Global report into plastic threats to the ocean

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Professor Richard Thompson OBE. Credit: University of Plymouth

A world-renowned expert in plastic pollution from the University of Plymouth has contributed to a major new report showing that without immediate and sustained action, the annual flow of plastic into the ocean could nearly triple by 2040.

However, technologies that are available today could cut this volume by more than 80 percent if key decision makers are willing to make system-wide changes, the report suggests.

Led by The Pew Charitable Trusts and SYSTEMIQ, the findings are revealed in a new report—"Breaking the Plastic Wave: A Comprehensive Assessment of Pathways Towards Stopping Ocean Plastic Pollution"—and a paper published today in *Science*.

They worked in collaboration with the University of Oxford, University of Leeds, Ellen MacArthur Foundation and Common Seas, supported by a panel of 17 global experts including Professor Richard Thompson OBE, Head of the University's International Marine Litter Research Unit.

The research found that if no action is taken to address the projected growth in plastic production and consumption, the amount of plastic entering the ocean each year would grow from 11 million metric tons to 29 million metric tons over the next 20 years. That is equivalent to nearly 50kg of plastic on each metre of coastline worldwide.

Because plastic remains in the ocean for hundreds of years and may never truly biodegrade, the cumulative amount of plastic in the ocean by 2040 could reach 600 million tons.

The COVID-19 pandemic has presented additional challenges in the fight to end ocean-bound plastic pollution, as single-use plastic consumption has increased during the pandemic, according to the International Solid Waste Association.

Professor Thompson led the first research to characterise ocean microplastics in 2004, and his team's work led to the University being awarded a Queen's Anniversary Prize for Higher and Further Education in 2020 for its ground-breaking research and policy impact on microplastics pollution in the oceans. He said:

"Plastics bring many societal benefits. These lightweight, versatile, durable and inexpensive materials have the potential to reduce our human footprint on the planet. But at present over 40% of all production is destined for single use items which bring short term benefit but can persist for centuries, and this rapid and sustained accumulation of end of life plastic as waste in managed systems, and as litter, is creating a global environmental challenge.

"This major international study points the way to solutions, allowing society to gain the benefits from plastics without the current environmental issues. At the same time the report, for the first time, makes very clear that to overt widespread environmental damage we need to act now,

working on multiple solutions simultaneously.

"From my own perspective it is clear we will need independent academic evidence to help guide the individual choices and trade-offs between solutions; that is something my team at the University of Plymouth have—and will continue—to deliver."

Working with scientists and experts around the world, Pew and SYSTEMIQ reached the report's conclusions using a first-of-its-kind economic model that quantifies the flow and amount of plastic in the global system and compares the quantity of ocean plastic pollution between 2016 and 2040 under six scenarios.

They say that although progress has been made in addressing the global plastic challenge, current commitments by government and industry will reduce the amount of plastic flowing into the ocean only by 7 percent by 2040.

Without meaningful change, about 4 billion people worldwide are likely to be without organised waste collection services by 2040, and closing this gap would require connecting more than 500,000 people to collection services per day until 2040.

Breaking the Plastic Wave identifies eight measures that together could reduce the plastic pollution that flows into the ocean annually by about 80 percent, using technology and solutions available today.

Among them are reducing growth in plastic production and consumption, substituting some plastics with alternatives such as paper and compostable materials, designing products and packaging for recycling, expanding waste collection rates in middle- and low-income countries, increasing recycling, and reducing plastic waste exports.

In addition to improving ocean health, adopting the changes outlined in the report could generate savings of $70 billion for governments by 2040, reduce projected annual plastic-related greenhouse gas emissions by 25 percent, and create 700,000 jobs.

Tom Dillon, Pew's vice president for environment, said:

"There's no single solution to ocean plastic pollution, but through rapid and concerted action we can break the plastic wave. As this report shows, we can invest in a future of reduced waste, better health outcomes, greater job creation, and a cleaner and more resilient environment for both people and nature."

Martin Stuchtey, SYSTEMIQ's founder and managing partner, added:

"Our results indicate that the plastic crisis is solvable. It took a generation to create this challenge; this report shows we can solve it in one generation. Breaking the Plastic Wave leaves no viable excuse on the table; we have today all the solutions required to stem plastic flows by more than 80 percent. What we now need is the industry and government resolve to do so."

More information: Breaking the Plastic Wave: Top Findings for Preventing Plastic Pollution. www.pewtrusts.org/en/research- … ic-wave-top-findings

Provided by University of Plymouth