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Reuse offers the most scalable solution to reduce plastic waste at source

Reuse schemes, or ‘packaging reuse’, refers broadly to new delivery models in which a single package achieves multiple trips, rotations or uses for the same purpose for which it was originally used¹. This can range from simple bulk dispensers in-store to more complex schemes with deposits and packaging take-back, washing and repair.

According to the Ellen MacArthur Foundation’s upstream innovation guide, there are four reuse models (Figure 1). On the left, switching from single-use products to reusable items (e.g. bags, drinking bottles and personal care products) can be achieved by customers owning and refilling the packaging, either from their home or through refill dispensers. On the right, reuse can also be achieved through new delivery models such as subscription services and take-back schemes, where companies own, take back and manage the items. Similarly, this framework also holds for business-to-business reuse models (e.g. pallets, cutlery and leased refill containers taken back for washing).

Plastic reduction measures, via the elimination, reuse and new delivery models, are at the top of the ‘waste hierarchy’ of actions to stop plastic pollution because they design out waste at its source. Reuse schemes have more potential to reduce plastic volumes than focusing only on reductions via bans, redesign or plastic elimination. As scientific evidence shows that decoupling economic development from the growing use of plastics from short-lived products is essential to decrease pollution, reuse offers a real solution. System modelling shows that reuse schemes have the potential to reduce the consumption of plastic from short-lived products by 30 per cent by 2040 compared to business-as-usual, reducing plastic by 22 per cent (after taking multi-use packaging into account)². Reuse also presents the highest greenhouse gas (GHG) emissions mitigation opportunity of any lever. These new reuse schemes and delivery models are also estimated to boost customer retention and create jobs across the value chain, in areas such as logistics and transport, cleaning, design, digital tracking and packaging pool management.

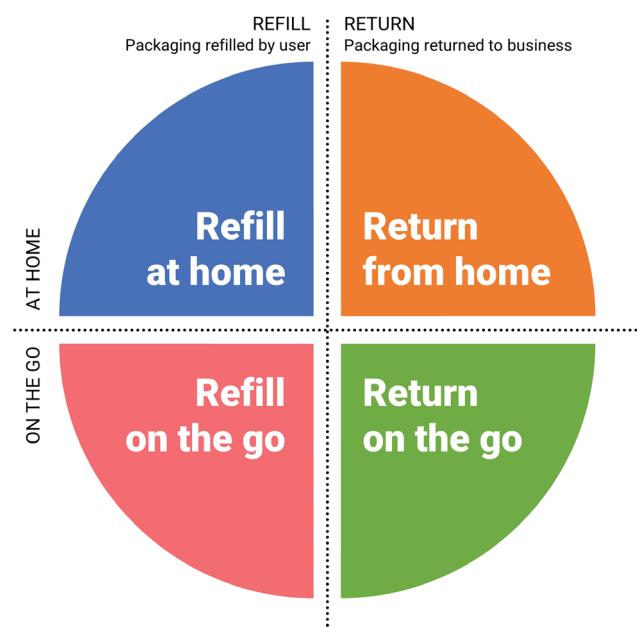


Figure 1: **The four reuse models.**
Source: Ellen MacArthur Foundation (2019).

Reuse solutions are already technologically and commercially available today, and many offer cost savings. However, shifting our economy to one that has reuse schemes at scale for a large number of applications will require real investment during a transition period, as well as consumer behaviour shifts. There is currently a lack of effective policy and economic incentives to shift supply chains and consumer behaviour to help overcome these transition costs. Many reuse solutions are also at an early stage of development and require financial investment to scale across brands and sectors. However, the shift could ultimately bring strong cost savings and opportunities at-scale: for example, the Ellen MacArthur Foundation estimates the economic opportunity of switching to reuse models at USD 10 billion.

¹ ISO 18603:2013

² The Pew Charitable Trusts and Systemiq. (2020). *Breaking the Plastic Wave*

What are the key benefits of reuse schemes?

- **Potential cost reductions:** At scale, well-designed and successful reuse models may offer significant cost savings and drive efficiency in the supply chain. Passing cost savings on to consumers will help incentivize customers to adopt reuse, while maintaining profit margins for retailers/brands. For example, Algramo reports that its platform refill system not only allows firms to save 44 per cent of costs but also offers refill products at low prices. Concentrated refill capsules, such as Everdrop's cleaning tablets, on the other hand, can save up to 80 per cent of transport costs by avoiding the need to transport water.
- **Personalised user experience:** Carefully designed reuse models can bring consumer benefits, including improved choice, more automated deliveries and the ability for customers to mix and match flavours, personalize packaging and choose desired quantities. PepsiCo's SodaStream reduces space and travel requirements, as there is no need to carry water bottles, and accommodates user preferences by offering different flavours.
- **Stronger customer relationships:** Subscription schemes for reuse schemes create long-term customer relationships and boost brand loyalty and customer retention. Bite toothpaste bits offers auto-refill subscription models, sending refill bits every four months. In addition, by incorporating digital offerings, firms can gather information on user preferences and improve system performance.
- **Lower emissions and plastic pollution:** When well implemented, reusable packaging may reduce GHG emissions and plastic pollution compared to single-use plastic packaging. For example, reuse schemes can decrease life cycle emissions from 60 per cent to 80 per cent when compared to single-use plastic products.

The main requirement for these benefits to materialise is achieving a high number of cycles – see the 'key success factors' section for details.

Multiple proven reuse models exist and should be scaled up rapidly

Some methods of reuse are already at scale and innovation in this area is on the rise: registered trademarks rose by 23 per cent annually for plastics reuse between 1995 and 2017.

Multiple companies have demonstrated the viability of reuse models, from reusable packaging as either a refill or a return model, often incorporating elements such as dispensers, reverse logistics, cleaning, delivery, financial incentives for customers and subscription services. Countries such as Indonesia have numerous game-changing reuse ventures that are redefining refill convenience through apps such as KoinPack, Siklus and Qyos by Algramo and other initiatives.

Many countries have banned specific products such as plastic bags and food service disposables, which encourages reuse alternatives such as by restaurants serving dine-in food on reusable plates that are washed on-site. Deposit return systems (DRS) for reusable glass or plastic bottles exist at scale across many Latin American, European and Southeast Asian countries. In the business-to-business sector, shared or leased reusable crates are commonplace. Many countries in the Global South still have traditional reuse-based systems that are not reliant on single-use plastics in the first place such as the Dabbawalla system in India.

However, the systems change scenario requires going much further, including ambitiously scaling reuse and new delivery models to more markets and more plastic categories. At full scale, it is estimated reuse models can provide a 20 per cent reduction in total annual plastic leakage to the ocean by 2040². As shown in the graph below, switching 25 per cent of single use plastic products towards reuse is possible in the systems change scenario. This creates a corresponding global net reduction potential of 91 million metric tons of plastic after accounting for the additional weight of multi-use plastic. This reduction applies to all plastic types, notably with a large impact on problematic multi-material sachets (>40 per cent of which are reduced).

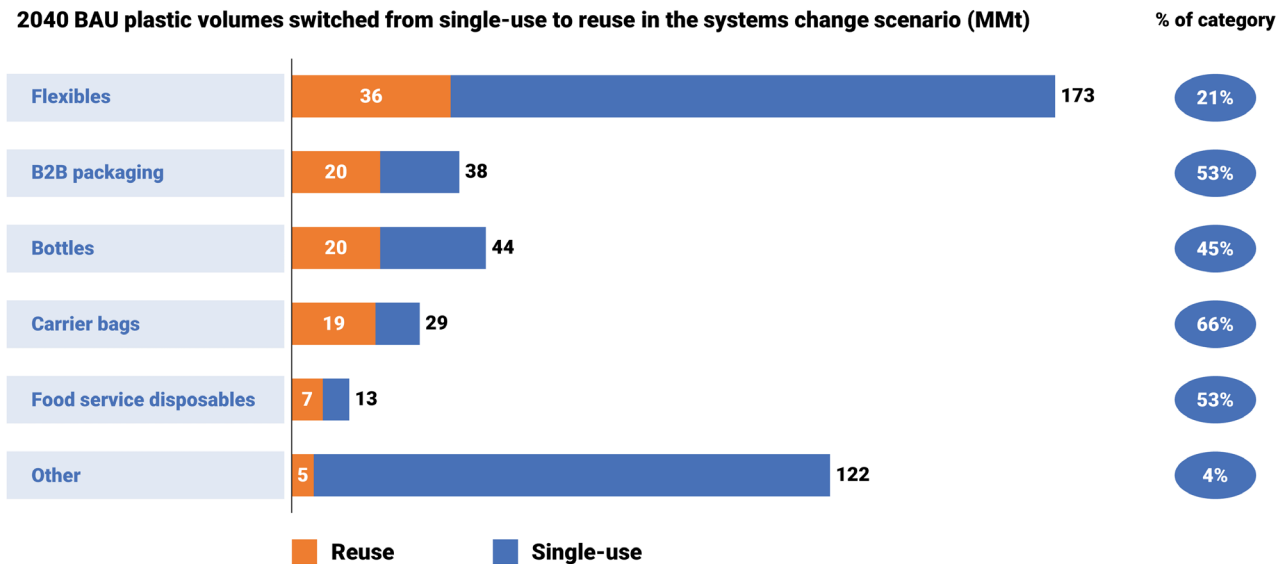


Figure 2: **2040 Business-as-usual plastic volumes switched from single-use to reuse in the systems change scenario.**
 Source: The PEW Charitable Trusts and Systemiq. (2020). *Breaking the Plastic Wave*. Volumes switched in this chart refer to the unit of 'Plastic utility' via reuse and new delivery models, and do not account for the remaining multi-use plastic mass required to deliver reusable packaging; for net reduction figures accounting for multi-use plastic usage, see original report

Effective policies supporting reuse are already in place in many regions, and growing fast

Formal packaging reuse policies are becoming more common. For example, France has reuse targets of 5 per cent by 2023 and 10 per cent by 2027; Germany has introduced an obligation on larger restaurants and takeaway establishments (bigger than 81 m² and at least six employees) to offer reusable cups and food containers. The European Union Waste Framework Directive has reuse as its second-highest priority for action, including the requirement to integrate dismantling, reuse and recycling considerations for end-of life vehicles and their components into the design and production of new vehicles.

Government policy and support can help remove market barriers for reuse schemes and reusable packaging systems. For instance, subsidies for reusable packaging, packaging fees or deposit return systems may help to scale up reusable packaging systems. Policies can also support reuse via the adoption of standard designs and modular container and refill systems. Additional regulatory guidance and support, particularly around food-service health and safety regulations, may be necessary for sector growth³.

Ultimately, targets and policies should be ambitious, targeted and designed to catalyse reuse solutions developments:

- **Ambition level considerations:** An ambitious target (based on today's packaging volumes) is to switch 30 to 50 per cent of beverages and home and personal care products packaged in PET/HDPE bottles to

durable reuse models by 2030. Since scaled reuse models can increase cost savings and efficiency, even higher targets for specific products or packaging types may be beneficial. Reuse solutions for these products range from concentrated refills to refill on the go, delivery services and returnable bottles. For example, Coca-Cola Germany had a 40 per cent share of reusable bottles (glass and plastic) as of 2018, and Danone sells 50 per cent of its water volume in reusable plastic jugs.

- **Standardised target-setting and measurement:** Standardisation of measurement is instrumental in ensuring that target-setting and success metrics are consistent across industry and jurisdiction to facilitate the widescale adoption of reuse. The World Economic Forum's Consumers Beyond Waste community of leading private and public stakeholders have collaboratively built a measurement framework and prioritized key success metrics for business to track progress towards reuse models.
- **Focus on key sectors and packaging formats:** Targets can be set for various industries such as packaging for shipment, agriculture and other industries. Though largest changes will occur at the level of consumer goods companies and retailers. Additionally, reuse models are most applicable for (but not limited to) the following packaging: a) beverages and home and personal care products currently packaged in PET/HDPE bottles: high potential; b) dried food, snacks

³ Reusable Packaging Association. (2008). RPA guidelines and best practices.

and coffee currently packed in trays, jars, pouches etc. made of PET/HDPE/PP rigids: medium potential.

- **Ensure standardisation:** Having more universal standards for reusable and refillable packaging, as well as establishing common reverse logistics, storage, sorting and washing, can all help to reduce costs and emissions while enhancing customer convenience, provided none of the foregoing violate applicable antitrust laws and regulations³. For example, using standard sizes that fit supply chains can make reuse models more efficient, as shown by the universal, standardized bottle from The Coca-Cola Company in Latin America. See the topic sheet on '[Design guidelines for circularity](#)' for more on standards for reuse systems.
- **Funding considerations:** Leveraging policy incentives and other instruments that reward forward-leaning businesses in scaling reuse models. For example, extended producer responsibility (EPR) policies can be applied to support companies in transitioning towards reusable packaging models.
- **Nurture pre-competitive collaboration:** Consider facilitating collaboration between companies, brands and sectors to achieve larger scales and lower costs with the help of streamlined logistics and transport or shared refill infrastructure (e.g. for collection or washing), provided such collaboration does not violate applicable antitrust laws and regulations².

Key success factors for effective and sustainable reuse schemes

- **Reaching a critical scale** to ensure cost competitiveness, especially if reverse logistics and/or cleaning is required.
- **Ensuring consumer convenience** by dealing with consumer barriers and providing a seamless, convenient experience for consumers. In addition to convenience, both the actual and the perceived health and safety standards of reuse systems are essential for consumer acceptance.
- **Achieving a high number of reuse cycles in practice.** The number of reuse cycles over the lifetime of a reusable package is a key driver of environmental impact and economic viability, alongside factors like material choice and system layout. Heavier reusable cups, for example, require 10 reuse cycles to break even. It is important to incentivize customers to return and refill as many times as possible and to monitor this indicator closely. A successful reuse model often requires a combination of using durable packaging that will not wear out and minimizing the weight of multi-use packaging. PR3 standards for reuse request reuse containers to be designed for at least 10 cycles, and be recyclable at the end of their useful life⁴.
- **Designing out unintended consequences:** Reuse models can have unintended consequences, such as high water or energy use, high GHG emissions or high material usage, usually driven by low reuse cycles in practice. It is critical to ensure that plastic reduction measures do not increase GHG emissions or create other unacceptable trade-offs. Also, as plastics can play an important role in product protection and avoiding food waste, careful assessment throughout the life cycle is required.
- **Economic viability for all stakeholder groups:** The shift away from a single-use towards a circular system must consider the economic impacts on all stakeholder groups to ensure systemic viability, e.g. including potential effects on waste pickers who depend on the waste streams being reduced.

Accelerating reuse through international harmonisation

The important shift is for governments to mandate reuse of plastic items (such as packaging) as a core element of any strategy to retain plastics in the economy. An immediate priority is to firmly mainstream reusable packaging systems in national and global plastics economies by 2030 and define specific targets and measurement and reporting mechanisms for reuse, distinct from other targets (e.g. recycling rates). The priority policy for reuse is to mandate the establishment of large-scale reuse schemes within the fast-moving

consumer goods sector, including refillable packaging, reusable packaging and retail refill. These rely on a combination of effective reverse logistics systems, consumer behaviour, intelligent product design and appropriate market infrastructure.

Successful reuse requires that product design accounts for the greater functional expectations and extended lifespan of packaging materials, which can be supported by the adoption of reusable packaging standards that

⁴ <https://www.resolve.ngo/site-pr3standards.htm#>.

promote interoperability and modular container and refill systems based on shared infrastructure. At present, few countries have the necessary infrastructure for large-scale reuse schemes, but economic incentives and targeted regulations can catalyse the transition towards rapid scale up. Motivation to return items can be supported by adding

a deposit-return element to the reuse policy in which the consumer has their deposit repaid when they return the item. Concerns over hygiene can be addressed through effective washing and cleaning systems and targeted public awareness and behaviour campaigns.

Additional resources

Closed Loop Partners, IDEO: Bringing Reusable Packaging Systems to Life. Lessons Learned from Scaling Reusable Cups. <https://www.closedlooppartners.com/research/bringing-a-reusable-packaging-system-to-life/>.

Ellen MacArthur Foundation. (2019). Reuse. Rethinking Packaging. <https://ellenmacarthurfoundation.org/reuse-rethinking-packaging>.

Ellen MacArthur Foundation: Upstream Innovation. A guide to packaging solutions. <https://ellenmacarthurfoundation.org/upstream-innovation/overview>.

Zero Waste Europe & Reloop: Reusable vs single-use packaging. <https://zerowasteurope.eu/library/reusable-vs-single-use-packaging-a-review-of-environmental-impact/>.

Reuse Portal (by WEF-WWF-UNEP): <https://www.reuseportal.org/home>.

World Economic Forum: Future of Reusable Consumption Models. https://www3.weforum.org/docs/WEF_IR_Future_of_Reusable_Consumption_2021.pdf.

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