

2022 UN Ocean Conference

WRITTEN STATEMENT

Garbage Patches and Their Environmental Implications in a Plastisphere

Garbage patches refer to large areas in the ocean where garbage and debris accumulate. These patches are formed by gyres, ocean currents that help in the circulation of ocean waters around the planet. Apart from circulating ocean waters, they also transport marine debris, especially solid waste from coastal areas.

This communication reports on the increases in the sizes of garbage patches, and their environmental implications, outlining the dimensions of what is a growing problem connected with the “plastisphere”. Presenting data on the distribution of garbage patches in the world’s oceans and making some predictions on future growth, which is partly associated with the future increases in worldwide plastics production.

There are six main influential gyres, namely, the North Atlantic Gyre, the South Atlantic Gyre, the East Pacific Gyre, the North Pacific Gyre, the South Pacific Gyre, and the Indian Ocean Gyre. Garbage patches exist inside these gyres. These six gyres have a significant impact on the ocean. The big six help drive the so-called oceanic conveyor belt that helps circulate ocean waters around the globe. Apart from circulating ocean waters, they’re also drawing in the pollution that we release in coastal areas, known as marine debris.

The world’s largest garbage patch is the Great Pacific garbage patch which is located in the North Pacific gyre. The estimated area of the patch is 1.6 million km². The South Pacific garbage patch located in the South Pacific gyres is estimated to cover around 2.6 million km². The Indian Ocean garbage patch is located within the Indian Ocean gyre. Currently, the patch is estimated to extend between 2.1 to 5.0 million km². The North Atlantic garbage patch, which hosts the largest patch in the region, located at the North Atlantic gyre, was first discovered in 1976. The exact size remains unknown. However, there are estimates that it spans over hundreds of kilometres. The South Atlantic Plastic gyre hosts the smallest of the five garbage patches. The size is approximately 0.7 million km². The central parts of the garbage patches are characterized by a higher density, having most of the weight, when compared with the boundaries, which are less dense. However, it is rather complex to define the size of

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the garbage patches exactly since the trash constantly changes its position due to ocean currents and winds.

In terms of future trends, the increases seen in global plastic production, which totalize in 2019 around 368 million metric tons worldwide, are a reason for concern. The global cumulative production of plastic is expected to reach 34 billion metric tons by 2050, meaning that garbage patches are expected to grow in the future. Short communication by Leal Filho et al., (2021) provides an estimate of their growth at the annual growth rate of 2.5% based on current trends.

It is therefore important that concerted action is undertaken so as to address the problem in respect of collecting them and clean up the oceans. This entails, in turn, better management of land-based solid waste as a whole, and plastic waste in particular, so that they do not reach the oceans in the first place. Moreover, the test and deployment of new technologies to collect and process marine plastic, especially microplastics, is needed, a task which needs to mobilize substantial amounts of money to cover the associated costs.

A further reason for concern is the fact that, whereas EU countries have imposed bans on some types of plastic products, most countries in Asia, Latin America, and Africa have no such restrictions in place. This trend suggests that, apart from technological solutions, clear policies to regulate plastic production and consumption are needed so that the world is better able to cope with what is, without doubt, a growing problem.



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