Marine Plastic Pollution

We are turning our beautiful Ocean into a plastic soup. About 8 million tonnes of plastic enters the sea every year, and at this rate we face a future with more plastic in the Ocean than fish by 2050. Our plastic addiction and waste mismanagement is condemning countless marine birds and animals to death by entanglement or poisoning, and even leading to chemical contamination of the fish we eat. The vast swirls of plastic rubbish visible on the sea surface – horrifying as they are – represent just the tip of the iceberg. What lies beneath are the masses of microbeads and broken-down particles of plastic that are easily ingested by sea creatures, and impossible to remove. The urgently needed solution calls for a combination of enhanced awareness, reduced plastic use, and massively improved waste management. The most effective way to have less plastic in the Ocean is to use less plastic in the first place.

Talking Points

- Plastic wraps our food, our houses, and our technology. It is a remarkable substance that has contributed to advances in health care and helped raise millions pf people out of poverty. But, disposable consumer goods end up – often after a single, fleeting use – in land-fills, littering our landscapes, and polluting our Ocean. 80% of marine plastic pollution originates from land-based sources.
- Plastic is definitely the poster child of everything that is going wrong with the Ocean, and plastic straws are perhaps the most poignant example of the throwaway culture that we have created. Apparently, Americans use 500 million plastic straws every single day- enough to span the world twice. And not all of them end up in the bin- they litter our waterways and our Ocean.
- The 192 countries with a coast bordering the Atlantic, Pacific and Indian oceans, or Mediterranean and Black seas, produced 2.5 billion tonnes of waste in 2010. Of this, an estimated 275 million tonnes was plastic, and 31.9 million tonnes was mismanaged coastal plastic waste. An estimated 8 million tonnes of this plastic waste enters the Ocean every year.[1]
- Global plastics consumption is predicted to grow dramatically, to reach nearly 400 million tonnes a year by 2025.[2]
- If the rate at which plastic debris enters the Ocean goes unchecked, it is possible that the Ocean could contain 1 kg of plastic for every 3 kg of fish by 2025, and more plastic than fish by 2050.[3]
- Inadequate waste management is a significant challenge in the developing world, particularly countries with rapid growing populations in coastal areas.
- Five countries in Asia (China, Indonesia, the Philippines, Thailand and Vietnam) are estimated to account for as much as 60% of the plastic waste entering the Ocean that we are aware of or has been documented.[4]

[1] J. R. Jambeck, R. Geyer, C. Wilcox, T. R. Siegler, M. Perryman, A. Andrady, R. Narayan, and K. L. Law, "Plastic waste inputs from land into the ocean," Science, 2015, Volume 347, Number 6223
[2] McKinsey Center for Business and Environment and Ocean Conservancy, Stemming the tide: land-based strategies for a plastic-free ocean. 2015
[3] World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, The New Plastics Economy: Rethinking the future of plastics, 2016
[4] ibid

- Africa and South America remain relatively unknown in terms of their overall contribution to the plastic waste in the Ocean. Recent research indicates that, given the projected urban expansion and economic growth, that Africa has the potential to follow in the plastic footsteps of Asia.[5]
- Research shows that 10 river systems, located in heavily populated regions where littering is common, carry more than 90% of the global output of plastics that ends up in the ocean. Two are in Africa (the Nile and the Niger) and the other eight are in Asia (the Ganges, Indus, Yellow, Yangtze, Haihe, Pearl, Mekong and Amur).[6]
- The plastic debris floating on the ocean surface accounts for only 5% of all the plastic trash dumped into the sea; the other 95% is submerged beneath the surface. Plastic trash has been found in both the Arctic and the Antarctic, virtually nowhere in the Ocean is untouched.
- This includes the billions of tiny pieces of plastic, called microbeads, that are often added to products such as toothpaste, face wash and abrasive cleaners, and are small enough to easily pass through water filtration and sewage treatment systems to end up polluting the Ocean.
- Microplastics coming from synthetic fabrics washed in washing machines is the most common form of microplastic in the Ocean.[7]
- Microplastics are even found in our table salt and tap water. A 2017 study showed that more than 80% of water samples collected from over 5 continents tested positive for plastic fibres.[8] A recent study even showed that it appeared in human stool for the first time.
- Bio-degradable plastics (particularly those made from plants) are promising under the right conditions, but these conditions are generally not found in the natural environment, and especially not in the Ocean. They are also energy intensive, expensive, and have the potential to make the problem of littering worse by encouraging people to think that it is okay to throw away valuable resources like plastics. Furthermore, even in ideal conditions, biodegradability does not resolve critical issues such as entanglement, or ingestion by marine animals.[9]
- Even if society were to ban all plastic bags, for example, that would only account for roughly 1% of total plastic film production.[10]
- There is growing awareness of our planet's plastic epidemic. It has led to increasing global commitments and action to fight marine plastic pollution at national as well as at the international level. For example, in 2017 the UN launched its #CleanSeas campaign to turn the tide on plastic. In December 2017, 200 governments at the UN Environment Assembly- the "world's highest-level decision-making body on the environment, adopted a resolution urging much more be done about plastic waste, and some said they want the action to lead to legally binding treaties.
- The EU has waged war against plastic waste as part of its plan to clean up its act and ensure that every piece of packaging produced in Europe is reusable or recyclable by 2030.
- In June 2018, G7 leaders also adopted their Oceans Plastics Charter. Japan are also pushing for the adoption of an obligatory action framework to tackle plastic marine pollution at the G20 Summit in Osaka in June.

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[5] J. R. Jambeck, B.D. Hardesty, A. Brooks, T. Friend, K. Teleki, J.Fabres, Y. Beaudouin, A. Bamba, J.Francis, A. Ribbink, T. Baleta, H. Bouwman, J. Knox, C.Wilcox, "Challenges and emerging solutions to the land-based plastic waste issue in Africa" Marine Policy, 2017

[6] C. Schmidt, T. Krauth, S.Wagner, "Export of Plastic Debris by Rivers into the Sea", Environmental Science and Technology, 2017, vol.51, pp 12246-12253

[7] J. Boucher, D. Friot, Primary microplastics in the Ocean, IUCN, 2017

[8] https://orbmedia.org/stories/Invisibles_plastics/

[9] UNEP, Biodegradable Plastics and Marine Litter. Misconceptions, concerns and impacts on marine environments, United Nations Environment Programme (UNEP), 2015

[10] UNEP, Single-use plastics: A roadmap to Sustainability, 2018

- There are also a growing number of countries that have banned the use of plastic bags and microbeads or are planning to.
- The business world is also starting to take action. As part of the New Plastics Economy Global Commitment, companies that are collectively responsible for producing 20% of all plastic packaging globally have pledged to eradicate plastic waste and pollution.
- Coastal clean-ups are being organized all other the world; and public awareness films are helping get the message out of the bottle.

The Consequences

- Plastic in the Ocean has a disproportionately large impact on ocean wildlife and habitats.
- Small pieces of plastic are eaten by fish, turtles and seabirds, often resulting in their death. Animals and birds can also become tangled up in plastic debris, leading to serious injuries and fatalities.
- Over time, plastic material does not bio-degrade, but breaks down into tiny particles known as micro plastics, which can be eaten by small marine animals and enter the food chain.
- Micro plastics in the Ocean are commonly defined as less than 5 mm in diameter.
- Plastic debris often contains chemicals added during manufacture that can absorb and concentrate contaminants such as pesticides, heavy metals and persistent organic pollutants (e.g. polychlorinated biphenyls or PCBs).
- This pollution is extremely difficult to remove from the environment or trace back to its source.
- A growing body of scientific research and evidence suggests that these harmful substances can transfer into the tissue of aquatic species – such as fish – that are consumed by humans.[11]

What needs to happen?

- Stemming the tide of plastics entering the Ocean will require a combination of approaches, including, most importantly, reducing and limiting the amount of plastic that we use, , improving waste collection, infrastructure, and management, and expanding recycling, particularly in the countries where most of the plastic trash originates.
- We must transition away from a linear (make, use, dispose) economy towards a circular economy where resources, such as plastics, are used, recovered and reused over and over again, instead of heading directly to the landfill or the Ocean.
- The most effective way to have less plastic in the Ocean is to use less plastic in the first place.
- **Corporate action**: We need to urgently reduce single-use plastic, and while companies' support for initiatives that help recycle and clean-up plastics are important, the key solution is for them to urgently introduce alternative sustainable packaging.
- **Government leadership:** More efforts are needed by governments to take leadership on environmental policy to cooperate and tackle this global scourge. Action is needed now, not ten years from now.
- An immediate measure needed is reducing barriers to financing better waste management, particularly in the identified countries (China, Indonesia, the Philippines, Thailand and Vietnam)

[11] GESAMP (2015). "Sources, fate and effects of microplastics in the marine environment: a global assessment" (Kershaw, P. J., ed.). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 90, 96 p

that are responsible for 60% of the plastic waste entering the ocean.

- **Personal responsibility:** We all also need to take personal responsibility and significantly limit our use of plastic. For example, we can carry a reusable water bottle or coffee cup, bring our own cloth bag or other reusable bag when shopping, buy second-hand products, dramatically cut down our consumption of single-use plastic such as food contained in plastic packaging or plastic straws in our take-away drinks, and make sure we recycle whenever possible.
- **Education and public awareness**: Some governments have incorporated education about plastics, waste management and recycling into their school curriculums. This is a helpful strategy and public education efforts should be amplified. But they also need to go further, faster to incentivize businesses to change and to also adopt procurement policies that reduce their plastic footprint.