

Takeaway containers—the environmental cost of packing our favorite fast-foods

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Scientists say more should be done to tackle the growing environmental impact of takeaway food containers.

A new study estimates there are 2025 million takeaway containers per year being used in the European Union (EU) alone. It also says finding a

way to recycle disposable takeaway containers could help reduce equivalent greenhouse gas emissions generated annually by 55,000 cars.

The researchers, from The University of Manchester, have carried out the first ever comprehensive study of the environmental impacts of disposable takeaway-food containers. They looked at aluminium, polystyrene ([styrofoam](#)) and polypropylene (clear plastic) containers. These were compared to reusable plastic containers, such as "Tupperware".

For example, the study found that whilst Styrofoam containers have the lowest carbon footprint—50% lower than aluminium containers and three times lower than their plastic counterparts—they cannot be considered a sustainable packaging as they are not recycled at a mass level and often end up in landfill.

The global takeaway food market is growing fast, with a projected value of over £80 billion in 2020. The sector uses a vast amount of disposable takeaway containers, estimated in this study at 2025 million units per year in the European Union (EU) alone.

Despite this, the scale of the impacts on the environment of takeaway-food containers used in this growing sector was not measured until now.

The study used life cycle assessment (LCA) to estimate the impacts of containers, taking into account their manufacture, use and end-of-life waste management. Altogether, the [research team](#) investigated 12 different environmental impacts, including climate change, depletion of natural resources and marine ecotoxicity.

The study found that the styrofoam container was the best option among the disposable containers across all the impacts considered, including the carbon footprint. For example, the styrofoam container had 50% lower

carbon footprint than aluminium and three times lower than the plastic. This is because of the lower amount of materials and energy used in the production of styrofoam compared to the other two types of [container](#).

However, styrofoam containers are currently not recycled and cannot be considered a sustainable packaging option. The study estimates that recycling half of the containers currently in use, as envisaged by the EU recycling policy for the year 2025, would reduce their carbon footprint by a third. This would save 61,700 t CO₂ eq. per year at the EU level, equivalent to the greenhouse gas emissions generated annually by 55,000 cars. Most other impacts would be reduced by more than 20%.

Dr. Alejandro Gallego-Schmid, the lead author, explains: 'Achieving this level of recycling of styrofoam containers is going to be challenging. Although technically possible and practiced at small scale in some countries, the main difficulties are related to collecting the used containers and the associated costs.'

Dr. Joan Fernandez Mendoza, one of the study authors, added: 'Because they are so light, the styrofoam containers can easily be blown away, contributing to urban and marine litter. So, despite their lower life cycle environmental impacts relative to the other containers, styrofoam containers cannot be considered a sustainable packaging option unless they can be recycled at a large scale.'

The study also found that reusable Tupperware containers had a lower carbon footprint than disposable styrofoam when they were reused more than 18 times. This is despite the energy and water used for their cleaning. Disposable clear-plastic containers needed to be reused even fewer times—only five—to become better for the carbon footprint than the styrofoam.

Professor Adisa Azapagic, the project leader, commented: 'As

consumers, we can play a significant role in reducing the environmental impacts of food packaging by reusing food containers as long as possible. Our study shows clearly that the longer we reuse them, the lower their impacts become over their extended lifetimes.'

More information: Alejandro Gallego-Schmid et al, Environmental impacts of takeaway food containers, *Journal of Cleaner Production* (2018). [DOI: 10.1016/j.jclepro.2018.11.220](https://doi.org/10.1016/j.jclepro.2018.11.220)

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