



Ocean
Conservancy

Stemming the Tide: Land-based Strategies for a Plastic-Free Ocean

Marine debris, particularly the dramatic upsurge of plastics in the ocean, has reached crisis proportion. While plastic has been one of the most versatile inventions of our time, it has become increasingly evident that discarded plastic products pose a challenge to many ecosystems and especially to the ocean, the ultimate “sink.” Once in marine waters, plastics begin to break down into small, irretrievable fragments that can persist for hundreds of years. Often mistaken for food, these particles have been found in over 660 marine species, from the smallest zooplankton to the largest whales. Plastic pollution also takes its toll economically on multi-billion dollar fishing and tourism industries, and its potential impact on human health is still being assessed.

Recent studies show that roughly eight million tonnes of plastic enter the ocean every year, in addition to the 150 million tonnes estimated to be there already. Left unchecked, by 2025 there could be 250 million tonnes of plastic in the ocean, one pound of plastic for every three pounds of fish. Over 80 percent of ocean plastics comes from land where, after use, the plastic product or packaging is improperly discarded, uncollected, or mismanaged, and thus “leaks” into the ocean.

As a signature initiative of its Trash Free Seas Alliance®, Ocean Conservancy worked with the McKinsey Center for Business & Environment to lead a comprehensive study, *Stemming the Tide* supported by Alliance members, The Coca-Cola Company, the Dow Chemical Company, the American Chemistry Council, World Wildlife Fund and the Recycling and Economic Development Initiative of South Africa (REDISA), and advised by technical experts in waste management, plastics and recycling as well as various governments and multilateral organizations. ***Stemming the Tide*** analyzes where the majority of ocean plastic comes from

and how it leaks into the ocean, examines regional differences of pollution pathways, weighs potential plastic waste reduction solutions and the relevant economics of each. The report has short, middle and long term scenarios for reducing plastic inputs to the ocean, and identifies the cornerstones of a concerted program for global action to solve the plastic waste crisis.

Ocean Conservancy has long known the dangers posed by trash in the ocean. The marine conservation organization started the world's largest annual effort to remove trash from beaches and inland waterways, the International Coastal Cleanup, in 1986, and over the years has mobilized more than 10 million volunteers in over 150 countries. In 2011, Ocean Conservancy established the Trash Free Seas Alliance® (TFSA), uniting industry, science and nonprofit leaders who share a common goal for a trash-free ocean.

Over the last year, breakthroughs in science and in TFSA commitment have resulted in a groundswell of support to solve the plastic pollution crisis. A three-year independent research study commissioned by Ocean Conservancy through the National Center for Ecological Analysis and Synthesis (NCEAS) at University of California, Santa Barbara, resulted in codifying a body of science on plastic debris in the ocean. A seminal publication in February 2015 in the journal *Science* by an international team of scientists at NCEAS led by Dr. Jenna Jambeck quantified for the first time the magnitude of the problem and identified the scope of what must be done to forge a global solution to plastics in the ocean.

While all countries with coastal access contribute to the ocean plastics problem, over half of the material leaked into the ocean comes from five rapidly developing countries where production and consumption of plastics is outpacing local waste management capacity – China, Indonesia, Philippines, Vietnam, and Thailand, in order of magnitude.

This report identifies ways this global crisis can be diverted through a set of strategies rooted in stopping the leakage in the first place. **By implementing a plan that begins at the local level, a 65 percent reduction of plastic pollution can be achieved in these five countries, which would mean a 45 percent reduction of plastics flowing into the ocean globally.** There is no “one size fits all” solution; achieving this global reduction requires the following mix:

- **26 percent: Close “leakage” points within the collection system** by optimizing transport systems to eliminate illegal dumping, and closing or improving dump sites located near waterways.
- **23 percent: Increase waste collection rates by offering expanded services.** Plastic waste is over twice as likely to end up in waterways and the ocean if uncollected.
- **16 percent: Keep leakage points closed by increasing the value of waste.** Manually sort waste in rural areas to extract high value plastic waste for recycling and convert the low value waste into fuel for use in the cement industry. Deploy a mix of waste-to-fuel or waste-to-electricity technologies in cities.

In addition we need to work with industry to introduce new materials, recovery, and recycling approaches that will allow uncontrolled plastic waste to peak globally by 2030.

The solutions suggested by this study are not plastic-specific – they target the whole waste stream. **If executed today, the total program would entail a cost of USD ~5 billion per year.**



Six priority areas of action exist for a global program to reduce plastic waste:

- 1. Ensure political leadership and commitment.** Obtain real and meaningful commitments from national governments, governors and mayors to set and achieve ambitious waste management targets.
- 2. Secure on-the-ground wins.** Provide local “proofs of concept” for integrated waste management approaches in a number of carefully selected “beta” cities.
- 3. Get critical mass.** Use lessons learned in beta cities to enable stakeholders to build a “best practice” transfer mechanism that can accelerate the transfer of global expertise to high priority cities.
- 4. Pave the way for funding.** Ensure that required project investment conditions are in place in the private, public and multi-lateral sectors. Work with industry on an innovative mechanism to strategically reduce capital costs and investment risks.
- 5. Facilitate technology implementation.** Equip state-of-the-art waste management technology providers with the detailed data on waste composition, volume, and pathways; local infrastructure; wage structure; scavenger systems; feedstock supply security; energy prices, feed-in tariffs and off-take agreements to enable implementation at scale.
- 6. Intensify the priority.** Bring leadership and strategic focus on solutions to the ocean plastic challenge as part of the global policy agenda on the ocean.

Industry leaders, NGOs and investors, along with local, national and multilateral government entities, need to jointly define the architecture of such a global program, identify the actors that need to be involved, and determine the funds required to drive this effort as a global flagship initiative that stands for a new, collaborative, and effective way of addressing a global challenge.

The health of our ocean – and that of the planet itself – depend upon the collective action we take today to reduce the flow of plastics into the ocean. Ocean Conservancy has been a leading voice on the impact of marine debris for thirty years. However, what we have learned in the last year reaffirms that a renewed commitment to stem the tide of plastics in the ocean is desperately needed. If we hope to protect the ocean from plastics, we must look to the land for solutions. While the situation is large and daunting, it is not insurmountable. It is not too late. Now is the time to act.

1 Jambeck et al. 2015, in *Science*, includes Sri Lanka in its estimates of top five countries (at Rank 5); our findings in China and the Philippines suggest that a re-evaluation of plastic leakage quantity for Sri Lanka might reveal a lower ranking than originally believed, with Thailand replacing Sri Lanka in the top five countries.



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