Plastic oceans

60% – of the plastic waste in the ocean comes from just 5 countries

40% – of the planet's surface is unregulated ocean

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There are increasing high levels of man-made pollution in many of the world's seas and little actually disappears. By 2050 there will be more plastic than fish in the world's oceans.

We live on a blue planet; the world's oceans cover three quarters of the Earth. They contain 97% of the Earth's water and are currently absorbing around a third of the CO2 being produced by our activities and so helping in part by acting a buffer for some of the impacts of climate change. (30 to 40% of the carbon dioxide from human activity released into the atmosphere dissolves into oceans, resulting in the creation of carbonic acid.) Ocean acidification is therefore a rising concern. The average pH balance is dropping and as a result the growth of calcifying organisms such as corals and shellfish is being reduced. Acidification alone, though, is not the only pollution problem faced by the world's seas, and others are escalating at an even faster rate. The impacts and implications are huge and growing.

Around 80% of marine pollution comes from land-based activities. Waste runs or is dumped into drains and rivers and hence the seas. Oil, fertilisers, sewage, plastics and toxic chemicals are all part of the mix. Oil spills are less frequent but in many countries without an established recycling system, used oil is thrown down the drain or poured directly into rivers. Nutrients in fertiliser runoff from farms and lawns produce algae, depleting dissolved oxygen and suffocating marine life, causing dead zones in places such as the Gulf of Mexico and the Baltic. In many regions, untreated sewage still flows into the seas – 80% of urban sewage discharged into the Mediterranean is untreated. A recent addition to the challenge is the role of desalination plants, cropping up in areas of water stress from the Middle East to Australia and California. As a core by-product of their water purification process, they add salt into the seas, so increasing salinity and hence acute toxicity.

While all of the pollutants are having severe negative impact, perhaps the most visible - hence one that will drive the biggest change in the next decade - is plastic. Around 275 million tons of plastic waste is generated each year around the world; between 4.8 million and 12.7 million tons is either washed or dumped deliberately into the sea. The World Bank expects the planet's municipal solid waste to double within 15 years, much of this in the form of single-use plastic items. Bottles, bags, balloons, packaging, shoes - all take decades to break down. This waste is ingested by pretty much every marine animal including fish, dolphins, seals and turtles. So far, plastic has been found to be blocking the digestive tracts of at least 267 different species.

Although this is a global problem, the epicentre of plastic pollution is clear. Today 60% of the plastic waste in the ocean comes from just 5 countries – China, Indonesia, the Philippines, Thailand and Vietnam. The media already talks about the Great Pacific Garbage patch. By 2025, plastic consumption in Asia will increase by 80%, surpassing 200 million tons; some are calling for specific interventions in these 5 countries. Regionally, the EU is aiming to halve plastic bag use by 2018 but this is not an international standard. Industry experts expect that by 2050 we will be producing three times as much plastic as we do today; on a volume basis, the WEF sees that by 2050 there will be more plastic than fish in the world's oceans.

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Plastic pollution is however not alone as an increasing danger to the world's seas. One politically sensitive issue now is associated with dredging and land reclamation. Whether in the South China seas, where China is creating islands built on coral reefs, or in Indonesia, where sand mining has been providing Singapore with the resource to add 130 square kilometres of artificial 'reclaimed' land in the past 40 years, mining has evidently moved from land to sea.

With all the consequences of our actions now becoming apparent, the question is what will change going forward? Has ocean pollution become such a significant issue that there will be tangible change within the next decade? Some think so. Foremost, and largely because of plastic waste, the visibility of the impact is clear in the media and policy bodies. The UN has included as its 14th Sustainable Development Goal the ambition to "conserve and sustainably use the oceans, seas and marine resources." A core 2025 objective is to prevent and significantly reduce marine pollution of all kinds, especially land-based activities, including marine debris and nutrient pollution.

Unfortunately, much of the world's oceans are not part of any one country's territorial waters. More than 40 per cent of the planet's surface (80 million square miles – seven times the area of the whole African continent) is ocean that belongs to everyone and no one – and hence is largely unregulated. While fishing, environmental, tourist and defence policies all unite to seek to protect and manage the sea close to a nation's shoreline, beyond a notional 12 to 200-mile limits it is largely a free-for-all. This is where the fish, dolphins and plankton are taking the hit. No one is setting the global rules and few are agreeing on a better way.

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When will the balance tip? When will the negative impacts on our environment, the ecology and, most significantly from a financial perspective, a good share of our food resources start to change attitudes? Some are putting their faith in China to set new standards, but these may only apply locally. At a global level some see that a rethinking of the value of the 'blue-economy' is required. The Global Ocean Commission, for one, has called for adoption of an ambitious, long-term goal of zero plastic waste into the marine environment. This will require partnerships and behaviour changes that simply do not exist today, and the end of Europe and the US shipping its waste to Asia. If we start to see waste as a resource in the next decade, will perceptions - and maybe behaviours - shift?

Whether seeking to protect food supplies or looking to fulfil UN development goals, bringing order to the high seas is seen as critical for the future. We have already overshot the planetary limits on biodiversity and nitrogen; as the consequences become more apparent, can we avoid the same for ocean pollution?

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Related insights

Food Waste

30-50% of our food is wasted either in the supply chain or in consumption and could feed another 3 billion. Optimising distribution and storage in developing countries and enabling better consumer information in others could solve this.

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