

# ADDRESSING SINGLE-USE PLASTIC PRODUCTS POLLUTION USING A LIFE CYCLE APPROACH

Summary for decision-makers



# PRODUCTS COMPARED IN THE LIFE CYCLE ASSESSMENT STUDIES

## Single-use alternatives

Bags made of paper, bioplastics, and composite



Shopping Bags

Bags made of cotton or thicker plastic that can be reused

Bottles made of bio-based plastic, carton laminated, glass, and aluminium



Beverage Bottles

Bottles made of glass or aluminium  
**Other:** Non-container means (filtration, purification by boiling)

Containers made of bioplastics, aluminium, paper, cardboard, and wood



Take-away food packaging

Containers made of glass, plastic

Cups made of bioplastic, paper



Beverage Cups

Cups made of reusable plastic, stainless steel, ceramic, glass, and bamboo

Tableware made of bioplastic, paper



Tableware

Tableware made of reusable plastic, porcelain, melamine, and stainless steel

Other single-use nappies (glue-less, bio-based)



Nappies

Cotton cloth nappies

Locally produced pads, organic tampons (with and without applicator)



Menstrual Products (pads and tampons)

Cotton pads, menstrual cups made of silicone and thermoplastic elastomer (TPE)



Face Masks (N95 and surgical masks)

Cotton masks with and without filter

# RECOMMENDATIONS FROM LCA META-ANALYSES ON SINGLE-USE PLASTIC PRODUCTS AND THEIR ALTERNATIVES

When developing policies on single-use plastic products, be guided by the following 8 points:

1

## Promote reusable products

- Reusable products have lower environmental impacts than single-use products
- The more times a product can be reused, the lower the environmental impact of that product.

2

## Reduce the use of single-use products irrespective of material

Replacing one disposable product (e.g. made of fossil-based plastic) with another made of a different material (e.g. paper, biodegradable plastic, etc) tends to simply shift the impacts. Therefore, it is important to reduce the use of single-use products altogether, while supporting current manufacturers of single-use products to shift their focus.

3

## Know your geographical & social context

- Policy should be designed considering the geographical and social context to which it will apply. Understand the
- Energy mix
  - Recycling rates & capability
  - Disposal method at end-of-life
  - State of waste-management infrastructure (sophisticated/unsanitary)
  - Consumer awareness and willingness.

4

## Promote resource-efficient product design and circularity

- Lighter and more durable materials will reduce the environmental impacts of products
- Product design can positively influence the end-of-life option utilized, thereby enabling better recyclability (proper disposal) of a product
- Well-designed Extended Producer Responsibility schemes can positively influence design choices.

5

## Decrease the environmental footprint of production

- Production is a significant contributor to the environmental footprint of single-use plastic products and their alternatives
- To reduce the environmental impacts at production phase:
  - keep products in the economy for longer through reuse
  - minimize the use of products with high environmental impacts.

6

## Opt for a low impact end-of-life scenario

- End-of-life scenarios have a substantial influence on the environmental impacts of products
- Each product material should be assessed considering the most feasible end-of-life option
- Keeping products in the economy through reuse is the lowest impact end-of-life scenario, as we avoid the end-of-life.

7

## Factor-in potential future scale-up and innovations

- Novel production technologies may need time to develop and scale-up to be comparable to established large-scale technologies
- Power generation systems, transportation and recycling processes change over time.

8

## Combine LCA insights with other robust information

- LCA provides important insights but needs to be supplemented with additional knowledge to account for litter, microplastics, ecosystem and health impacts, as well as social and gender aspects
- The environmental impacts of SUPP alternatives depend on many factors and should be assessed on a case-by-case basis.

# SUMMARY OF KEY FINDINGS FROM COUNTRY-SPECIFIC CASE STUDIES

Lessons learned by countries  
from actions to address  
Single-use plastic products  
(SUPP) pollution:

CANADA  
COLOMBIA  
EUROPEAN UNION  
MAURITIUS  
NEW ZEALAND  
PERU  
RWANDA  
SAINT LUCIA  
SINGAPORE  
THAILAND

**All materials have an impact, “the issue isn’t just plastic, it’s how we use it” with, “the most sustainable product being the reusable products”.**

An analysis of SUPP alternatives, and a good strategy to encourage reuse of products multiple times, are important aspects. Addressing single-use plastic products pollution requires systems change.

**A life cycle approach can help identify trade-offs and prevent burden-shifting among value chain stages.**

LCA highlights hotspots and should be complemented by other evidence for a comprehensive policy development (e.g. consider impacts from litter and micro-plastics, socio-economic conditions and culture).

**Access to quality, timely and location-specific data on the plastics sector is critical.**

This informs policy development and is essential for evaluating the effectiveness of the policy.

**There are many actions and solutions already being implemented to address single-use plastic product pollution.**

Understanding what stakeholders are doing at local, regional and international levels is important, as well as exploring opportunities for new business models and support to help scale-up activities.

**A mix of policy interventions is often required, as well as understanding the underlying economic drivers for behavior.**

For example, it may appear to be cheaper to dump waste than to recycle it when the hidden costs of dumping are not considered.

**Behavioral research provides insights on how different policies can target people’s actions regarding the use of SUPP.**

For instance, targeted communication and education strategies can enable consumers in making better decisions around reuse, recycling and waste disposal. Utilising a gender lens can also highlight the gendered roles and behavioural preferences of women and men to unlock long-term behavioural change.

**Design and management of product packaging is an important area of action.**

Design can significantly reduce the environmental impacts of plastic products and their alternatives. Other co-benefits should also be explored when contemplating design modifications, e.g. new designs for tableware could consider how to reduce food waste.

**All stakeholders need to be involved in developing and implementing policy across the life cycle of SUPP.**

Some governments have developed collaborative agreements with the private sector to reduce plastics pollution. Civil society has also been actively involved in many policy developments. Decision-makers are encouraged to integrate the informal waste sector into policy due to their significance in many countries. As women are key stakeholders in purchasing and waste management practices at the household and community levels, participation of women groups is also essential.

**Monitoring and enforcement are vital steps in implementing SUPP policies.**

Understanding the effectiveness and enforcement of certain policy interventions becomes critical over time. A well-communicated timeline of policy and legislative action can send early signals to stakeholders and aid the transition to support policy objectives.

## THE GLOBAL COVID-19 PANDEMIC PRESENTS SIGNIFICANT CHALLENGES

Efforts of countries to reduce single-use plastic product pollution come under additional pressure in a pandemic. Safety and health requirements are essential along with a strong science-based approach to understanding the necessity for specific exemptions for the use of single-use plastic products. At the same time, it is important to note that it is usually the way we use products, rather than the products themselves, which guarantees safety (e.g. handwashing as opposed to wrapping items in plastic). There may also be opportunities for creative solutions and new business models that can address plastic pollution.

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### REPORT BACKGROUND

In response to the [request by Member States](#) at the Fourth session of the UN Environment Assembly in March 2019<sup>1</sup>, the report “Addressing Single-Use Plastic Products Pollution using a Life Cycle Approach” describes: a) actions taken by Member States to address single-use plastic products (SUPP) pollution and b) the full lifecycle environmental impacts of single-use plastic products in comparison with their alternatives.

The Report includes results of LCA meta-analyses on SUPP and their alternatives, an elaboration on a variety of resources and mechanisms related to actions to address SUPP pollution, as well as country-level case studies on policy development presented by a selection of Member States. The development of this Report was supported through a four-part webinar series hosted by UNEP in October 2020.

A summary of recommendations from the LCA meta-studies, as well as key findings from the country-specific case studies on actions implemented by Member States is set out. A critical finding, of this work is that **“single-use” is more problematic than “plastic”**. Therefore, Member States are encouraged to support, promote and incentivize actions that lead to keeping resources in the economy at their highest value for as long as possible, by replacing single-use plastic products with reusable products as part of a circular economy approach. This will require systems change.

<sup>1</sup> UNEA/EA.4/Res.9



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