

Marine plastic pollution

THE HEFTY COST OF DOING NOTHING

PLASTIC WASTE FLOWING from rivers into oceans around the world has reached an estimated 0.8–2.7 million metric tons per year.¹ Awareness of the harmful impact has led to several initiatives from governments and volunteers aiming to curb the problem. The ability to objectively quantify the impact of marine plastic pollution could enable the construction of effective and efficient frameworks to assess solutions for controlling or preventing the buildup of marine litter at the source itself before it enters the oceans.

In collaboration with The Ocean Cleanup under the Impact Foundation, Deloitte Netherlands developed an economic assessment model to quantitatively estimate the impact of land-sourced marine plastic on key economic sectors linked to the blue economy.² By compiling information from existing research literature across Europe, Asia, Africa, Middle East, and the Americas, our model highlighted that marine plastic pollution could have resulted in an annual economic loss of up to US\$19 billion for 87 coastal countries in 2018. Although staggering, this number could be conservative, as the economic loss relates to inhabited coastlines, and only selected industries linked to oceans were scoped in to study the impact.

The model indicated that the highest costs generally arise from cleanup activities, which relate



directly to government spending. Because government-sanctioned cleanup activities are typically systematic with dedicated budgets, governments are generally the primary orchestrators of cleanup activities and the bearers of associated costs. With the scope of our analysis limited to selected coastal countries, we identified four primary cleanup areas: coastlines, rivers/other waterways, marinas, and ports. According to the costs estimated by the model,³ cleaning stranded or floating plastic waste from inhabited coastal areas would have cost US\$5.6–15 billion in 2018.

The second direct cost estimated by the model⁴ is related to marine tourism: The industry potentially lost an estimated US\$0.2–2.4 billion in revenue in 2018. The aesthetic value of the environment can be greatly affected by mismanaged waste. Stranded debris can also cause injuries and long-term health concerns for humans. Whether tourists are turned off by health/safety risks or just the prospect of an unpleasant experience, a reduction in tourism activity has caused a snowball effect, and tourism-associated businesses are seeing a loss of livelihood.

The third direct cost is being felt by fisheries and aquaculture businesses, which lost US\$0.3–4.3 billion in revenue in 2018, as estimated by the model.⁵ The presence of plastic debris in water bodies has an adverse effect on marine biodiversity. Not only can this affect local ecosystems and the food chain, but it can also harm fishery reserves which are typically the main source of sustenance for the fisheries sector. The degradation of water quality tends to compound the problem by creating unfavorable conditions for aquaculture. Fish larvae can have high mortality rates and are sensitive to water quality and nutrient feed. Any slip in their survival rates can result in significant economic losses for the fisheries and aquaculture industry.

We further studied the waste management value chain in coastal countries that have higher volumes of waste leakage. A responsible, well-established waste management infrastructure allows for waste collection, transportation, sorting, and processing—ideally recycling—in a way that keeps plastic from ending up back in the environment. We found that the challenge is exacerbated by the fact that the countries with the highest outflow of river plastics typically have underdeveloped and/or underfunded plastic disposal options, as well as substantial leakage. While the public and private sectors have made some efforts to address this issue, more commitment is likely needed to act locally.

The financial impacts of marine plastic pollution emphasize the incentive to remove river plastic. The field is wide open for potential heroes, from government to development agencies to corporates. The prospect of involvement for all seems win-win: Cut the cost of plastic waste and earn a reputation for taking action. ●

To learn more, read the full report, *Marine plastic pollution: The hefty cost of doing nothing*, on www.deloitte.com/insights/marine-pollution.

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1. Laurent C. M. Lebreton et al., "River plastic emissions to the world's oceans," *Nature Communications* 8, no. 1 (June 7, 2017): pp. 1–10.
2. The term "blue economy" covers a wide range of interlinked established and emerging sectors, including all economic activities related to oceans, seas, and coasts. European Commission, *What is the blue economy?*, accessed November 22, 2019.
3. Vincent Viool et al., *The price tag of plastic pollution*, Deloitte Netherlands, 2019.
4. Ibid.
5. Ibid.