

Facilitating the Adoption of Takeaway Reuse Systems

Cost Assessment of Moving from Single-use Packaging to a Takeaway Reuse System and Assessment of the Necessary Policy Measures

Executive Summary

September 2024



Report For



Zero Waste Europe (ZWE) is the European network of communities, local leaders, experts, and change agents working towards a better use of resources and the elimination of waste in our society. We advocate for sustainable systems; for the redesign of our relationship with resources; and for a global shift towards environmental justice, accelerating a just transition towards zero waste for the benefit of people and the planet.

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Zero Waste Europe gratefully acknowledges financial assistance from the European Union. The sole responsibility for the content of this material lies with the author. It does not necessarily reflect the opinion of the funder mentioned above. The funder cannot be held responsible for any use that may be made of the information contained therein.

Acknowledgements

We would like to thank the Municipality of Aarhus and TOMRA for their contribution and input into this study.

Cover image credit: *New European Reuse Alliance and its members*

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A handwritten signature in black ink, appearing to read 'Andy Grant'.

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Endorsements



Fernando Rodríguez-Mata, Director General at the New European Reuse Alliance

As pioneers of a future where reusable packaging becomes mainstream, we need to create a level playing field with single-use alternatives. This starts by acknowledging the hidden and externalised costs of the latter, often disregarded by policymakers and local authorities. Then, we must adequately apply the polluter-pays principle, making producers responsible for bearing the full costs of the end-of-life of the packaging they place on the market. This report is unique in shedding light on the costs associated with both reusable and disposable containers for six of the most common types of takeaway packaging. The results are unambiguous: we need policies that provide the conditions and incentives to transition to well-designed reuse systems, unlocking their full environmental and economic potential.



Marta Longhurst, Plastics Initiative, Ellen MacArthur Foundation

Reuse plays a crucial role in achieving a circular economy, presenting one of the biggest opportunities to reduce plastic pollution whilst delivering benefits to the economy and creating jobs across the value chain. We were pleased to provide input to this report by sharing our perspective and reviewing the findings. It contributes further evidence that reuse solutions replacing single use packaging in the takeaway food sector can reduce GHGs emissions and outlines a variety of policy interventions which are essential to making the economics work. This report should give further confidence to businesses, policy makers and financial institutions to drive action and scale reusable takeaway packaging further and faster to realise the benefits these solutions bring.

plastic change

Louise Lerche-Gredal, Managing Director at Plastic Change

Plastic is deeply rooted in modern life's consumerism and convenience culture. The massive consumption of plastic has led to plastic pollution affecting our environment, biodiversity, climate and health. The only way to mitigate the consequences from plastic is to reduce the demand for plastic. When we move from single use to reuse of our products, we reduce the need to extract new resources from the planet and we reduce the negative consequences from increasing plastic production. However, as the report points out, we need to factor in the hidden cost of single use and we need political intervention if we want to maximise the environmental and economic benefits of reuse systems.

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While food and drinks packaging can play important roles in keeping food safe for consumers and preventing food waste, the growth in consumption of single-use packaging over the last decades has resulted large scale environmental impacts from resource extraction, use of raw materials, and associated carbon emissions, as well as the littering of packaging items. According to European Commission data, the amount of total packaging waste (i.e., for all packaged products) consumed in the EU rose by 16.4 million tonnes from 2010 to 2021 – an increase of 24.2 %.¹ As Zero Waste Europe recently stated the problem²:

“... despite huge legislative and financial efforts, recycling, as necessary as it is, has proven vastly insufficient to address the problem. In times of energy and resource scarcity, efficient prevention and reuse measures are the only options that preserve the value of materials and reduce waste and costs for public authorities whilst spurring innovation and entrepreneurship.

Take-away food and drink is one of the sectors where packaging waste has increased the most, making it both a pressing problem to solve and an opportunity to seize for many stakeholders.”

Throughout the EU, there is growing interest in reducing packaging waste from takeaway food and drinks by replacing single-use packaging with reusable and refillable alternatives. However, we are yet to see reuse packaging systems embraced by the takeaway food and drink industry at large. Indeed, reuse is not yet mainstream and such systems are not achieving significant market penetration (meaning the proportion of sales of takeaway packing that are included within a reuse packaging system).

The requirements outlined in the adopted Packaging and Packaging Waste Regulation (PPWR) have the potential to drive further adoption of reuse packaging systems across Europe. Under this regulation, final distributors of takeaway food and beverages are required to provide consumers with a choice between reusable packaging within a reuse system and single-use takeaway packaging.³ The PPWR also includes a requirement that, from 2030, final distributors shall endeavour to offer 10% of takeaway food and beverage products in reusable packaging formats. However, as the requirement is only “to endeavour” to do this, it is not a binding target. The PPWR also states that incentivising food and drink vendors to provide reusable packaging is a means of contributing towards the attainment of EU packaging reduction targets (the PPWR requires Member States to reduce the volume of packaging waste per capita by 5% by 2030, 10% by 2035, and 15% by 2040, based on 2018 levels). The more ambitious Member States and cities may choose to go beyond the requirements of the PPWR in driving larger scale adoption of reuse packaging systems to accelerate positive environmental outcomes.

This report explores the costs associated with single-use and reusable takeaway packaging and investigates the policy instruments likely to drive higher levels of market adoption of reuse packaging systems. Specifically, the study compares the costs, to takeaway vendors and wider society, related to single-use packaging with the costs related to adopting a reuse packaging system. In the context of this report, ‘wider society’ also includes members of the public who, while not takeaway consumers or vendors, are nonetheless impacted by the costs of single-use packaging and reuse packaging systems.

¹ Packaging waste statistics, Europe website, accessed 02/09/2025, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics

² Zero Waste Europe (2023), Blueprint for harmonising the implementation of takeaway food and drinks packaging in Europe, available at: <https://zerowasteurope.eu/wp-content/uploads/2023/10/RSVP-Reuse-Blueprint-October-2023.pdf>

³ The adopted PPWR text includes obligations for both reuse and refill. While these are related, they are distinct concepts and refill would not be part of a reuse packaging system as understood in this report. For this reason, refill is not considered in this report.

It then compares the costs of equivalent single-use (including both paper and plastic) and reusable packaging formats. Given that the outcomes of these comparisons depend upon some key cost assumptions, the study also examines the sensitivities around these assumptions. The study examines whether the cost differences between single-use and reuse packaging systems serve as a barrier or incentive to market adoption. Finally, the report concludes with suggested additional policy measures that individual Member States, regions and cities could implement to facilitate the transition to reuse. The study focussed on six packaging formats: bowls, boxes for pizza, burgers and sushi, and cups for warm and cold drinks for the European cities of Aarhus (Denmark) and Berlin (Germany). The results are assumed to be applicable to many other similar European cities.

Key Findings

In a steady state of operation with market penetration at ~85% (what this report calls an 'evolved scenario') and no supporting fiscal policy measures in place, a reuse packaging system is likely to cost takeaway vendors, and therefore takeaway consumers, more than the single-use option. The difference in net cost varies by format, with some formats that are easier to wash and transport (such as cups) being close to cost-neutral on the reuse option, and others (such as pizza boxes) costing significantly more.

However, single-use is only relatively low cost because the environmental externalities associated with it are not currently priced in – these being the costs of litter clean-up, litter disamenity and carbon impacts. These externality costs are borne by society as a whole, and so are paid by a wider group of citizens than takeaway vendors. As the externality costs of single-use packaging are greater than the increased costs to vendors of switching to a reuse packaging system, the cost benefits for society as a whole of making the switch outweigh the increase in cost for vendors.

Policy interventions are needed to incentivise and facilitate the adoption of effective reuse packaging systems that can deliver both environmental and economic benefits to society. As adopting reuse is necessary in order to reduce consumption of single-use takeaway packaging and the associated negative environmental impacts, it is reasonable to take the environmental costs borne by society into account when designing the required policy interventions. This can be done by using fiscal instruments such as taxes, levies or adjusted Extended Producer Responsibility (EPR) fees to modify single-use packaging costs to internalise the current externalities (i.e., litter clean-up, litter disamenity and carbon impacts), thereby creating a more level playing field for reusable packaging to compete with single-use packaging.

Germany has in place fiscal policy measures in the form of EPR fees on single-use packaging. The results of this study show that such fees are likely to increase the cost of single-use takeaway packaging for some formats (such as cups and bowls) to the extent that a reuse packaging system for takeaway packaging is expected to have a comparatively lower cost to vendors – and therefore to consumers. It is interesting to note that although EPR fees in Germany have been shown to likely result in lower reuse packaging system costs than single-use, we are yet to see reuse systems in Germany achieving high levels of market penetration. This perhaps indicates that the impact of these types of fiscal interventions on vendor costs are on their own insufficient to facilitate high levels of market penetration of reuse packaging systems.

To optimise the performance of reuse packaging systems, and to ensure they are efficient and convenient to use for both takeaway vendors and consumers, policy should also focus on setting system objectives, such as minimum return and rotation rates, minimum requirements on collection point coverage, minimum and maximum deposit/penalty levels, a requirement that funds from unredeemed penalties/deposits stay within the reuse packaging system and guarantees around the hygiene safety of the system. Pursuing objectives like these would help to ensure interoperability across regions and would simplify engagement for both vendors and consumers.

At first, as reuse packaging systems are trialled, rolled-out and subsequently improved upon, and while market penetration is relatively low at ~20% (what this report calls an 'evolving scenario'), such objectives would need to be agreed between governments and industry on a voluntary basis. However, as systems developed and achieved greater market penetration, it would become appropriate to set objectives in legislation as minimum standards and requirements.

While fiscal measures targeting single-use takeaway packaging are necessary in the early stages of a reuse packaging system, it is uncertain whether they alone are enough to achieve an evolved scenario, and so legislating mandatory, time bound targets – with meaningful sanctions if the targets are missed – may be necessary to achieve ~85% market penetration and the highest possible levels of reuse. Subsequently, if and only if the targets are not met, then it may be necessary to introduce measures prohibiting placing single-use takeaway packaging on the market. It would be important to communicate clearly to industry that, in the first instance, mandatory targets would be introduced if desired levels of performance were not achieved and then, in the second instance, that single-use bans would be introduced if the targets were not met. This would incentivise all actors in the system to work towards high market penetration of reusable packaging.

Other supporting measures unlikely to have a significant effect on market penetration alone but which are useful examples of good practice that should be included in all policy scenarios include bans on single-use takeaway packaging for 'dine in' consumption, a mandate that the default packaging option for serving takeaway food and beverages should be reusable packaging and requirements for minimum levels of staff vendor training on reuse.

