

Sustainable plastics are not a solution, researchers warn

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With hundreds of millions of tons of plastic produced and used on a yearly basis, it's no surprise that people are looking for alternatives. Yet so-called "sustainable plastics" are not a silver bullet, warn researchers

Sara Gonella and Vincent de Gooyert from Radboud University.

When looking at the full impact of these plastics, they are often not nearly as sustainable as they pretend to be, they argue. Their [findings](#) are published in *Environmental Research Letters*.

The rising popularity of plastic poses a large environmental challenge. Over the past few years, attempts have been made to address it: from recycling technologies to biodegradable plastics to attempts to change consumer behavior with a tax on plastic, all contributing to the relatively new concept of "[sustainable plastics](#)."

The new buzzword piqued the interest of De Gooyert and Gonella, who have now published a comprehensive study on the true sustainability of possible interventions in the plastics system, aimed at improving its sustainability.

"Calling it sustainable creates the impression that it will have a more positive effect on the environment. But our study shows that might be only true when looking at it in a very narrow context," warns Gonella. "The end product might be more sustainable in some regards, but there can still be many [negative impacts](#) and undesired consequences at the same time, especially if you also consider the social and [economic aspects](#)."

An example can be found in the push to switch from plastic made from oil to plastic made from biomass, explains De Gooyert. "Using biomass is still incredibly energy intensive and relies on fossil fuels. Plus, a higher demand for biomass might result in overusing the land in low-income countries, which has a negative effect on food production and quality in those regions."

In many other cases, there is simply no alternative to plastic available.

"For a wide range of essential applications, from medical gear to [solar panels](#), the most sustainable options are still the ones produced from plastic," says De Gooyert.

The researchers also point out that, if people are told the plastic they use is now sustainable, it might lead to them becoming more careless with the use of plastic.

Gonella says, "If people are under the impression that, for instance, biodegradable and/or bio-based plastics are environmentally sound 'enough,' it might dissuade a larger transition away from any type of material. Also, not all consumers are aware that [biodegradable plastics](#) may not be bio-based, and vice versa: this confusion can lead to mistakes in waste separation."

The findings by Gonella and De Gooyert may serve as a warning to the United Nations, which is currently forming a treaty on plastic pollution. Gonella states, "A treaty that is supposed to end plastic pollution is expected to follow in the coming year, but there are indications that many members of the UN are considering what they call 'alternative plastics' a viable way forward on the path towards increased sustainability.

"But without having a clear, all-encompassing definition of what sustainable plastics actually are, the UN might fall into the same trap many others have, as we see in our paper.

"A clear definition on what makes plastics sustainable is still quite vague, especially if you look at all the surrounding factors as we did. As long as all aspects of sustainability are not accounted for, don't expect too much from what is presented as 'sustainable' plastics."

More information: Sara Gonella et al, What are sustainable plastics? A review of interrelated problems and solutions to help avoid unintended consequences, *Environmental Research Letters* (2024). [DOI: 10.1088/1748-9326/ad536d](https://doi.org/10.1088/1748-9326/ad536d)

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