ELLEN MACARTHUR FOUNDATION

From single-use to reuse: A priority for the UN treaty

ELLEN MACARTHUR FOUNDATION

From single-use to reuse: A priority for the UN Plastics Treaty

Moving from single-use to reuse is essential for achieving the goals of the UN Plastics Treaty. The Treaty has a crucial role to play in bringing reuse to scale, building on existing global momentum.

As part of the Ellen MacArthur Foundation's engagement to support the development of an ambitious and effective international legally binding instrument to end plastic pollution, this briefing highlights:

- the need to prioritise reuse in the UN Plastics Treaty,
- initial considerations for policy measures to overcome current barriers to scaling reuse.

This briefing looks at reuse through the lens of plastic packaging, the single biggest plastic application and source of leakage, representing around 40% of total plastic waste. Reuse models can also be widely applied beyond packaging.

I. Reuse is essential for achieving the goals of the UN Plastics Treaty

1.1 Why prioritise reuse?

Moving from single-use to reuse models presents one of the biggest opportunities to reduce plastic pollution. It is estimated that moving to reuse models can provide over 20% reduction in total annual plastic leakage to the ocean by 2040.[1] Studies show that the reuse market is a multi-billion dollar economic opportunity,[2] providing benefits to customers, and creating jobs across the value chain.

1.2 No single measure will stop plastic pollution

Until now, many efforts to tackle plastic pollution have focused narrowly on improving waste management or clean-ups. Others have focused on bans and plastic reduction. But to significantly reduce plastic pollution in the oceans, an integrated approach is needed including upstream, midstream and downstream solutions. The most comprehensive modelling on scenarios to reduce ocean leakage suggests that no single strategy can sufficiently reduce annual plastic leakage into the oceans by 2040.[3] Reducing plastic pollution in the oceans requires a comprehensive and integrated set of solutions from material redesign, plastic reduction, substitution, and reuse, to recycling and disposal. Reuse is an essential component in this mix.

1.3 Reuse can help achieve complementary environmental goals

When well implemented, reusable packaging can reduce greenhouse gas (GHG) emissions compared to single-use plastic packaging. For example, reuse schemes can decrease life cycle emissions by

[1] Pew Charitable Trusts and Systemiq. *Breaking the Plastic Wave* (2020). https://www.pewtrusts.org/en/research-and-analysis/articles/2020/07/23/breaking-the-plastic-wave-top-findings

[2] Converting 20% of plastic packaging into reuse models is estimated to be a USD 10 billion business opportunity. Source: Ellen MacArthur Foundation, *The New Plastics Economy: Catalysing action* (2017). https://ellenmacarthurfoundation.org/the-new-plastics-economy-catalysing-action?utm_term=exclude&utm_source=exclude

[3] Pew Charitable Trusts and Systemiq. *Breaking the Plastic Wave* (2020). feuhttps://www.pewtrusts.org/en/research-and-analysis/articles/2020/07/23/breaking-the-plastic-wave-top-findings

65-80% when compared to emissions of single-use plastic products.[4] Recent modelling focusing on Europe suggests that achieving a 20% reusable packaging target in 2027 in three packaging sectors (takeaways, e-commerce and household products) could result in multiple environmental benefits such as reduced water consumption (3.5 bn m^3) and GHG emissions (1.3 Mt CO_2-eq) compared to a business-as-usual scenario.[5] Reuse models also reduce the pressure on biodiversity associated with material extraction of virgin materials, processing and disposal.

The economic and environmental success of reuse models depends on several factors like transport distance, number of reuse cycles, and material choice. Therefore reuse models need to be supported by good system design and the right policy framework to capture their benefits in full.

II. The UN Plastics Treaty has a crucial role to play in scaling reuse

Individual countries and businesses alone cannot realise the shift to reuse at a global scale without uniform legislation applied consistently across global markets. Scaling reuse requires a globally coordinated approach to create the system and market conditions for supply chain cooperation, infrastructure harmonisation and a level economic playing field.

The UN Plastics Treaty provides a unique opportunity to establish these enabling conditions for scaling reuse globally. To do that, the treaty negotiations must cover four key areas, outlined below.

2.1 Measures to harmonise reuse definitions and design standards

Creating the required economies of scale to make reuse work, considering the importance of cross-border trade and global supply chains, requires the global harmonisation of reuse definitions and design standards. Measures can include:

- Developing globally aligned definitions and design standards, to facilitate the scale up of efficient reuse systems with economically and environmentally optimised reverse logistics.
- Establishing robust and comprehensive reuse metrics standards covering all reuse model types for harmonisation across industry, governments and standard-setting institutions - to facilitate credible reuse measurement and effective regulatory enforcement in practice.

2.2 Measures to establish ambitious reuse targets and reporting

Tackling plastic pollution requires significant effort and ambition across all countries. Measures can include:

- Setting binding quantitative and time-bound reuse targets with sanctions for failure - to ensure aligned responsibility for accelerated transition to scaled reuse systems.
- Mandating consistent reporting on scaling reuse progress based on agreed definitions and measurement standards - to ensure transparency and accountability.

2.3 Measures to facilitate the establishment of harmonised infrastructure

Harmonised infrastructure should complement harmonised definitions and design standards to create the required economies of scale. Measures can include:

- Creating shared reuse infrastructure guidelines for all stakeholders across the supply chain - to ensure effective governance structures and cooperation.

---

[4] Based on the average results of LCAs a reusable HDPE bottle produces 65% less emissions than single-use HDPE, and a reusable glass bottle produces 80% less emissions than single-use glass, 70% less than single-use PET, and 57% less than single-use aluminuim. Source: Reloop platform & ZeroWaste Europe. *Reusable Vs Single-use packaging* (2020) https://zerowasteeurope.eu/wp-content/uploads/2020/12/zwe_reloop_executive-summary_reusable-vs-single-use-packaging_-a-review-of-environmental-impact_en.pdf

[5] European Environmental Bureau, *Realising Reuse* (2021). https://eeb.org/reusable-packaging-can-bring-significant-environmental-and-economic-benefits-by-2030-report-finds/

- Providing capacity building and technical support for overcoming delivery barriers - to accelerate the implementation of reuse targets and infrastructure setup guidelines.

2.4 Measures to make the economics work

While reuse represents a significant long-term macroeconomic opportunity, capturing this is not always possible for individual players as the economic playing field is currently uneven, often giving single-use models an advantage over reuse solutions. Measures can include:

- Establishing effective take-back systems such as deposit return schemes (DRS), setting up extended producer responsibility (EPR) systems that finance reuse infrastructure and developing guidelines for wider financial measures such as tax breaks for reuse solutions - to incentivise the widespread adoption of reuse models and investment in shared reuse infrastructure.
- Banning, restricting or taxing single-use applications, removing virgin plastics subsidies and setting limits for virgin plastics use - to level the playing field for reuse solutions by disincentivising single-use models.
- Setting up funds for reuse scale up research and innovation - to support the transition to safe, affordable and efficient reuse systems.

III. The UN Plastics Treaty can build on existing global momentum on reuse

3.1 Business momentum on reuse is building

Through the Global Commitment and Plastics Pact Network over 1000 organisations (including businesses representing over 20% of the plastic packaging market), have signed up to the vision of building a circular economy for plastics, explicitly acknowledging that, wherever relevant, reuse business models for packaging should be explored as a preferred solution.

In 2021, nearly 60% of Global Commitment signatories had reuse models in place across seven plastic packaging sectors (apparel, beverage, cosmetics, food, households, retail and packaging producers).[6] The world's two largest users of plastic packaging by weight have recently set public, quantitative targets to significantly increase the share of reusable packaging solutions across their portfolios by 2030.[7][8] These initiatives have laid the foundations for wide-reaching voluntary cooperation, but we need to go further.

3.2 Going beyond voluntary actions will be necessary to address system barriers

Voluntary action alone is not enough to scale reuse at the pace required to solve the plastic pollution crisis. The latest results from the 2022 Global Commitment progress report show that overall, despite companies conducting an increasing number of reuse pilots, those are struggling to scale. A number of system and market barriers that are slowing down progress need to be addressed.

[6] Ellen MacArthur Foundation, *The Global Commitment* (2022). https://ellenmacarthurfoundation.org/global-commitment-2022/overview

[7] The Coca Cola Company, *The Coca-Cola Company Announces Industry-Leading Target for Reusable Packaging* (02 October, 2022), https://www.coca-colacompany.com/news/coca-cola-announces-industry-leading-target-for-reusable-packaging

[8] PepsiCo, *PepsiCo Introduces New Packaging Goal, Doubling Down on Scaling Reusable Packaging Options* (05 December, 2022),https://www.pepsico.com/our-stories/press-release/pepsico-introduces-new-packaging-goal-doubling-down-on-scaling-reusable-packagin12052022

3.3 Supporting regulation for reuse is emerging at country level, but global policy action is needed

Formal packaging reuse policies are beginning to appear and national legislation has been adopted for example in Europe, Chile and Australia.[9] For example, France has reuse targets of 5% by 2023 and 10% by 2027, Germany has introduced an obligation on larger restaurants and takeaway establishments to offer reusable cups and food containers. Public-private partnerships, by fostering collaboration, can also expand reuse models by reducing barriers and increasing accessibility, as demonstrated by the Ellen MacArthur Foundation's Plastics Pact Network. But to amplify current efforts and deliver industry-scale change, we need global, urgent, policy action.

What is reuse?[10][11]

Reuse schemes, or "packaging reuse", refers broadly to delivery models in which a single package achieves multiple trips, rotations or uses for the same purpose for which it was originally used.

This is distinct from, and complementary to, recycling. Reuse models circulate a product or packaging as a whole, whereas recycling reprocesses the constituting materials into a new product or package.

Reuse can be applied both in a business-to-business (B2B) and business-to-consumer (B2C) context. In B2B, reusable packaging can for example take the form of reusable pallets loaded with products or crates. In B2C, reuse and refill models are wide-ranging. They include:

Refill at home:

Users refill a reusable container at home with refills either delivered to the door (for example, through a subscription service) or bought in a shop. Users retain ownership of the main packaging and are responsible for cleaning.

Refill on the go:

Users refill the reusable packaging at a dispensing point away from home, such as in a store. Users retain ownership of the reusable packaging and are responsible for cleaning.

Return from home:

Users subscribe to a delivery and collection service that allows them to return empty packaging from home. A business or service-provider then takes care of cleaning and redistribution of the packaging.

Return on the go:

Users purchase a product in a reusable container and return the packaging at a store or drop-off point after use. The packaging is either cleaned where it is returned or a business or service-provider takes care of the cleaning and redistribution.

More information on reuse models*: Ellen MacArthur Foundation:* *Reuse - Rethinking packaging*[12]

[9] World Economic Forum. *How national policies can accelerate the shift to a reuse economy*. (18 Jan 2022). https://www.weforum.org/agenda/2022/01/how-national-policies-can-accelerate-the-transition-to-a-reuse-economy/

[10] Reuse of packaging: Operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market, enabling the packaging to be refilled - ISO 18603: 2013, Packaging and the environment - Reuse, modified.

[11] Reusable packaging: Packaging which has been designed to accomplish or proves its abilities to accomplish a minimum number of trips and rotations in a system for reuse - ISO 18603 Packaging and the environment - Reuse, modified.

[12] Ellen MacArthur Foundation, *Reuse - Rethinking Packaging* (2019). https://ellenmacarthurfoundation.org/reuse-rethinking-packaging

ANNEXES

Annex 1: Business-to-Consumer case studies for reuse

PepsiCo's SodaStream

Description: Instant sparkling water
Appliance for making sparkling water at home, in reusable bottles. The sparkling water is made using water from the tap and CO2 supplied in returnable cylinders. Concentrated syrups for a variety of common drink flavours are also available.
Reuse model: Refill-at-home
Sector: Beverages
Innovation Maturity: Scaled
Geography: Global
Benefits: Convenience Customisation Waste prevention Carbon emissions
Links: https://sodastream.com/
https://pepsicopartners.com/navigation/sodastreamprofessional

CUSTOMER BENEFITS
Convenience: Reduces space requirements and eliminates the need to travel to a store and then carry bulky, heavy bottles home (a single CO2 cylinder can carbonate up to 60 L of water).
Customisation: Accommodates users' preferences by offering a variety of flavours and control of level of carbonation.

ENVIRONMENTAL BENEFITS
Waste prevention: Prevents the use of single-use bottles. For example, in the year 2017 - 2018, users produced the equivalent of 6.3 billion single-use bottles worth of sparkling water in reusable bottles, at home.
Carbon emissions: SodaStream reduces the carbon emissions of sparkling water by up to 87% compared to single-use, PET-bottled sparkling water.

INNOVATION STATUS
Scale: Distributed through more than 90,000 individual retail stores in 46 countries, and has 15 million household users.
Investment: SodaStream was acquired by PepsiCo in 2018 for USD 3.2 billion.

DEEP DIVE
How Sodastream is moving beyond 'at-home'
SodaStream has proven to be a successful example of an at-home refill solution. In June 2020, PepsiCo announced that following successful pilots with key customers, Sodastream expanded its brand to move beyond the at-home model into 'on-the-go' - introducing the SodaStream Professional Hydration Platform allowing users to customise and digitally track their beverage intake on-the-go while cutting back on plastic bottles. It has been developed for workplaces, college campuses and airports, expanding on the SodaStream brand.

Unilever and Walmart Mexico

Description: Shampoo refill stations
Refill stations for Unilever shampoo brands in ten Walmart shops in Mexico. The stations were overseen by staff to help customers dispense shampoo in 1 litre reusable aluminium bottles. The reusable bottles were sold at a one-time price and were printed with guidance on how customers should clean the bottle at home before bringing it back to refill. As the solution expands, self-service refill machines will be tested to make the refilling independent from staff oversight and provide better dosing to avoid spillage.
Reuse model: Refill-on-the-go
Sector: Personal care
Innovation Maturity: Pilot
Geography: Mexico
Benefits: Affordability Customisation Waste prevention
Links:
https://www.unilever.com/news/news-and-features/Feature-article/2020/shampoo-refill-stations-prove-popular-with-mexican-consumers.html

CUSTOMER BENEFITS
Affordability: The refill shampoo is priced 16% lower than the equivalent in single-use packaging.
Customisation: Customers pay per weight and choose a desired quantity.

ENVIRONMENTAL BENEFITS
Waste prevention: Over the three month pilot period, more than 3,000 single-use shampoo bottles, equivalent to 126 kg of plastic, were eliminated.

Huidu's Zero Box

Description: Reusable e-commerce boxes
Reusable boxes for e-commerce deliveries rented out on a monthly, yearly or one-time basis. The box is made from a light-weight plastic material, sealed without tape, and is fitted with an RFID tag to track its location. The box is either opened and directly returned when the product is delivered, returned at the time of a subsequent delivery, or returned to drop-off stations. Depending on the rental model, Huidu or the company renting the box take care of the washing.
Reuse model: Return-from-home
Sector: E-commerce transport
Innovation Maturity: Scale-up
Geography: China
Benefits: Affordability Convenience Waste prevention Carbon emissions
Link: https://huidugroup.cn/recycle
https://jdcorporateblog.com/jd-com-launches-new-reusable-package-initiative/

CUSTOMER BENEFITS
Affordability: Although the production cost of a ZerO Box is about twice that of a standard cardboard box, Huidu is able to offer a box rental at a price below the single-use alternative, because each box is rented out multiple times. Using ZerO Box can save 30% on a cost-per-use basis compared to traditional shipping boxes. One of China's largest online retailers, JD.com, has partnered with ZerO Box after estimating that they could save approximately USD 4.5 million annually if just 10% of their orders came in a ZerO Box.
Convenience: The patented design can be flat-packed after use, making for easy storage and returns.

ENVIRONMENTAL BENEFITS

Waste prevention: A box can be reused up to 14 times and it is estimated that over 18 million single-use boxes have been eliminated since 2018. As a specific example, JD.com expects to have eliminated 7.2 million single-use boxes from its supply chain by the end of 2020 (having started using the boxes in 2018).

Carbon emissions: Companies using ZerO Box have collectively reduced carbon emissions by 50 tonnes since 2018.

INNOVATION STATUS

Scale: More than 2 million ZerO Boxes are currently in circulation. The company has more than 20 operation centres across China that manage the reuse logistics.

Investment: A USD 14 million series A funding round was completed in 2019.

Partnerships: The company has cooperation partnerships with over 200 businesses, including JD Logistics, Cainiao, Suning Logistics, China Post, and Vipshop.

The Coca Cola Company's Universal Bottle

Description: A shared design for multiple brands

A reusable PET bottle which is standardised across multiple soda brands in Latin America, introduced by Coca-Cola in 2018. Users return empty bottles to retailers who store them and then give them back to Coca-Cola upon delivery of a new order.

Coca-Cola takes the multi-branded mix of bottles back to a bottling facility where paper labels are washed off and bottles are cleaned, refilled, and rebranded with a fresh label.

Reuse model: Return-on-the-go

Sector: Beverages

Innovation Maturity: Scaled

Geography: Latin America

Benefits: Affordability Waste prevention Carbon emissions Water use

Links:https://www.coca-colacompany.com/content/dam/journey/us/en/reports/coca-cola-world-without-waste-report-2019.pdf

CUSTOMER BENEFITS

Affordability: Creating a universal bottle design across all brands simplifies logistics and reduces stock space. This has enabled reduced pricing.

ENVIRONMENTAL BENEFITS

Waste prevention: Avoids the production of 1.8 billion single-use bottles in Latin America per year.

Carbon emissions: Greenhouse gas emissions can be reduced by up to 47% compared to single-use PET bottles, taking into account bottle production, increased transport and water use during washing.

Water use: Even with washing factored in, the reuse model reduces water use by 45% compared to single-use PET bottles, because the major water footprint comes from the production of new bottles.

INNOVATION STATUS

Scale: The universal bottle initiative is part of a greater strategy for Coca-Cola Latin America to increase the share of reusable packaging (both glass and PET). As of 2020, reusable bottles (glass and PET) represent 27% of sales and were the fastest growing packaging format in 2018 and 2019. The universal PET bottle is being piloted in South Africa and in 2020 Coca-Cola will launch a universal design of the reusable glass bottle as well.

Investment: Coca-Cola Latin America has invested more than USD 500 million in expanding the reuse infrastructure (bottle cleaning, labelling, refilling) to accommodate the universal bottle.

Annex 2: Business-to-Business case study for reuse

REUSA-WRAPS

Description: Reusable pallet wrap
Reusable pallet wrap made from sturdy, breathable, mesh material secured with straps (solid material versions also available). The wrap is easily strapped around a loaded pallet and can be used both for delivery operations and storage at distribution centres.
Innovation Maturity: Scaled
Geography: USA
Benefits: Cost Savings Superior packaging Waste prevention
Links: https://www.reusawraps.com/

BUSINESS BENEFITS
Cost savings: Estimated to cut pallet wrapping costs by up to 40% and typically pays for itself in less than a year. The cost savings are achieved through reductions in material usage (reusable wraps eliminate single-use pallet wrap), product damage (unlike single-use wrap, the reusable wraps can't be overtightened), and packing times (reusable wraps are easier to use and more ergonomic). For example, one beer distributor saves approximately USD 75,000 per year using REUSA-WRAPS cart covers.
Superior packaging: The reusable wraps are breathable and can be designed with a range of custom functionalities including document pockets, fire retardancy, insulation, RFID tags and locks. Compared to single-use pallet wrap, the reusable solution makes it easier to remove one item from the pallet at a time and then re-secure.

ENVIRONMENTAL BENEFITS
Waste prevention: Each wrap lasts approximately three years with regular use and can eliminate an estimated 450 kg of single-use pallet wrap during its lifetime. For example, a small wholesale produce distributor reports preventing the use of 45 tonnes of single-use pallet wrap per year through using REUSA- WRAPS.

INNOVATION STATUS
Scale: Used by companies such as Toyota, MillerCoors, Anheuser- Busch, Ashley Furniture, and Martin Brower. The reusable wraps have been sold to businesses globally.

CHEP a Brambles Company

Description: Cross-industry B2B packaging platform
A global B2B supply chain logistics 'share-and-reuse' system of tertiary and secondary packaging.
Innovation Maturity: Scaled
Geography: Global
Benefits: Optimised operations Cost Savings Superior packagingData Waste prevention Carbon emissions
Links: https://www.chep.com/uk/en/consumer-goods

BUSINESS BENEFITS

Optimised operations: CHEP's standard sizes for crates and pallets have set an industry standard and enable simplified and optimised logistics.
Cost savings: CHEP's network scale and visibility allows it to reduce transport distances and cut costs for businesses through facilitating efficient and collaborative solutions. Using the CHEP platform also reduces capital expenditure for businesses and makes it easier to meet seasonal peaks and troughs in packaging demand without needing to pay for storage and ownership of buffer stock. Overall cost savings compared to single-use alternatives can be from 10 to 70%.
Superior packaging: The reusable pallets and crates are of higher quality than single-use alternatives. This reduces product damage and improves production line efficiency.
Data: By using its end-to-end supply chain solutions and digital technology, CHEP can enhance customer's visibility of their supply chain so they can make more informed decisions.

ENVIRONMENTAL BENEFITS

Waste prevention: CHEP products have an extended product life to reduce waste. For example, considering wooden pallets — a CHEP pallet will last up to ten times longer than a standard wood pallet equivalent meaning CHEP uses three times less wood and generates one quarter of the waste compared to non- reuse systems. In 2019, use of Bramble's platforms prevented the need to log 1.7 million trees.
Carbon emissions: The CHEP system minimises transport distances compared to systems that are not collaborative across industry. This can halve CO2 emissions. In 2019, use of Bramble's platforms prevented 2 million tonnes of CO2 from being generated.

INNOVATION STATUS

Scale: For over 60 years, CHEP has operated share and reuse systems in practice, in various supply chains. CHEP now operates in 60 countries with 750 service centres and 510,000 delivery points. In Europe alone, CHEP issues more than 330 million pallets, containers and crates.
Partnerships: Through launching the Zero Waste World collaboration programme, Brambles has committed to applying its proven know-how of running reusable packaging models to help prevent waste beyond its core activities.