

Unlocking a reuse revolution: scaling returnable packaging

Insights summary





In support of the study

At Amazon, we continuously work to lower the environmental impact of the packaging we use, including investing in new materials, packaging technologies, and fulfilment supply chains. We appreciate the collaboration with the Ellen McArthur Foundation in researching ways and developing frameworks to reuse packaging as a means to reduce waste across multiple packaging applications.

Zak Watts

European Director of Sustainability, Amazon

The reuse study has provided us with a comprehensive understanding of the opportunities and positive impacts on material consumption and emissions across different product categories and sectors. This is a great starting point to continue exploring solutions specific to personal care for us.

Eva Bredehorst

Manager Global Packaging Sustainability, Beiersdorf

Reuse is a complex topic with many different elements at play – and doing this across different global markets is even more complex, while aiming to reduce emissions and bring the consumer along. The modeling proposed in this report includes ambitious scenarios for returnable packaging that will require time, policy action ensuring the right enabling conditions and cross-sector collaboration to realize. Next to that, also refill models have an important role to play to increase reuse. We appreciate the Ellen MacArthur Foundation's ambition, and The Coca-Cola Company's global goal to increase reuse demonstrates our commitment to working with other companies and stakeholders to scale reuse.

Ben Jordan

Senior Director, Environmental Policy,
The Coca-Cola Company

Collaboration between retailers and manufacturers can bring the critical mass needed for systems change by offering solutions to consumers that are convenient, enable choice, and integrate well into their daily lives and shopping routines. The CGF is working to understand what we can do collectively to overcome the key challenges and support the scaling of reuse/refill models.

Cédric Dever

Director, Plastic Waste Coalition of Action,
The Consumer Goods Forum

Danone is committed to accelerating returnable models and reuse is one of the key levers to achieve our renewed sustainability ambition - Danone Impact Journey. Today, more than 50% of our global water volumes are sold in reusable format and we have more than 15 pilot projects on reuse/refill models in our portfolio. This study by the Ellen MacArthur Foundation paves the way for profitable scale-up, stressing the need for an industry-wide approach to address the challenge. We are happy to participate and share our learnings across categories and geographies.

Nicolas Gregoire

VP, Packaging Cycle, Danone

It is widely accepted that we need to reduce our consumption of natural resources to stay within planetary boundaries, but how do we do that in practice? Reuse has a key role to play, especially for short-lived products like single-use packaging. This breakthrough report shows that unlocking reuse will rely on deep collaboration, including between competitors, but that the environmental and economic benefits of getting it right are huge and attainable.

Joe Papineschi

Chairperson, Eunomia Research and Consulting

This valuable study issues a blueprint for achieving the crucial step-change from recycling to reuse, in a global economy which is now only 7% circular. Shifting towards reuse systems can increase circularity at scale, whilst at the same time creating new business options and social benefits. The financial sector has an important role to play in this transition, and the measures which are proposed herein for financial institutions are helpful in informing the way forward. We in the EIB, through our finance and advisory services, are well-placed to help realise the potential of the reuse revolution.

Ambroise Fayolle

Vice President, European Investment Bank

PepsiCo is working to increase reuse by 2030 through offerings that are easy and convenient for our consumers to enjoy. Making that happen requires a whole-system effort, including collaboration with peer companies, governments, and other stakeholders. This latest analysis from EMF shows that benefits can be realized through reuse but requires action across the full value chain. We are looking forward to working with partners to overcome current barriers to scale reuse including both refill and return models.

Anke Boykin

Senior Director, Global Environmental Policy, PepsiCo

The findings of this report address the critical obstacles for reuse which brands and retailers face, head-on. It's a real breakthrough to have proven such a compelling business case for industry collaboration and reusable packaging standardisation, and to understand exactly the conditions and applications for which the business case makes sense.

Yoni Shiran

Partner and Plastics Lead, Systemiq

We're pleased with this publication and encouraged by the findings, along with the numerous stakeholders in the value chain who recognize the importance of scaling reuse models. We urge all business stakeholders to convert these findings into tangible actions that will bolster refill reuse systems with urgency. As a system operator, we pledge to do whatever it takes for reuse adoption to be convenient as well as fiscally and environmentally attractive for the three most important stakeholders: consumers, manufacturers, and retailers.

Tom Szaky

Founder and CEO, TerraCycle and Loop

Turning the 'reuse revolution' ambition into a reality requires cross-industry collaboration. We're pleased to be working with the Ellen MacArthur Foundation and other industry partners to explore the economic, environmental, and experiential impacts of reuse models versus single-use. Only by better understanding these important variables can we make the case for scaling these systems all the more compelling.

Jolanda de Rooij

Senior Sustainability Manager Circular Economy, Unilever

Reuse and refill of packaging are two of the levers we need to activate if we want to reduce our CO₂ emissions by at least 80% by 2050 in order to meet the target set by the Paris Agreement in 2015. The development of reuse and refill requires major shifts in the way we produce, we consume, and we deal with packaging once the products they contain have been consumed. This study shows that we need all relevant players to collaborate in order to build, deploy, and finance the reuse and refill systems of the future. CITEO is fully committed to this objective, notably through its collaborative project: ReUse.

Valentin Fournel

Head of Eco-Design and Reuse, CITEO

Recycling alone is not enough to combat plastic pollution and plastic soup. Worldwide, we need to focus more strongly on reusing plastic products and packaging, to reduce demand for virgin plastics and prevent environmental pollution. Let's make reuse the norm and prevent plastic pollution.

Jennefer Baarn

Netherlands, Head of Delegation to the UN treaty negotiations on plastic pollution

In a resource constrained and increasingly polluted world, reuse is the logical next step for packaging our goods. Modelling packaging systems is however notoriously complex. In this context, this new robust analysis from EMF provides yet further evidence on the environmental and economic opportunity that well designed reuse systems can deliver at scale. Now the pressure is on policymakers to create the necessary legislative conditions for reuse to thrive, and on business leaders in the fast-moving consumer goods sectors to change their practices, adopting truly circular solutions to end our addiction to single-use packaging.

Jean-Pierre Schwetzer

Circular Economy Manager,
European Environmental Bureau (EEB)

The study comes at an important time when the introduction of reuse systems is considered worldwide. It is extremely relevant as it contributes to shift the focus from the 'why' to the 'how' of effective and efficient reuse systems, particularly the application of shared infrastructure and standardization.

Tobias Bielenstein

Director Public Affairs & Sustainability, GDB

PR3 welcomes the focus on standards which are essential to ensure both environmental and economic performance. Our partners across the value chain who are currently advancing the PR3 Standards for use around the world will surely gain insights from this report.

Amy Larkin

Director, PR3

The insight and evidence presented by this new report reflects the evolving experience of Plastics Pact members around the world who have tested reusable packaging – collaboration, standardisation, and customer-centred design to maximise participation, are key to unlocking reuse at scale. WRAP welcomes the important contribution of this report to support the long-term business case for reusable packaging as we work with our UK Plastics Pact members to make the transition to delivering a full 'system change' to reusable packaging systems.

Lowelle Bryan

Sector Specialist, WRAP

'Unlocking the Reuse Revolution' is a critical body of work that provides governments and businesses with the evidence and steps needed for a ground shift from single-use to reusable packaging. Reuse lies at the heart of a circular economy and will be fundamental to solving plastic pollution while also delivering reductions in greenhouse gas emissions and water use. Now is the time for businesses and policymakers to seize the opportunity to transform our way of delivering products and unlock a future free from plastic pollution.

Sarah Baulch

Principal Associate, The Pew Charitable Trusts

Reuse has the incredible potential to transform our material systems if implemented at scale. The scenario-based modelling showcased in this report is exactly what we need to drive the uptake of this high-impact solution – highlighting the huge opportunity reuse can deliver for both business and the planet. EMF's analysis emphasises the need for industry-wide collaboration and collective action from all stakeholders in order to change the trajectory of the plastic pollution crisis. WWF is excited to build on these findings as we continue to work toward a more circular future.

Erin Simon

Vice President and Head of Plastic Waste & Business, WWF

Insights summary

A reuse revolution is critical to tackling the plastic waste and pollution crisis: this study offers insights and recommendations to design and scale returnable packaging and make that revolution a reality

Moving from single-use to reuse models presents one of the biggest opportunities to reduce plastic pollution.¹ Indeed, it is estimated that moving to reuse models can provide an over 20% reduction in total annual plastic leakage to the ocean by 2040.² Moreover, adopting reuse models at scale can play a critical role in not only tackling plastic pollution, but also in significantly reducing virgin material use, greenhouse gas (GHG) emissions, and water consumption. Despite concerted and ambitious industry initiatives, such as the Global Commitment,³ the world is off track to eliminate plastic waste and pollution — with scaling reuse being identified as one of the key pivotal hurdles to overcome.⁴

Elimination of packaging is essential, where possible, and recycling efforts will still be needed, but to achieve a future where plastic never becomes waste, reuse systems need to be scaled. Over the past five years, there has been some momentum across the industry and existing pilots are a step in the right direction, but action must go further, faster in order to meet the scale of the challenge and realise the benefits of a reuse revolution.

This study focuses on business-to-customer returnable packaging, where customers purchase products — just as they normally would, but in reusable packaging, which is then returned to be professionally cleaned and refilled, before being placed back on the shelf. This differs from refill models, where customers own and refill their own packaging. Both approaches are an essential part of the solution, but this study focuses on **return** for two reasons:

- 1 Returnable packaging filling, sales, and shopping experience closely map to current packaging systems** — from the filling of packaging to the retail supply chains, and through to the customer shopping experience. This means that return models can address a variety of reuse challenges, such as concerns about hygiene, retail space disruption, and customer convenience. In turn, this also means that returnable models can be applied across a broad range of applications, offering a clear route to scaling reuse in the long term.
- 2 Scaling return models will need new infrastructure to collect and re-process packaging, and, therefore, unlocking the opportunity reuse-return systems present requires a focused approach as outlined here.** Designing, establishing, and operating return models needs stakeholders from across the value chain to collaborate, as virtually no organisation can do this on its own. This study aims to inform business, policymakers, and financial institutions on the key design choices to facilitate this collaboration and make reuse-return systems work effectively at scale.

Our analysis provides a vision as well as vital new data and insights, supported by 60 organisations, on how to design return systems to harness the full range of economic and environmental benefits they offer. These insights can also inform the ongoing negotiations for an international legally binding instrument on plastic pollution.⁵

This study focuses on the system design choices and quantifies the role of collaboration. We recognise there are other important considerations and challenges that need to be further understood which are not part of the scope of this study, for example safety of reusing materials,⁶ effective levers for customer behavioural change to return packaging, and governance models to ensure effective and equitable systems.

To reach the scale necessary to tackle plastic pollution, reuse urgently needs to be scaled; to make the economics work, collaboration is essential. While effective, scaled return systems do exist around the world, our findings, alongside an abundance of learnings from pilots, demonstrate that a concerted effort will be required for these to be replicated. Since businesses maintain ownership and responsibility for packaging throughout the reuse-return model, they have a pivotal role in designing these shared systems in an optimal way and incentivising customer adoption, while policymakers have a crucial role in creating the enabling conditions, and financial institutions in supporting and investing in the infrastructure. **As the need for action becomes evermore urgent, and in anticipation of increased regulation, now is the time to come together to make this reuse revolution a reality.**

About the study

This study aims to contribute to the debate on reuse through (i) analytically modelling the environmental and economic performance of return systems; (ii) better understanding and quantifying the key drivers that affect their environmental and economic performance.

Scenarios at varying levels of ambition have been modelled. The most ambitious scenario modelled – the System Change scenario – depicts a bold scenario for optimised return models at high scale. Achieving this will require a major transition from today's systems and supply chains, and will not happen overnight – but we should start working towards it today. For some applications for which return packaging is a proven solution (e.g. certain types of beverages), this bold scenario is roughly aligned with the most advanced existing systems (e.g. systems in Germany). For less mature applications, such as personal care or food products, there is a higher need for further research and development before this long-term vision will be within reach. As our model is based on existing technologies, it does not take into account potential innovation that might accelerate the transition to returnable packaging and further enhance its performance.

The modelling is sector-specific, to reflect sectoral differences. The focus sectors are: beverages, personal care, fresh food, and food cupboard items. Assumptions vary across these sectors. Within each scenario, system variables (see next page) are kept constant across sectors to aid comparison. In reality, the system can be a blend of different scenarios and vary by sector, for example, it's likely that any system would have a blend of bespoke and pooled packaging. For additional results, outside of the three scenarios, see page 38 of the [full study](#).

This study is based on advanced modelling with data and assumptions tested with 30+ experts, especially those operating the few reuse systems that exist at scale today. It is underpinned by advanced, scenario-based, analytical modelling, including GIS-based (Geographical Information System) logistical modelling, that quantifies the performance of return models under certain scenarios.

This study is intended as a starting point, not to provide all the answers. While many of the insights on the key drivers that impact the environmental and economic performance are applicable across multiple geographies, the specific outcomes presented in this report are based on French data and geography – having chosen one geography to enable as realistic modelling as possible. We encourage further detailed research for other geographies. We also recognise there are other important considerations and challenges that need to be further understood which are not part of the scope of this study, including hygiene and safety standards, and effective governance of shared reuse systems. For these we encourage further research and on-the-ground testing. For further details on the modelling design, assumptions, limitations, and underlying data, please see the section 'Model overview, key assumptions, and limitations' (pages 16-18) of the [full study](#) and the [Technical appendix](#).

Model overview

We have modelled 4 different returnable packaging applications and their single-use equivalents...



... Across three theoretical scenarios (using France as a representative geography)

System variables	Fragmented Effort A low scaled and fragmented return system	Collaborative Approach An established reuse system with potential to scale beyond	System Change A visionary scaled, shared, and standardised return system
Scale and shared infrastructure The volume of packaging switching to reuse, within a common system	Market share: ~2% Due to low volumes and fragmented infrastructure	Market share: ~10% Possible through big volume shifts to reuse and some sharing of infrastructure	Market share: ~40% Large shift to reuse within a highly shared infrastructure
Packaging system Bespoke packaging vs. shared structural design that can return to any filler	Bespoke packaging 	Pooled packaging 	Pooled packaging
Return rate and average no. of loops How much packaging gets returned, determining how many times it can be reused	80% return rate enabling packaging to be reused ~5 times. 	90% return rate enabling packaging to be reused ~10 times. 	95% return rate enabling packaging to be reused ~15 times.

To provide insights on:

- Environmental performance:** GHG emissions, water use, material use, and waste generation
- Economic performance:** total costs, including OPEX (operational expenditure), and CAPEX (capital expenditure).

* The analysis presented in this report focuses on the insights of a single-use plastic to returnable plastic packaging comparison (i.e a single-use 1L PET bottle with a 1L returnable PET bottle), and the insights of the single-use plastic to returnable glass packaging comparison are presented separately from the main analysis on page 45-46 of the [full study](#).

Returnable plastic packaging has the potential to achieve meaningful environmental benefits compared to single use, in the System Change scenario reducing GHG emissions and water use by 35 to 70%, and material use by 45 to 75% for selected applications

Our modelling shows that returnable plastic packaging has better environmental outcomes than single-use plastic packaging across almost all scenarios, applications, and performance indicators that were studied. At high scale, with highly collaborative systems and standardised packaging, the GHG emissions savings achieved range from 35% to 69%; water and material use are reduced by 45% to 70% and 45% to 76% respectively (Figure 1). These benefits are achieved in a plastic, single-use packaging to plastic returnable packaging comparison, but are dependent upon application and scale, for example the top range would be achieved in large-scale reuse systems (~40% of the market for that application), with high return rates (95%, ~15 loops*) and highly optimised transport.

Even at lower scale and without standardised packaging or industry-wide collaboration, most applications achieve positive environmental outcomes. In a scenario with medium return rates (80%, ~5 loops), for all rigid-to-rigid packaging comparisons,** returnable packaging exhibits GHG emissions savings (12–22%) and material use reductions (34–48%) compared to single use. Water use is reduced across the board by 16% to 40%.

However, in some applications, a certain level of scale and system efficiency is necessary to compete environmentally with single use. When comparing single-use flexible packaging to rigid, returnable packaging, returnable packaging only outperforms single use on GHG emissions and material use when a Collaborative Approach scenario is achieved.

* Return rate is the percentage of packaging that is returned by customers. The amount of packaging returned, along with the quality loss rate, determines how many times the average piece of packaging can therefore be reused (or 'looped').

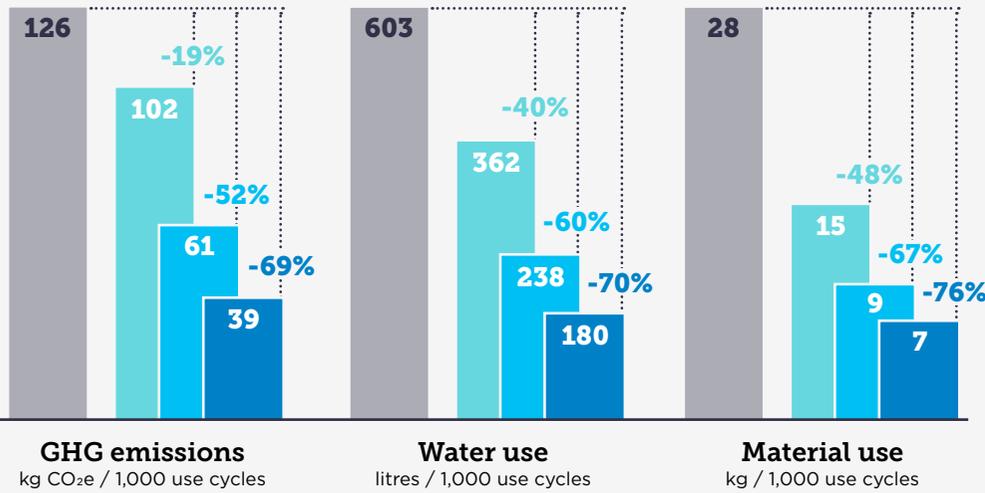
** This includes beverage bottles, personal care bottles, and fresh food packaging, where the single-use alternative is rigid packaging. For food cupboard products we compare to flexible, single-use packaging.



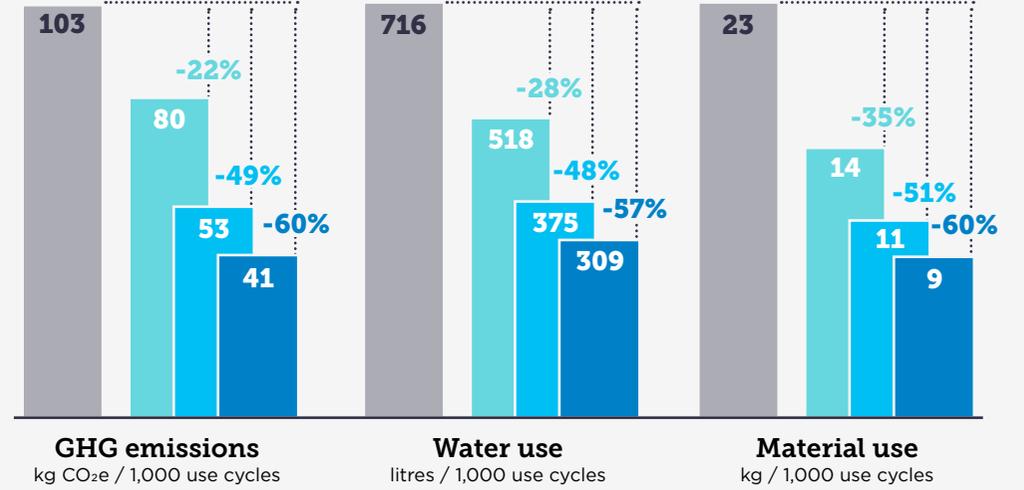
Figure 1:
Performance of return systems on environmental metrics, compared to single use



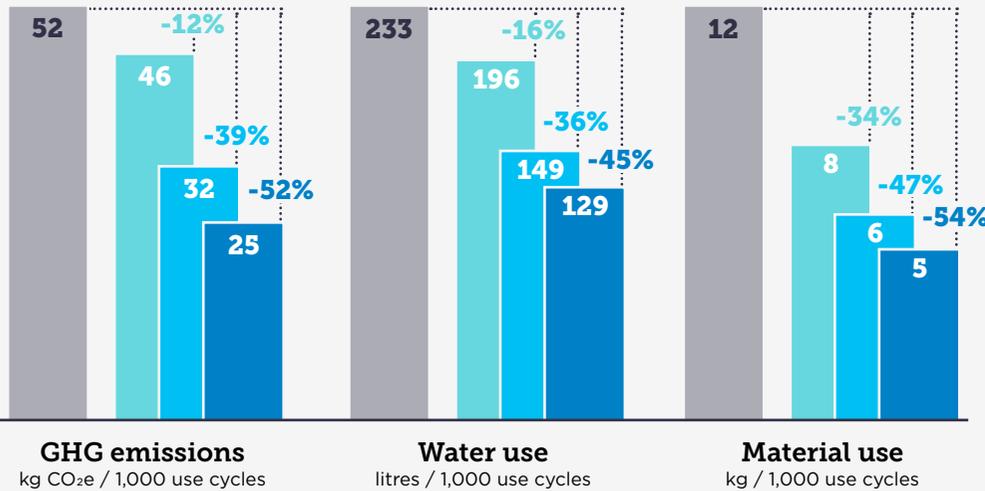
Beverage bottles



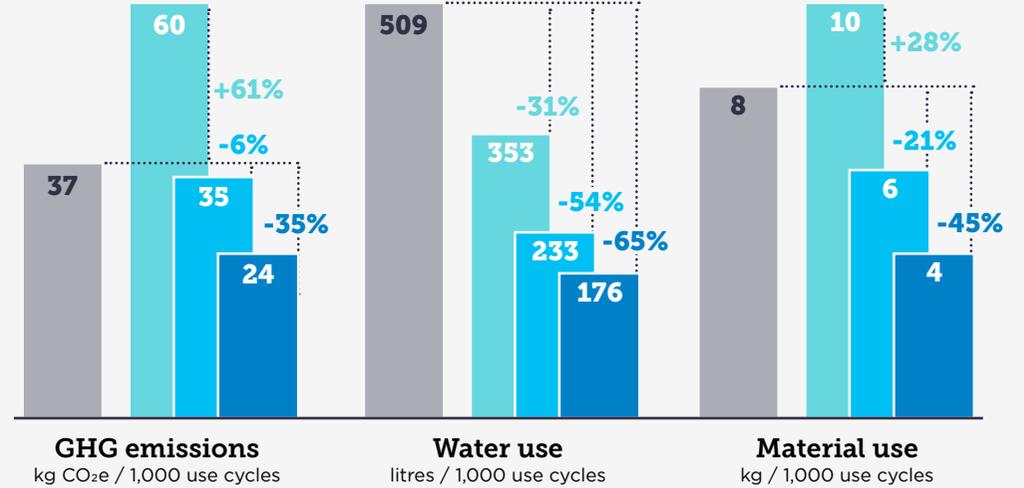
Personal care bottles



Fresh food



Food cupboard



To compare single-use to returnable packaging, we look at the cost of providing a 'unit of product', for example 1 litre of soda or 250ml of shampoo, to a customer. For single-use packaging, '1,000 use cycles' will be all the costs associated with 1,000 single-use packages. For returnable packaging, this will be the cost associated with providing 1,000 units of the same product, but reusing packaging to supply it to customers. Often, depending on the variables (for example, the return rate), this will require substantially less packaging.

The economics can work: when designed collaboratively and operated at high scale, the economics of return systems can compete with single use for some applications

Our modelling shows that a collaboratively designed return system with standardised packaging and shared infrastructure can provide, at high scale, cost parity for beverage and personal care applications. In the System Change scenario, the total costs per unit of utility* of returnable plastic beverage bottles and personal care bottles are, respectively, 6% and 10% lower than single use (Figure 2). Whereas, fragmented, or low-scale systems are unlikely to reach cost parity with today's highly optimised, large volume single-use systems.

If 'revenues' from unreturned deposits are factored in, other applications also become economically competitive with single use. For returnable fresh food (e.g. yoghurt) and food cupboard (e.g. rice, pasta) packaging, the total costs per unit of utility are ~25% (-EUR 0.011) higher compared to their single-use counterparts. While reaching high return rates must be the absolute priority to achieve economic savings and maximise the environmental opportunity, unreturned deposits can have a significant impact on the economic viability of return systems. They can help de-risk or finance the transition phase, covering the lost value of

unreturned packaging when return rates are low, before higher return rates come to fruition. The system setup and the wider governance is crucial to ensure that revenues are channelled correctly to support the economic viability of return systems.

It is widely expected that the full life-cycle cost of single-use packaging will increase, strengthening the business case for returnable packaging. With expected changes in regulation to fully account for packaging's end-of-life cost, externalities such as pollution and GHG emissions, and investor priorities,⁷ the cost of single-use packaging looks set to rise. While this analysis is based on today's prices, this study projected potential increases in Extended Producer Responsibility (EPR) fees for flexible packaging, carbon taxes, and plastic taxes and their impact on the economics of reuse-return.** This resulted in returnable beverage bottle costs being 28% lower per unit than single-use bottles in the System Change scenario, and food cupboard costs only 3% higher than a single-use equivalent — even without taking into account revenues from unreturned deposits.

* A unit of utility is a unit of 'service' provided to a customer, e.g. 1 litre of beverage, or 250g of yoghurt. Serving one unit of utility in single use means producing one unit of packaging. For returnable, it means producing packaging for the first loop and reusing this same packaging for the subsequent loops.

** See 'Assumed price increases' (p35) for more details on this analysis

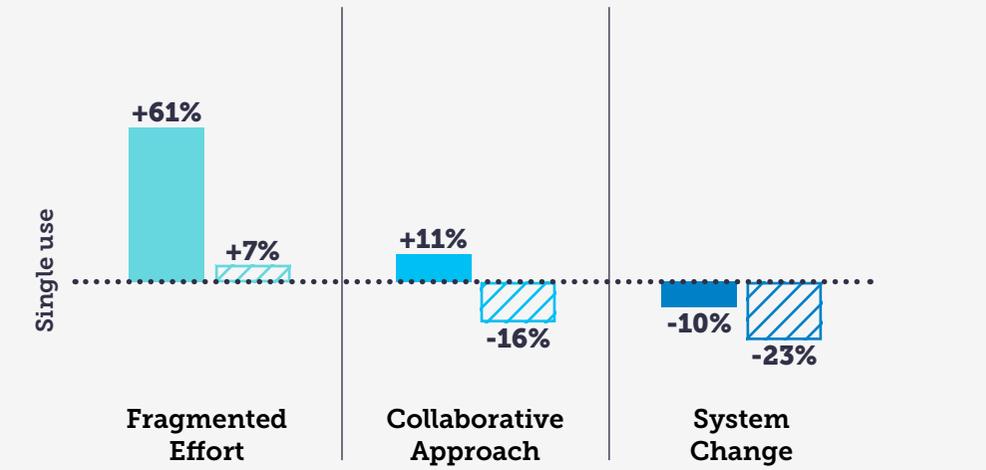
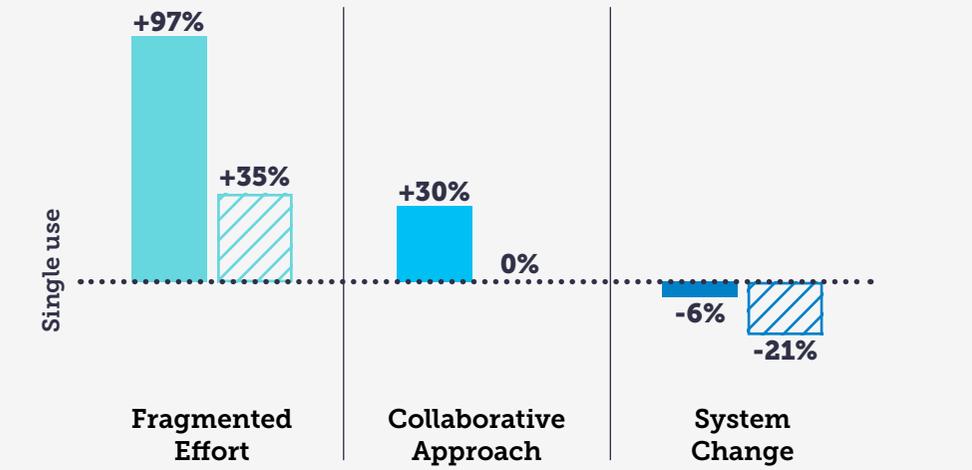


Figure 2:
Costs per returnable packaging applications, compared to single use

■ Costs, excluding revenues from unreturned deposits
▨ Costs, including revenues from unreturned deposits

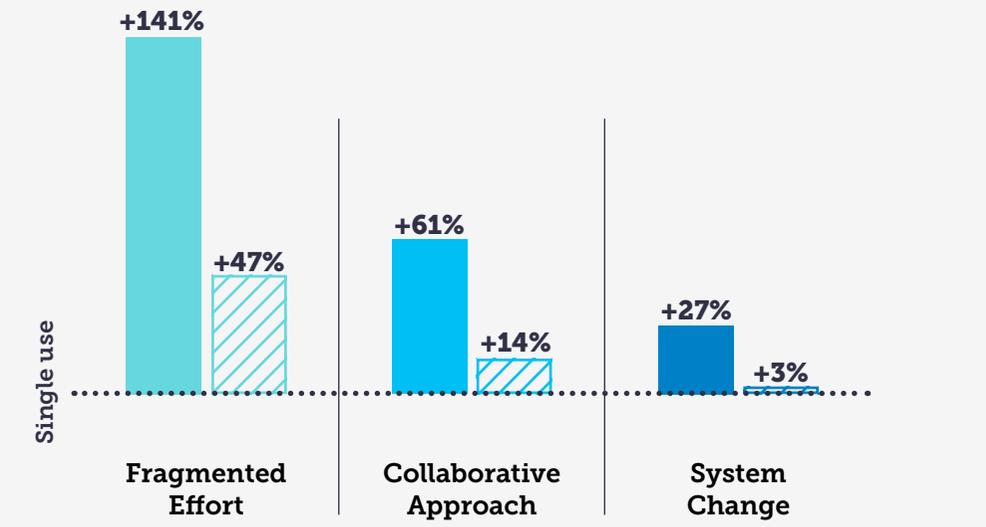
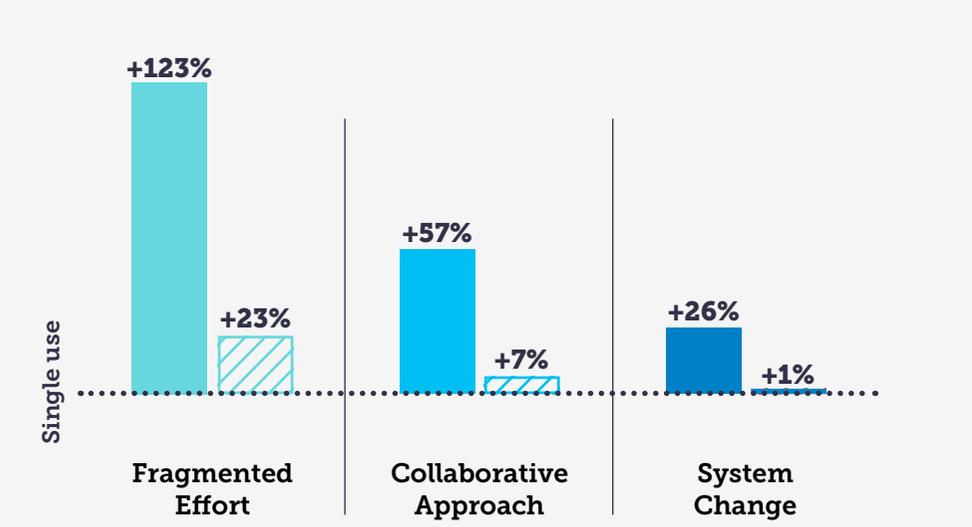
Beverage bottles

Personal care bottles



Fresh food

Food cupboard



Realising the full potential of return systems relies on three key performance drivers

Our modelling shows that continuing and scaling fragmented efforts could bring some environmental benefits. But to make the economics work for returnable packaging and maximise the environmental opportunity, collective action is vital. This study has identified three key performance drivers:

Scale and shared infrastructure

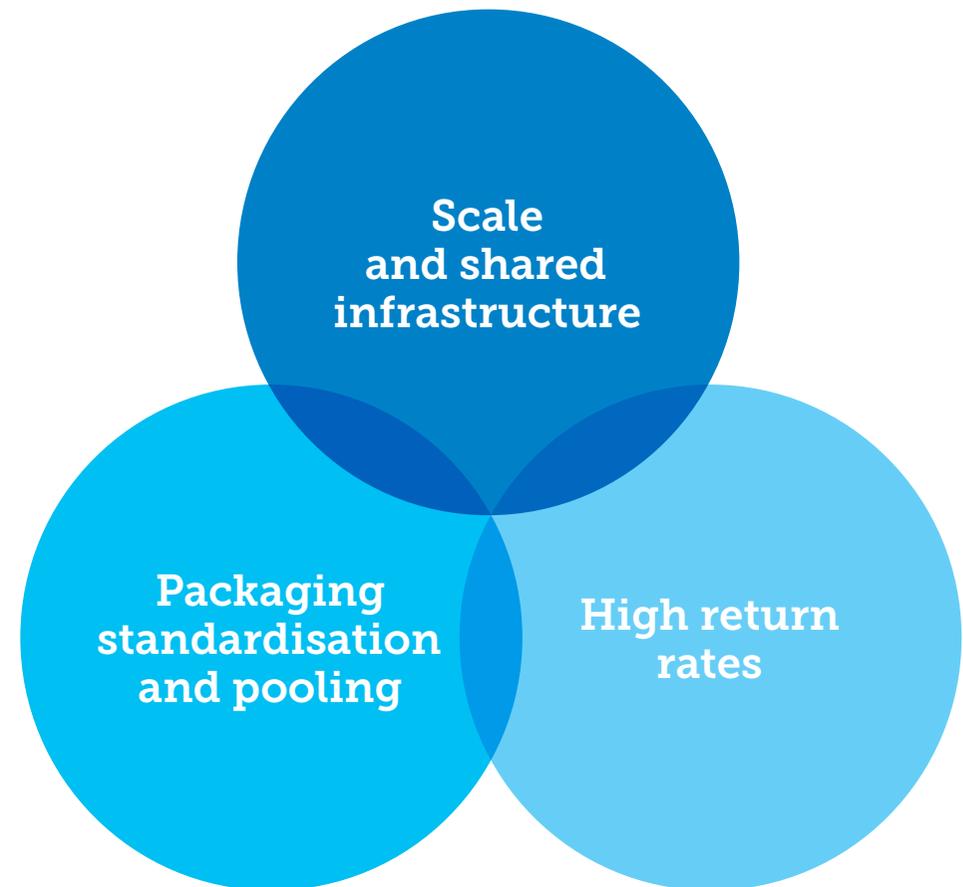
Sharing infrastructure provides economies of scale for all steps of the value chain (collection, sorting, cleaning, and transportation). It is particularly crucial to collaborate on collection infrastructure, not only to share costs, but also to offer customers a consistent and smooth experience. Customers are much more likely to adopt new models when they do not have to segregate packaging for, and interact with, different systems.

Packaging standardisation and pooling

Harmonising the structural design of packaging within a product category while using labels and closures to differentiate brand and product lines can significantly increase the efficiency of the system. Standardisation can drive down sorting, cleaning, and storage costs, and pooling* of packaging can dramatically decrease transport distances and associated emissions and costs.

High return rates

Reached through incentivising return and a frictionless return experience — are a key performance driver for all reuse systems. When transitioning, it is paramount to progress through the early stage, when return rates are likely very low, as quickly as possible. Among other factors, shared collection, a wide range of products, and customer convenience can help achieve high return rates by driving behaviour change. All actors must work together to learn how to reach the high return rates which this study shows are needed, the inspiration for which can be found in established systems.



* Pooled packaging refers to a set of packaging that is shared by several actors. See Part 3 for more details.

To realise the full benefits of return systems, a fundamentally new approach is required where industry peers, policymakers, and financial institutions work together to build shared systems. A major transition that won't happen overnight.

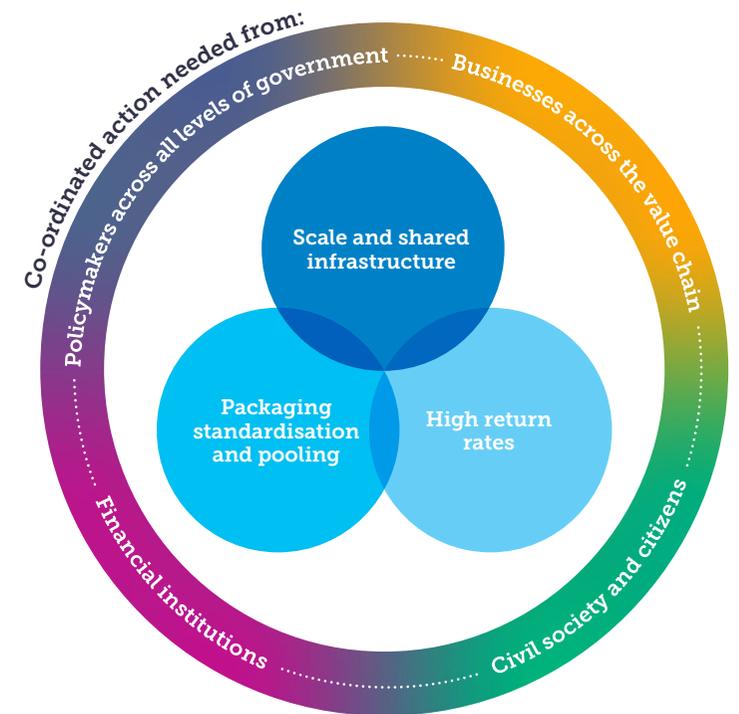
National and international policy will need to play a role to create the enabling conditions and mobilise an industry-wide transition. Given the need for a collaborative industry-wide approach and significant transformations of supply chains, it is clear that businesses cannot do this alone. Efforts such as the international legally binding instrument on plastic pollution and the EU Packaging and Packaging Waste Regulation (PPWR) have the opportunity to play a crucial role in bringing reuse to scale, building on existing global momentum.

Realising the potential of reuse-return will require a major transformation and a big shift from today's single-use model, but the foundations for this already exist. Infrastructure (e.g. collection, sorting, and cleaning), mindsets (e.g. packaging standardisation), and customer and business behaviour will all need to change. While the majority of collection, sorting, and cleaning infrastructure will need to be created (and can as such be optimised by design), other parts of the value chain, such as product manufacturing and filling facilities, already exist. Reaching the outcomes of our most ambitious scenario will be a massive transformation, requiring investment to evolve and retrofit equipment and adapt supply chains to suit a reuse system, but if the same

expertise and drive to build hyper efficient single-use systems can be re-utilised to build reuse systems, these outcomes are achievable.

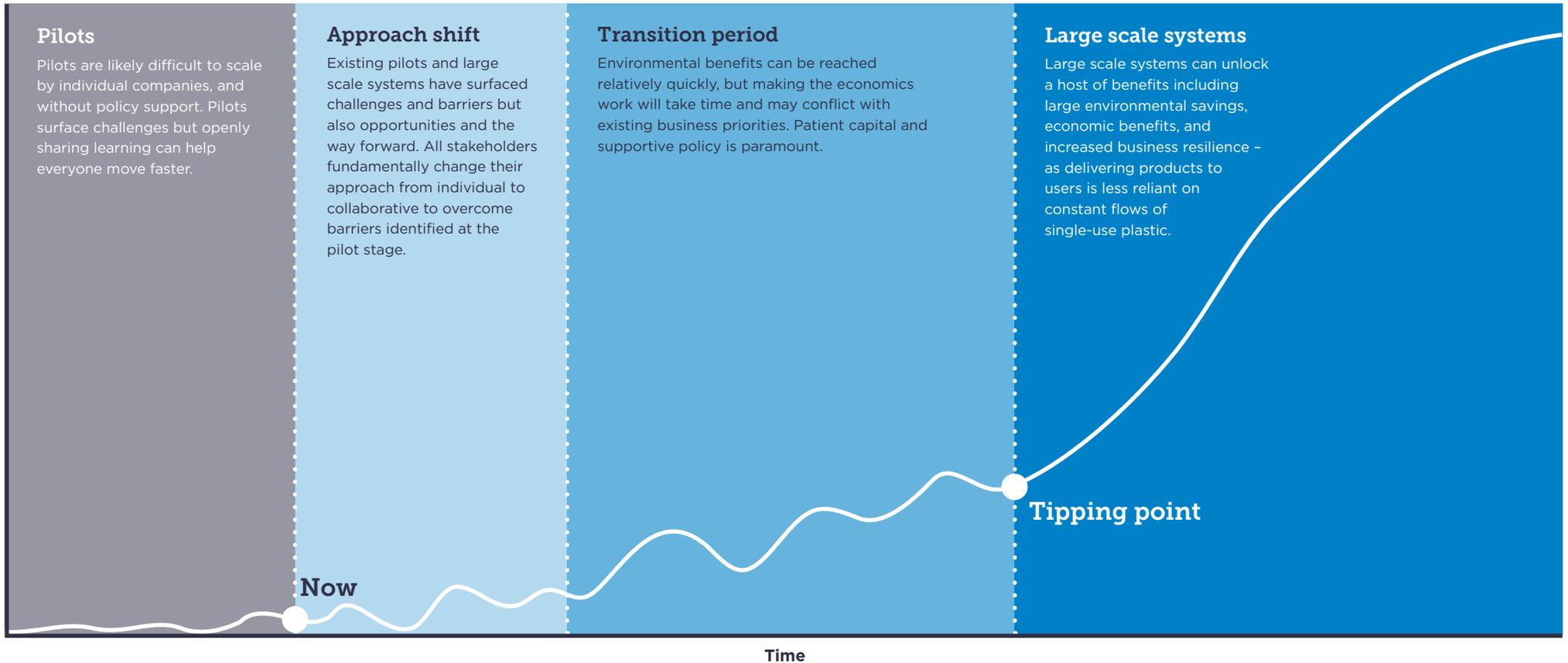
Scale is critical, so it will be crucial to strategically mobilise, and de-risk this transition period. Although environmental benefits can be achieved with relatively low-scale operations, the economic benefits are often only realised with a certain scale. Therefore, to reach the scale required as fast as possible and unlock the significant benefits that such a system offers, collaboration will be key.

There are clear indications of where to start and which existing efforts to build on. There are applications — such as plastic beverage bottles — where achieving economic parity with single use is easier, and can already happen at lower levels of scale. Additionally, there are some geographies — such as Latin America — with well-established systems for reuse that provide insights for how to scale. Lastly, there is deposit return infrastructure currently designed for recycling, that could be leveraged for reuse to reduce the investment needed to set up collection systems for returnable packaging.



To realise this vision, we urge all stakeholders to come together to take three concrete actions:

- **Adopt a fundamentally new approach**
- **Kickstart the transition by deploying collaborative multi-brand and multi-retailer systems**
- **Follow through by enlarging these systems across a greater range of products, sectors, and geographies.**



Calls to action for each stakeholder

	Businesses across the value chain (brands, retailers, service providers, startups)	Policymakers across all levels of government (municipalities, national governments, UN treaty negotiators)	Financial institutions	Civil society and citizens
Role	Cultivating industry-wide collaboration and establishing scaling return systems as a key priority in packaging strategy, with dedicated resources, investments, and action plans, supported by targets and advocacy efforts.	Creating the enabling conditions by ensuring a level playing field, fostering industry-wide collaboration, de-risking the initial investments, and creating the right incentives for return systems (e.g. by leveraging the international legally binding instrument and EU PPWR).	Supporting the shift in business approach to scaling reuse, financing infrastructure investment and research projects through innovation funds with room to fail and long returns on investment, and redirecting long-term investment flows from single use to reuse systems.	Participating in new systems, and shifting demand from single use to reuse.
Actions	<p>Leverage combined technical expertise to plan and develop the establishment of shared logistics infrastructure for packaging collection, cleaning, and transport.</p> <p>Scale with shared infrastructure</p> <p>Bring packaging designers and marketers together to innovate towards standardised and pooled packaging for high priority products across a range of packaging materials and categories.</p> <p>Standardised and pooled packaging</p> <p>Retailers: scale up collection efforts. All actors: harmonise the customer experience and communication of how return systems operate to reduce friction to participate.</p> <p>High return rates</p>	<p>Set up and expand the adoption of Extended Producer Responsibility (EPR) systems — developed in collaboration with brands, retailers, and other industry stakeholders — with mechanisms (e.g. eco-modulation) to incentivise reuse.</p> <p>Scale with shared infrastructure</p> <p>Foster the uptake of reuse, for example by setting ambitious, evidence-based reuse targets.</p> <p>Scale with shared infrastructure</p> <p>Create and implement health, hygiene safety, and quality standards to ensure safe return systems.</p> <p>Standardised and pooled packaging</p> <p>Establish effective take-back systems such as deposit-return schemes (DRS) and develop guidelines for wider financial measures (e.g. EPR, taxes, subsidies) to ensure financial viability and incentivise widespread adoption and investment in shared return infrastructure.</p> <p>High return rates</p>	<p>Scale financial products and services that support the development of shared return infrastructure. Collaborate between public and private institutions on mechanisms such as blended finance, to offer guarantees, or de-risking, to crowd in sufficient capital.</p> <p>Scale with shared infrastructure</p> <p>Make capital available to businesses at favourable rates to support their transition to standardised and pooled packaging.</p> <p>Standardised and pooled packaging</p> <p>Support increasing return rates by linking financing to ambitious packaging return rate targets using mechanisms such as sustainability-linked bonds and loans, where the cost of debt steps down if companies meet their targets.</p> <p>High return rates</p>	<p>Citizens: Return packaging to help achieve high return rates.</p> <p>Act as a watchdog to hold governments, businesses, and institutions to account.</p> <p>Raise awareness and call for strong regulation where it is required.</p> <p>Conduct advocacy and coordinate research to build evidence for how return systems can be designed effectively.</p>

An illustration of a delivery worker, a woman with a ponytail wearing a blue vest and dark pants, pushing a hand truck loaded with orange boxes. She is walking on a sidewalk towards a house with a blue door and windows. A green recycling bin is visible near the door, and a cat is looking out from a window. A large blue circular graphic is overlaid on the right side of the image, containing the text. The background shows a green tree and a white delivery truck with its back open, revealing more boxes.

What role
will **you** play
to make it
happen?

Project team

Ellen MacArthur Foundation

Core project team

Dilyana Mihaylova

Programme Manager, Plastic initiative

Maël Arribas

Senior Research Analyst, Plastic initiative

Mark Buckley

Strategic Design Manager, Circular Design, Plastic initiative

Rob Opsomer

Executive Lead, Systemic initiatives

Sander Defruyt

Lead, Plastic initiative

Wider team

Lena Gravis

Senior Expert, Editorial

Joanna de Vries

Editorial Lead

Laura Collacott

Consultant Editor

Sarah O'Carroll

Governments and Cities Lead

Bahar Koyuncu Caylak

Senior Policy Officer

Eline Boon

Senior Policy Manager

Joe Rodgers

Programme Manager, Finance Initiative

Emily Healy

Finance Initiative Lead

Gabriella Hewitt

Communications Manager

Anna Sheehan

Senior Communications Executive

Iulia Strat

Communications Consultant

Steven Duke

Media and Messaging Lead

Matt Barber

Graphic Designer

James Wrightson

Creative Lead

Dan Baldwin

Senior Designer, Digital

Supported by

Systemiq

Yoni Shiran

Partner

Canan Akguen

Associate, Project Manager

Felix Philipp

Associate, Modelling Expert

Christiana Dujardin

Associate, Modelling Lead

Elena Georgarakis

Associate, Data Collection Lead

Sanchi Singh

Associate

Eunomia

Joe Papineschi

Founder

Helene Lanctuit

Principal Consultant

Maxine von Eye

Principal Consultant, Modelling Lead

Rich Grousset

Consultant

JDO

Natasha Arthur, Matt Blaylock, Paul Drake, Sara Faulkner, Phil Marlow, Liza Neudegg, Malcolm Phipps, Toby Rivett, Ed Silk, Racheal Skingle, Philip Stevenson, Jorja Taylor

yokedesign.studio

Acknowledgements

We, at the Ellen MacArthur Foundation, are very grateful for the support we have received in producing this study.

The Plastic initiative's Advisory Board has supported the Foundation's work since 2016, helping to conceive and launch the [Global Commitment and Global Commitment Progress Reports](#), the [Plastics Pact network](#), as well as the [Reuse – Rethinking Packaging book](#) and the [Upstream Innovation Guide](#) that lay the foundation of this study. Many of the organisations in the Advisory Board, with the addition of others, participated in this project's Advisory Group, which supported us throughout this work and provided invaluable data, insights, and feedback.

Thanks also go to all organisations and individuals across policy, industry, and academia, as well as those from NGOs and think tanks, who contributed to this study with insights and constructive input, through interviews, in person, and online workshops.

Scaling Returnable Packaging Project Advisory Group

L'Ademe	The European Investment Bank
Amazon	TerraCycle / Loop
Amcor	Mars, Inc
Beiersdorf	Nestlé
Carrefour	PepsiCo
The Coca-Cola Company	L'Oreal
Colgate-Palmolive	Schwarz Group
The Consumer Goods Forum	Unilever
Danone	

Contributor organisations

The Ellen MacArthur Foundation would like to thank the organisations who contributed to the study for all their constructive input. Please note that contribution to the study, or any part of it, or any reference to a third-party organisation within the study, does not indicate any kind of partnership or agency between the contributors and the Foundation, nor an endorsement by that contributor or third party of the study's conclusions or recommendations.

Again	JRC
Auchan Retail	Krones
ANZPAC Plastic Pact (Australian Packaging Covenant Organisation)	Minderoo
Break free from plastics	OECD
Closed Loop Partners	Perpetual
Circulation	The Pew Charitable Trusts
Citeo	Mehrwegverband Deutschland (German Association for Reusable Packaging)
The City of Paris	Portsmouth University
The City of Copenhagen	ReLondon
Delete cups	Reposit
DS Smith	Reath
The Dutch government	ReFrastructure
European Environment Agency	Réseau Vrac et Réemploi
European Environmental Bureau	Resolve - PR3
Dizzie	Reusable Packaging Association
Eternity Systems	Searious Business
The French government	SC Johnson
Fyllar	Tomra
Henkel	GoUnpackaged
Genossenschaft Deutscher Brunnen (GDB)	UNEP
Former Chile Environment Ministry representative	UNPRI
Greenpeace	Upstream
GS1	U.S. Plastic Pact
India Plastic Pact (Confederation of Indian Industry)	WEF
InOff Plastic	Wrap
	WWF



The Ellen MacArthur Foundation is an international charity that develops and promotes the circular economy in order to tackle some of the biggest challenges of our time, such as climate change, biodiversity loss, waste, and pollution. We work with our network of private and public sector decision makers, as well as academia, to build capacity, explore collaborative opportunities, and design and develop circular economy initiatives and solutions. Increasingly based on renewable energy, a circular economy is driven by design to eliminate waste, circulate products and materials, and regenerate nature, to create resilience and prosperity for business, the environment, and society.

Further information:
www.ellenmacarthurfoundation.org
 @circulareconomy



Systemiq, the system-change company, was founded in 2016 to drive the achievement of the Sustainable Development Goals and the Paris Agreement, by transforming markets and business models in five key systems: nature and food, materials and circularity, energy, urban areas, and sustainable finance. A certified B Corp, Systemiq combines strategic advisory with high-impact, on-the-ground work, and partners with business, finance, policymakers and civil society to deliver system change. In 2020, Systemiq and The Pew Charitable Trusts published “Breaking the Plastic Wave: A Comprehensive Assessment of Pathways Towards Stopping Ocean Plastic Pollution”, an evidence-based roadmap that shows how industry and governments can radically reduce ocean plastic pollution by 2040. Systemiq has offices in Brazil, France, Germany, Indonesia, the Netherlands, and the UK.

Further information:
plastic@systemiq.earth
www.systemiq.earth



Eunomia Research & Consulting has been working to address triple planetary crisis of climate change, biodiversity loss, and pollution since 2001, through supporting the transition to a circular and regenerative economy. Combining real world practical experience and deep technical knowledge with an active role in policy, Eunomia provides applicable, science-led solutions and insights that drive a positive, regenerative impact on the planet. Eunomia's role in reuse is providing market and technical analysis, sophisticated modelling and advice to policymakers, cities, businesses, and civil society.

Further information:
www.eunomia.co.uk

Endnotes

- 1 Ellen MacArthur Foundation, From single-use to reuse: A priority for the UN Treaty (2023)
- 2 The Pew Charitable Trusts and Systemiq, Breaking the Plastic Wave (2020)
- 3 Led by the Ellen MacArthur Foundation, in collaboration with the UN Environment Programme, the Global Commitment – together with a network of Plastics Pacts – has united more than 1,000 organisations behind a common vision of a circular economy for plastics. Driven by the goal of tackling plastic pollution at its source, companies representing 20% of all plastic packaging produced globally have committed to ambitious 2025 targets to help realise that common vision. Learn more here.
- 4 The Global Commitment Five Years In: Learnings to Accelerate Towards a Future Without Plastic Waste or Pollution
- 5 Ellen MacArthur Foundation, From single-use to reuse: A priority for the UN Treaty (2023)
- 6 Food Packaging Forum, Reuse Factsheet
- 7 Investors call for urgent action to reduce plastics from intensive users of plastic packaging

Disclaimer

This report has been produced by the Ellen MacArthur Foundation (Foundation) with modelling and analysis by Systemiq and Eunomia.

Whilst care and attention has been exercised in the preparation of the report and its analyses, relying on data and information believed to be reliable, the Foundation makes no representations and provides no warranties in relation to any aspect of the report (including as to its accuracy, completeness, or the suitability of any of its content for any purpose). Products and services referred to in the report are provided by way of example only and are not endorsed by the Foundation. The Foundation is not responsible for any third-party content referred to in the report nor any link to any third-party website, which is accessed at the reader's own risk.

Neither the Foundation, Systemiq, or Eunomia nor any of its related people and entities and their employees or appointees shall be liable for any claims or losses of any nature arising in connection with this report or any information contained in it, including, but not limited to, lost profits or punitive or consequential damages.



© COPYRIGHT 2023
ELLEN MACARTHUR FOUNDATION

www.ellenmacarthurfoundation.org

Charity Registration No.: 1130306
OSCR Registration No.: SC043120
Company No.: 6897785