fish may be the most high risk species for human consumption⁷. Coastal communities where fish and other seafood products are a staple food source may be the most significantly impacted.

In addition to food safety and food security concerns, marine debris also creates a significant navigational hazard which can cost human lives. Many of the reported incidents involve plastic debris being caught in boat propellers. The U.S. Coast Guard reported that in 2005 collisions with submerged objects caused 269 boating accidents, causing 15 deaths and 116 injuries⁸.

SDG 6: Ensure availability and sustainable management of water and sanitation for all

The problem of plastic debris is not limited to oceans, the scale of plastic pollution in freshwater

systems threatens the access people have to clean water. SDG 6.3 requires improved water quality by the reduction of pollution, elimination of dumping and minimising of hazardous chemicals and materials. Riverways are often the first place where plastic debris occurs and there is an urgent need to find solutions to reduce and prevent sewage and storm water related waste, that often includes plastic and microplastics from entering the marine environment. A 2014 study looking at plastic debris in the Danube, Europe's second largest river, revealed that there were a higher number of plastic particles than fish larvae⁹. Significant volumes of plastic debris also accumulates in lakes. Lake Garda in Italy, for example, has been found to have as many microplastic particles as are found in marine beach sediments¹⁰ and in the U.S. around 10,000 metric tonnes of plastic debris are thought to enter the Great Lakes annually¹¹.

Recent studies have even found plastic particles in both tap and bottled water with one study finding that 80% of samples taken across 14 countries contained an average of 4.34 plastic particles per litre of water¹² and a different study looking only at bottled water found that 90% of samples from some of the world's most popular bottled water brands contained tiny pieces of plastic¹³. The sources and pathways of this contamination is not yet clear but the World Health Organization (WHO) has recently announced a review into the potential human health risks of this issue. Although not directly related to the marine environment, these examples demonstrate the potential human health consequences of current plastic use.

SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Economic losses related to marine plastics must be taken into consideration. The more marine debris that exists in the ocean, the higher the costs are of coastal clean ups and the loss of revenue from fisheries, shipping and coastal tourism.

These are not hypothetical losses; the Asia-Pacific region is reported as losing 1.265 billion USD every year due to the damage caused by marine litter¹⁴. Clean up costs of derelict fishing gear in the Asia-Pacific Economic Cooperation APEC region range from 100 USD per tonne, right up to 25,000 USD per tonne¹⁵. Global loss of marketable lobster as a

result of ghost fishing from ALDFG is estimated to be at 250 million USD per year¹⁶. For countries which rely upon having a clean coastline for tourism, the potential for lost revenue if tourists stop coming is huge, for example, some Small Island Developing States in places such as the Caribbean are dependent on tourism for economic development but bear a disproportionate burden in dealing with waste from the cruise ship sector¹⁷.

However, waste management as a sector has the potential to become a significant growth industry - the need for innovative and sustainable ways of managing waste already attracts millennials, entrepreneurs and industry heavyweights, providing excellent opportunities in science, technology, engineering, humanities, business studies and IT and can be a powerful catalyst for economic growth¹⁸.

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation and SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

There is evidence to suggest that fast economic growth in countries which lack the waste management infrastructure to cope can be a factor in having a high percentage of mismanaged waste¹⁹. Significant investment in infrastructure particularly in low and middle income countries is necessary to tackle the marine debris issue and overall waste management. Studies have estimated that if waste management infrastructure on land is not improved then the cumulative quantity of plastic waste available to enter the marine environment is predicted to increase by at least ten times by 2025²⁰. SDG 11.6 refers specifically to waste management; "By 2020, reduce the adverse per capita environmental impact of cities including by paying special attention to air quality and municipal and other waste management" and this is critical considering that half of the global human population (3.5 billion people) already live in cities and it is estimated that by 2030 almost 60% of people will live in urban areas.²¹ Unless waste management, disposal and recycling is improved to match this rapid urbanisation it will only intensify the problems caused by mismanaged waste, including the levels of plastic debris in our oceans.

SDG 12: Ensure sustainable consumption and production patterns

Global annual plastic consumption has now reached over 320 million tonnes with more plastic produced in the last decade than ever before²². This figure does not include synthetic fibres which accounted for an additional 61 million tonnes in 2015²³. The sheer scale of plastic poses a serious problem for waste management and the environment.

SDG target 12.5 is clear in stating that by 2030 overall waste generation must be significantly reduced through prevention, reduction, recycling and reuse.

In the short term, especially in developing countries, the most urgent action may be improving waste collection and management. Studies have shown that to achieve a 75% reduction in the mass of mismanaged plastic waste, waste management would have to be improved by 85% in the top 35 ranking countries currently exhibiting high levels of mismanaged waste²⁴.

In the longer term the more sustainable solution is to move towards a more circular economy where waste is designed out of the production cycle and single use plastics are eliminated.

As well as taking action to eradicate single use plastic, governments should also implement other circular economy tools such as the adoption of extended producer responsibility models, significant improvements in waste collection and recycling infrastructures and improved product design that would enable reuse and recycling and minimise packaging. Although there may be many intermediate stages until full circular economy is reached, each of these actions represents a positive step.

SDG target 12.4 requires that the release of chemicals to air, water and soil must be significantly reduced. In some cases legislation may be needed to prohibit certain products and practices, such as bans on cosmetic products containing microplastics, hazardous toxins and practices which allow for the release of resin pellets during transportation. A particularly urgent consideration is the release of microfibres from clothing, too small to be picked up by water treatment plants, these nano plastics enter the waterways when washed and end up in the ocean. A recent study has shown that an estimated 15-31 percent of plastic entering the ocean may be from primary microplastics, two thirds of which come

from clothing fibres and the abrasion of tyres while driving²⁵. These issues cannot be tackled without strong commitments from governments to act on all these pathways causing plastic to enter the oceans.

SDG target 12.3 on the prevention of food waste and loss also makes it essential to tackle ALDFG as the majority of fish caught through 'ghost fishing' are of commercial value and are literally wasted.

SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

SDG 14.1 requires a significant reduction of marine debris by 2025. OceanCare believes that changing consumer and industry attitudes and behaviours towards plastics, including the elimination of single-use plastic, moving towards a more circular economy model as well as adopting proper waste management on land and at sea are all critical for achieving this target.

The absence of pollution is critical for healthy oceans. Without healthy oceans we cannot achieve most of the other Sustainable Development Goals, particularly those relating to ending hunger, improving nutrition and ensuring livelihoods. ALDFG in particular has been proven to negatively impact fish stocks (SDG 14.4) through 'ghost fishing' and the entanglement and death of millions of animals, including whales, seals, turtles and birds, every year is an issue of significant conservation and animal welfare concern.

With over 300 million tonnes of plastics being produced each year globally²⁶ and an estimated 8 million tonnes of this ending up in the ocean²⁷ it is clear that urgent efforts must be made to effectively protect marine ecosystems and the services they provide from the growing threat of marine debris. As long as plastic continues to suffocate the oceans, its use cannot be considered sustainable.

Recommendations

OceanCare proposes the following ten important actions for governments to address in order to prevent and reduce marine debris:

1. Commit to clear and ambitious national and regional targets in order to meet the SDG14.1 target to *prevent and significantly reduce marine pollution of all kinds by 2025*.
2. Develop policies, action plans and regulatory measures which favour preventative actions and 'source-to-sea' approaches and ensure that national action plans address both land and sea-based sources of marine debris, including that from fisheries, aquaculture, shipping and off-shore activities.
3. Facilitate work in developing countries, in particular Small Island Developing States, to build infrastructure and capacity to improve waste management and implement preventative measures to address marine debris from land and sea-based sources.
4. Support via regulatory measures, development of a circular economy approach across relevant industries to stop waste at its source. This should include strategies for the design of products that are durable, can be repaired, and are recovered and recycled at the end of their productive use.
5. Phase out, or prohibit, in the shortest time feasible, single-use plastic items and the use of microplastics and nano plastics in cosmetic and household products and increase engagement with industry and investment in research to develop alternatives. Such measures should be accompanied by consumer campaigns and economic incentives.
6. Develop urgent classification of the different types of plastic waste according to its hazardousness to assist with regulating the use of toxic chemicals in plastic. Governments should commit to phase outs and future bans of the most hazardous toxic plastics.
7. Fully implement existing instruments such as IMO's MARPOL Annex V and the London Protocol to deal with waste generated by ships and the Voluntary Guidelines for the Marking of Fishing Gear developed by FAO²⁸.
8. Invest significantly in technological development particularly in areas such as washing machine and clothing design to address microfibres from clothing, the transportation of plastic resin pellets, and tyre erosion in vehicles.
9. Improve cooperation, monitor progress and share information, particularly on the scale of the problem, trends and viability of implemented solutions from and between national, regional and international initiatives, in particular between relevant UN agencies and between

relevant regional networks such as Regional Seas Programmes and Regional Fisheries Management Organisations (RFMOs). Use this information to better inform policies and solutions and to harmonise standards and methodologies for measurement and monitoring.

10. Enable the removal of marine debris where it poses a threat, utilising best available techniques (BAT) and best Environmental Practice (BEP) to avoid removal of biomass or harm to the environment and further ensuring that removed debris is recycled wherever possible.

Achieving protection of the oceans and marine life from the impacts of marine debris requires critical action from a range of stakeholders. OceanCare's Voluntary Commitments to drive and support progress on marine debris as part of the 2030 Agenda for Sustainable Development can be found here #OceanAction16050: <https://oceanconference.un.org/commitments/?id=16050>

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