



A Circular Economy for Food Packaging

Learnings and Way Forward

September 2023

Presented by
Bahar Koyuncu

CONFIDENTIAL





**ELLEN
MACARTHUR
FOUNDATION**

The **Ellen MacArthur Foundation** was founded in 2010. It works with businesses, governments, academia, NGOs and others to build a framework for an economy that is restorative and regenerative by design - **a circular economy.**

The circular economy is built on three principles, driven by design:



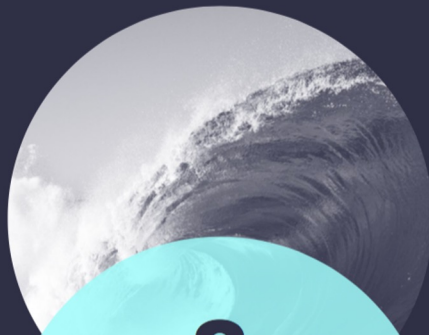
**Eliminate waste
and pollution**



**Circulate products
and materials**



Regenerate nature



**8
million**
tonnes of plastic
enters the oceans
every year



Cars
left unused
92%
of the time



Global wildlife
populations fallen
58%

PUBLICATIONS



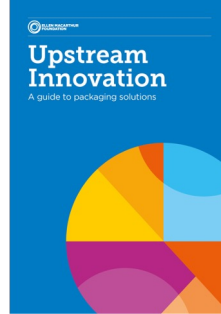
Ellen MacArthur Foundation:
The New Plastics Economy - **Rethinking the future of plastics (2016)**



The New Plastics Economy - **Catalysing action (2017)**



Reuse - Rethinking Packaging (2019)



Upstream Innovation Guide (2020)



Flexible Packaging:
The urgent actions needed to deliver circular economy solutions

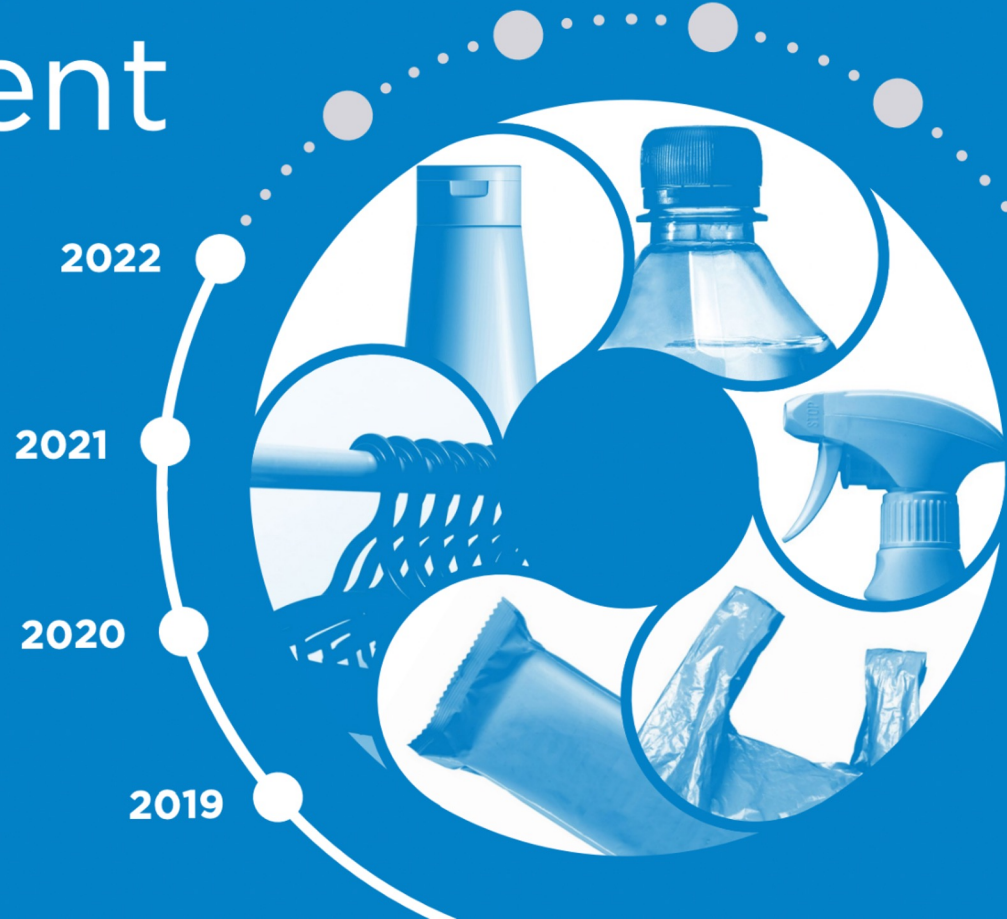


Global Commitment 2022 Progress Report

The New Plastics Economy Vision

- 1 Elimination of problematic or unnecessary plastic packaging through redesign, innovation, and new delivery models
- 2 Reuse models are applied where relevant, reducing the need for single-use packaging
- 3 All plastic packaging is 100% reusable, recyclable, or compostable by design
- 4 All plastic packaging is reused, recycled or composted in practice
- 5 The use of plastic is fully decoupled from the consumption of finite resources
- 6 All plastic packaging is free of hazardous chemicals, and the health, safety, and rights of all people involved are respected

The Global Commitment



Commitments & targets



1

Take action to eliminate problematic or unnecessary plastic packaging

2

Take action to move from single-use towards reuse models where relevant

3

100% of plastic packaging to be reusable, recyclable, or compostable

4

Set an ambitious 2025 recycled content target across all plastic packaging used

5

Set an ambitious 2025 total and/or virgin plastic reduction target

Key message - Progress Report 2022

1

While strong progress is being made in some areas, key 2025 targets are expected to be missed.

2

The prospect of not meeting all 2025 targets reinforces the urgency for businesses to accelerate action, particularly around reuse, flexible packaging, and decoupling business growth from packaging use.

3

Governments need to take immediate action to accelerate progress and have the opportunity to promote a high ambition level in upcoming negotiations for a legally binding instrument on plastic pollution.

The Global Commitment will continue to drive progress, provide unprecedented transparency, and inform legislation.

Scaling Returnable Packaging (Preliminary Overview)

How might we design a returnable packaging system that competes with single use?

Scaling Returnable Packaging- Preliminary Overview

How might we design a returnable packaging system that competes with single use based on economic and environmental performance?

| | |
|-------------------------------------|--|
| Scale | Share of packaging that switches from single use to reusable |
| Return rates | Share of containers which are returned after each use cycle |
| Sharedness of infrastructure | Share of packaging managed by a collaborative system |
| Packaging Standardization | Number of different pack designs for each application |

Scaling Returnable Packaging- Preliminary Overview

Our analysis assesses the economic and environmental performance of four types of single-use packaging and their reusable alternatives

| | 1: Beverage bottle | | | 2: Personal care bottle | | 3: Dry food packaging | | 4: Wet food packaging | |
|--------------------|---|---|---|--|--|--|---|---|---|
| | Single-use | Reuse | Reuse ¹ | Single-use | Reuse | Single-use | Reuse | Single-use | Reuse |
| Primary packaging |  Single-use PET bottle |  Reusable PET bottle |  Reusable glass bottle |  Single-use PE bottle |  Reusable PE bottle |  Single-use PP flexible |  Reusable PP container |  Single-use PP pot |  Reusable PP container |
| Lid |  Single-use HDPE cap |  Single-use HDPE cap |  Single-use HDPE cap |  Single-use PP snap lid |  Single-use PP snap lid | No lid |  Single-use PP foil |  Single-use PP lid |  Single-use PP lid |
| Example products | Water, soft drinks (soda/juice) | | | Shampoo, shower gel, hand soap | | Rice, pasta, flour, sugar, cereals | | Dairy products (yogurt, cream etc.), butter, chocolate spread | |
| Volume | 1L bottle | | | 0.25L format | | 1.5L format | | 0.5L format | |
| Purchase frequency | ~ 1 week | | | ~ 2/3 months | | ~ 2-4 weeks | | ~ 1 week | |
| Easiness to clean | Easy | | | Hard | | Easy | | Medium | |

➤ Each application represents a wider group of products and applications that vary by material, volume, purchase frequency and easiness to clean

Scaling returnable packaging key takeaways- Preliminary Overview*

*Project on-going, final modeling and results will be available in November

| | |
|--------------------------------------|--|
| | Large scale reuse systems with a high return rate in a collaborative system significantly outperforms single use packaging for all applications. |
| Environmental Impact | <ul style="list-style-type: none">• 35-69% GHG emission reduction compared to single use• 45-70% water use reduction compared to single use• 45-76% material use reduction |
| Economic and Societal Impacts | <ul style="list-style-type: none">• The cost of returnable packaging can compete with single use.• Significant number of new jobs creation |
| Key Drivers of Performance | <ul style="list-style-type: none">• Scale and collaboration via shared infrastructure• Return rates• Pooling of standardized packaging |

Policy Developments

Health Impacts of Plastics Rising on the Global Agenda



Key Focus for Scientific Research

- Increasing number of publications
- Key research focus (scientific community, WHO, UNEP, EU...)



Civil Society and Voluntary Initiatives

- Civil Society: Forever Pollution Project etc
- Voluntary Initiatives: Elimination of certain chemicals



Policy Momentum

- UN Plastics Treaty
- National Level
- EU

EU Policy Developments

| Legislation (Regulation/ Directive) | Research and Funding | Legislation (Recommendation) |
|---|--|--|
| Packaging and Packaging Waste Regulation (Circular Economy Action Plan- CEAP) | Relevant for several clusters of Horizon Europe funding programme | Recommendation for Safe and Sustainable by Design (SSbD) Chemicals and Materials |
| Food Contact Materials (Chemicals Strategy for Sustainability, Farm to Fork) focus on safety and sustainability: <ul style="list-style-type: none"> • Shifting focus on final materials • Prioritization on substances • Supporting safer and more sustainable alternatives | Cluster 4: Horizon Innovation Action (HORIZON CL4-2024- RESILIENCE-01-24) - Development of safe and sustainable by design alternatives Budget: € 59 million Deadline: 7 February 2024 | |
| REACH (Chemicals Strategy for Sustainability) Ecodesign for Sustainable Products Regulation(CEAP) | European Investment Bank (Circular economy, reuse amongst others) | |

Going Forward...

It is time to take urgent action and adopt a comprehensive circular economy approach in food packaging.

- Growing scientific evidence regarding;
 - Chemicals migration including hazardous chemicals from packaging into food
 - Generation of micro/nano plastics in food packaging during use of packaging
- Policy and upcoming legislations provide the opportunity to holistically address safety and sustainability aspects of all packaging materials along the life cycle whilst ensuring legislative coherence





ELLEN
MACARTHUR
FOUNDATION



Eliminate



Innovate



Circulate

Thank you

It's time for a circular economy for (food) packaging.

This publication has been produced by the Ellen MacArthur Foundation (the "Foundation"). The Foundation has exercised care and diligence in preparing this publication, based on information it believes to be reliable, but makes no representations and gives no warranties, assurances or undertakings (express or implied) in connection with it or any of its content (as to its accuracy, completeness, quality, fitness for any purpose, compliance with law, or otherwise). The Foundation does not monitor or moderate any external websites or resources linked or referred to in this publication. This publication does not purport to be comprehensive and none of its contents shall be construed as advice of any kind. Any reliance on it is at reader's own discretion and risk.