Marine Plastics

**ISSUE** We are witnessing a crisis in the making. What looked like a marginal, local, and aesthetic disturbance is now recognized as a global challenge that is probing the adaptiveness of an entire industry, challenging entrenched consumer behaviors, and prompting governments to take leadership into new territory: marine plastics. This call to action is spurred by the relatively new recognition that at least 8—13 million tons of plastic end up in our oceans every year, the equivalent of one garbage truck full of plastic dumped into the ocean each minute.

Plastic makes up 80% of all marine debris from surface waters to deep-sea sediments. Plastic has been detected on shorelines of all the continents, with more plastic materials found near popular tourist destinations and densely populated areas. Invisible plastic has been identified in tap water, beer, salt, and seafood. These microplastics are present in all samples collected in the world's oceans, including the Arctic. The main sources of marine plastic are land-based: urban and storm runoff, sewer overflows, inadequate waste disposal and management, industrial activities, construction, and illegal dumping. Ocean-based plastic originates mainly from the fishing industry, nautical activities, and aquaculture.

Plastic pollution threatens not only ocean health, but also food safety and quality, human health and coastal tourism, and contributes to climate change. The impacts to marine life are well documented: seabirds, whales, fishes, and turtles mistake plastic waste for prey, and many die of starvation as their stomachs fill with plastic debris. Animals can become entangled in or suffocated by plastics. Floating plastics also contribute to the spread of invasive marine organisms and bacteria, which disrupt ecosystems. Less appreciated are the environmental impacts of the entire lifecycle of plastics: greenhouse gas emissions during fossil fuel extraction for plastic production and hazardous chemical emissions during production and improper disposal. Further, several chemicals used in the production of plastic materials are carcinogenic and to interfere with the body's endocrine system, causing developmental, reproductive, neurological, and immune disorders in both humans and wildlife.

**SOLUTION**

Given the sheer magnitude and pervasiveness of this problem, ocean and coastal clean-ups are coming too little, too late. Reversing the tide with marine plastics requires preventing it from entering the ocean through the 5 Rs: rethink, redesign, reduce, reuse, and recycle. The solution requires addressing the entire plastic value cycle: material engineering, product and process design, consumer use and behavior, and collection systems and recycling. This circular economy approach
to marine plastics not only reduces marine debris but it also reduces greenhouse gas emissions through reduced fossil fuel extraction, reduces hazardous chemical emissions through both improved end-of-life practices to capture and properly dispose of these substances, and reduces hazardous chemical emissions through redesigned materials and products.

Addressing the challenge of marine plastics requires engaging the breadth of public and private partners working at global to local scales. Global corporations are already waking up to the need to adopt sustainable practices, as evidenced by the announcement of 11 leading brands, retailers, and packaging companies, including Unilever, Coca-Cola and Ikea, to work towards 100% reusable, recyclable, or compostable packaging by 2025 through the New Plastic Economy initiative led by Ellen MacArthur Foundation. Recognizing the business opportunities, small and medium enterprises are growing in the areas of alternative materials (e.g. seaweed based), redesign (e.g. disposable plastic bottles with attached caps), consumer use (e.g. shared coffee cup systems) and recycling facilities (e.g. improved sorting technology for home and commercial use).

At the same time, an increasing number of governments are moving toward plastic bag and/or straw levies and/or bans, including Chile, China, Colombia, France, India, Kenya, and South Africa (to name a few) as a first step toward wider plastic ‘rethink’ policies and incentives. More promising, comprehensive initiatives are also being announced. Five of the seven G7 countries (Canada, Germany, France, Italy and the UK) recently signed a non-binding agreement to eradicate plastics pollution. Released a few months ago by the European Commission, A European Strategy for Plastics in a Circular Economy establishes a vision for Europe’s new plastics economy that includes improving the economics and quality of plastics recycling, curbing plastic waste and littering, driving innovation and investment towards circular solutions and harnessing global action. Among developing nations, the Indonesian government has been one of the most committed nations to addressing marine plastic pollution having developed a National Plan of Action for Marine Plastic Debris Management and having pledged US$1 billion to curb ocean waste by 70% by 2025. Multilateral initiatives are also supporting these government efforts, such as the United Nations Environment Programme through its Beat the Pollution and CleanSeas campaign.

Global alliances building on public-private partnerships are critical to the solution, such as the recently proposed Global Plastic Action Partnership put forward by the World Economic Forum, UN Environment, World Resources Institute, UN Friends of the Ocean, and other key global players. Global non-governmental organization campaigns play a critical role and include the Trash Free Seas Alliance led by Ocean Conservancy, Plastic Pollution Coalition, Litterati, 5 Gyres, Plastic Soup Foundation, Beat the MicroBead and the Ocean Plastic Lab.

Finally, blended financing through grants, loans and impact investors are increasingly being pursued through for example the Plastic Solutions Fund and Closed Loop Ocean in order to foster innovation and ensure the long-term financial sustainability of marine plastic initiatives.

**LOOKING AHEAD**

The circular economy approach to marine plastics is well aligned with the GEF commitment to promoting global environmental benefits, including protecting biodiversity, reducing greenhouse gas emissions, and minimizing hazardous chemical emissions.

Recognizing the importance of this issue, the GEF has highlighted marine plastics within the GEF-7 strategy under the International Waters and Chemicals and Waste Focal Areas. In considering the existing and emerging players and alliances in this frontier space, there are several strategic intervention points for GEF that relate to the major phases of the plastic life cycle:

- **Material and design engineering** - promoting the use of recycled content and alternative sources of feedstock for plastics and redesigning products to foster reuse, recycling, shared use, and extended life through innovation awards, incubation, investor services, infrastructure for circular supply chains, industry standard setting, alliance building, and national policies and incentives to enable circular material flows;
- **Consumer use** - changing the behavior of individuals and businesses that use plastic (e.g. restaurants) to catalyze demand for sustainable products and processes as well as to foster reuse, repair, remanufacturing, and recycling through awareness raising and national policies and incentives;

- **Recovery and recycling** - improving efficient waste collection, tracking, management, and trade markets to prevent improper incineration and discharge into waterways and promoting recycling of material back to the first intervention point through market analyses, hot spot analyses, awareness programs, financial models, information systems, and national policies and incentives.

Along with many partner organizations, the GEF also recognizes the global nature of this issue and, consequently, the value of global investments, which may include efforts to raise government and private sector awareness regarding plastic solutions and opportunities, fostering public-private partnerships, promoting best practices and shared experiences, including policies and incentives, monitoring and evaluation protocols, and working with the public and private sectors to set global standards.