Nordic Council of Ministers

Global criteria to address problematic, unnecessary and avoidable plastic products

Contents

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Abbreviations

APCO	Australian Packaging Covenant Organisation
BRS	Basel, Rotterdam and Stockholm
CRC	Chemical Review Committee
EEA	European Economic Association
EU	European Union
FAO	The United Nations Food and Agricultural Organization
GHG	Greenhouse gas
HS	Harmonized System of Codes
INC	Intergovernmental Negotiating Committee
MEA	Multilateral environmental agreement
NGO	Non-governmental organization
PET	Polyethylene terephthalate
PETG	*Polyethylene* terephthalate glycol
PFAS	Per- and Polyfluoroalkyl Substances
PIC	Prior informed consent
PLA	Polylactic acid
POPs	Persistent organic pollutants
PUA	Problematic, unnecessary or avoidable
PVC	Polyvinyl chloride
SDG	Sustainable development goal
SPP	Science-Policy Panel on chemicals, waste, and pollution prevention
SUP	Single-use plastic
TESS	Forum on Trade, Environment & the SDGs
UNEA	United Nations Environment Assembly

Executive Summary

The goal of this report is to contribute to the development of control measures for problematic, unnecessary or avoidable (PUA) plastic products under the international legally binding instrument on plastic pollution, including in the marine environment (hereafter: plastics instrument), developed pursuant to Resolution 5/14 of the United Nations Environment Assembly (UNEA). Traditionally, such plastics have been associated with single-use plastics, such as carrier bags, straws, disposable cutlery, and packaging materials. These represent approximately 36% of plastic production, of which an estimated 85% is mismanaged (UNEP, 2023a). Notably, 141 countries have banned or restricted some form of plastic products, and 33 countries have banned or restricted one or more plastic polymers or monomers (in some cases, for particular applications only). Figure A illustrates the geographic coverage of bans or restrictions at the national or regional level applicable to at least one plastic product.

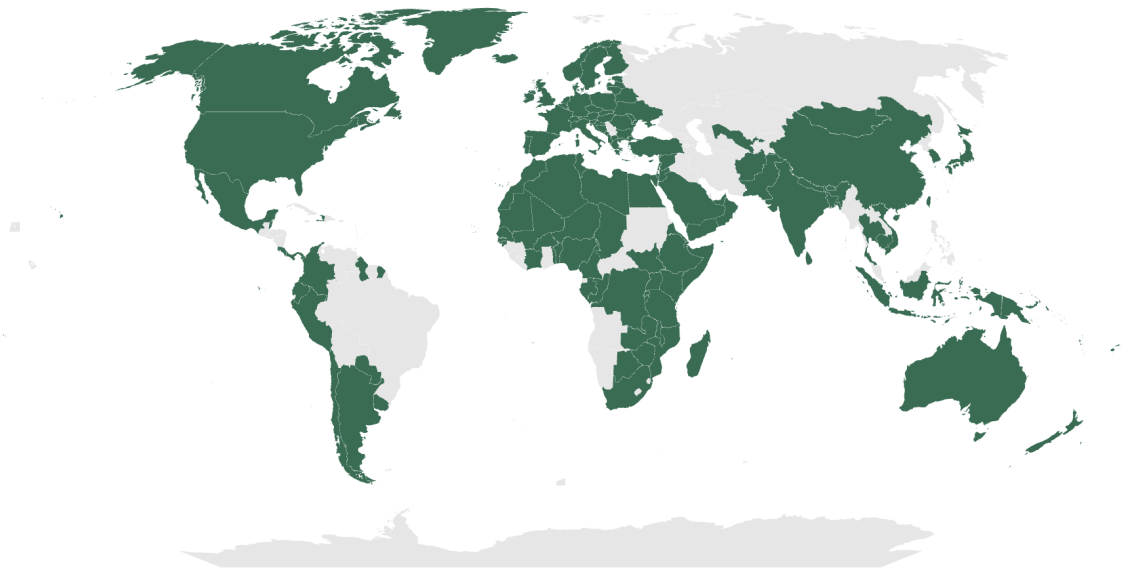

Figure A. Geographical view of countries in which at least one plastic product is banned or restricted at the national or regional level (n=141).

However, the plastic pollution problem extends well beyond single-use applications. For the upcoming global plastics agreement, there is therefore a need to develop global criteria for determining single-use plastics, as well as other applications and categories of products which can be considered problematic, unnecessary or avoidable. The criteria can be used to regulate current and future plastic products at the global and national level.

The identification and gradual **removal** of unsafe and unsustainable plastic items, accompanied by **redesign** and **detoxification** of indispensable products, will play a

vital role in reducing plastic pollution. It will help in stemming production levels, as well as reducing waste generation and subsequent leakage to the environment and biota (UNEP, 2022).

This report aims to supplement discussions of the Intergovernmental Negotiating Committee (INC), tasked with developing the plastics instrument as per UNEA Resolution 5/14. The report specifically focuses on paragraph 3b which advocates for provisions to promote sustainable production and consumption of plastics through, among other things, product design and environmentally sound waste management, including through resource efficiency and circular economy approaches.

The report builds on the options outlined in the Zero Draft of the plastic instrument presented for the third session of the INC held in November 2023 in Nairobi, Kenya (UNEP, 2023b). The Zero Draft calls for criteria, annexes and procedures for listing "problematic and avoidable" plastic products. The criteria sets proposed in this report expand on the Zero Draft's two classifications of problematic and avoidable by disaggregation into three classifications of problematic, unnecessary and avoidable products.

Keeping the three classifications distinct from each other allows for the development of control measures specific to each classification. This could include measures ranging from **elimination without replacement** to support an overall reduction in production of plastic, to redesign in support of resource efficiency.

The aim of determining problematic, unnecessary and avoidable plastic products is to establish appropriate measures at the global and national levels to, for e.g.:

1. remove them from the market,
   or
2. reduce their production by promoting alternate practices or non-plastic substitutes,
   and
3. redesign problematic products to be safe and functional for intended uses, and according to criteria for sustainable and safe product design.

The potential criteria proposed are based on a determination of a product's function or end-use, and whether it is deemed essential or not. The criteria below are clustered thematically by key concerns.

1. Problematic plastic products refer to products which have adverse impacts across the life cycle of the products (environmental and human health).

Potential criteria for determining problematic plastic products:

Hazards	• The product contains chemicals or polymers of concern, including those derived from secondary plastics, or represents a health or environmental hazard.
Emissions generation	• The product releases nano-, micro- and macroplastics during its production, intended use or end-of-life. • The product releases chemicals of concern during its intended use. • The product is falsely promoted to be biodegradable under certain conditions. • Tendency to be dispersed to the environment due to direct application in nature.
Impediment of circularity	• The product is non-recyclable as per established recyclability criteria. • The product has a high likelihood of not being collected and a high likelihood of not being properly disposed of or managed. • The product does not conform with existing labelling schemes to guide correct end-of-life treatment, (including for easy identification, sorting and separation), impeding circularity and leading to avoidable production of the product.
Lack of transparency	• The product lacks data to determine safety to the environment and human health across the full life cycle.

2. Unnecessary plastic products refer to products with a function that is not essential because they do not provide significant added value to society.

Potential criteria for determining unnecessary plastic products:

Availability or potential for availability of alternate practices that do not require plastic (towards elimination)	• Feasible and safe modified/alternate practices are available or possible that eliminate the need for the plastic product.
Availability or potential for availability of alternate designs that remove plastic component/s (towards elimination)	• The product has plastic components that can be removed without requiring a replacement or compromising the primary function of the product.

3. Avoidable plastic products refer to products with a function that is essential, but demand for the product can be reduced through non-plastic substitutes, alternate designs and alternate practices.

Potential criteria for determining avoidable plastic products:

Availability or potential for availability of alternate practices that reduce the need for new versions of the product (towards reduction)	• A feasible reuse or refill business model is available or can be developed. • A feasible remanufacture business model exists or can be developed. • The lifespan of the product can be extended, e.g. through the right to repair, removing early obsolescence, and the provision of sharing services that also reduce associated waste generation.
Availability or potential for availability of non-plastic substitutes that reduce the need for the product (towards reduction)	• The product can be replaced completely with a nature-based product. • The product can be produced using a non-plastic substitute material.
Availability or potential for availability of alternate designs that reduces the need for new versions of the product (towards reduction)	• Options for improved resource efficiency exist or can be developed, including extending the longevity of the product.

Figure B provides a simple decision hierarchy for determination of problematic,

unnecessary and avoidable products. Three decision points are provided to help prioritise actions towards a safe and sustainable plastics economy, based on the above criteria.

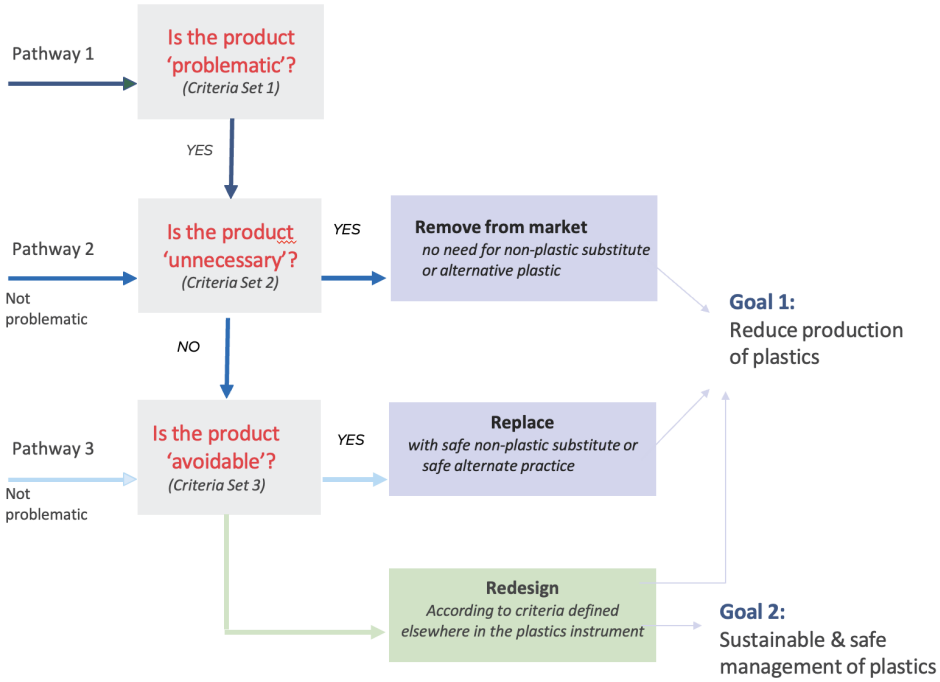

Figure B. A simple decision tree to determine actions to address problematic, unnecessary and avoidable plastic products.

All actions should contribute to the two main goals of:

- **Goal 1 – Reduce production of plastics** through the removal of unnecessary products from the market, and replacement with safe non-plastic substitutes and alternate business practices.
- **Goal 2 – Sustainable and safe management of plastics** that remain on the market through redesign according to sustainability criteria, including safe alternatives, and circular business practices.

To strengthen the global governance of plastics, criteria developed under the plastics instrument could act on two levels by stimulating the following measures:

1. **Mandatory measures for listed products,** including **bans and restrictions**, **trade measures** between Parties and with non-Parties of listed products, and time-restricted **exemptions** for specific products.
2. **Voluntary measures for non-listed products** adopted at the national level based on global criteria, including national lists for action beyond the obligations established under the instrument.

Additionally, voluntary national listings could be collated into a **global database for candidate products** administered by the Secretariat of the plastics instrument. This could provide 1) an opportunity to identify candidate products that can in future be considered for global listing under the plastics instrument, or 2) may inform strengthened voluntary action at the national level.

Institutional arrangements can be established to support the listing of PUA products. As reflected in Figure C, these could include the development of processes for 1) Submission and review of proposals, 2) Comprehensive review by the Review Committee on PUA products, 3) Cooperation with other possible committees, and 4) Governing body decisions. Listing should be based on a proactive approach, endeavouring to remove products of concern from the market in their early stages to prevent adverse impacts before they materialize. Independent scientific advice plays a pivotal role in this context.

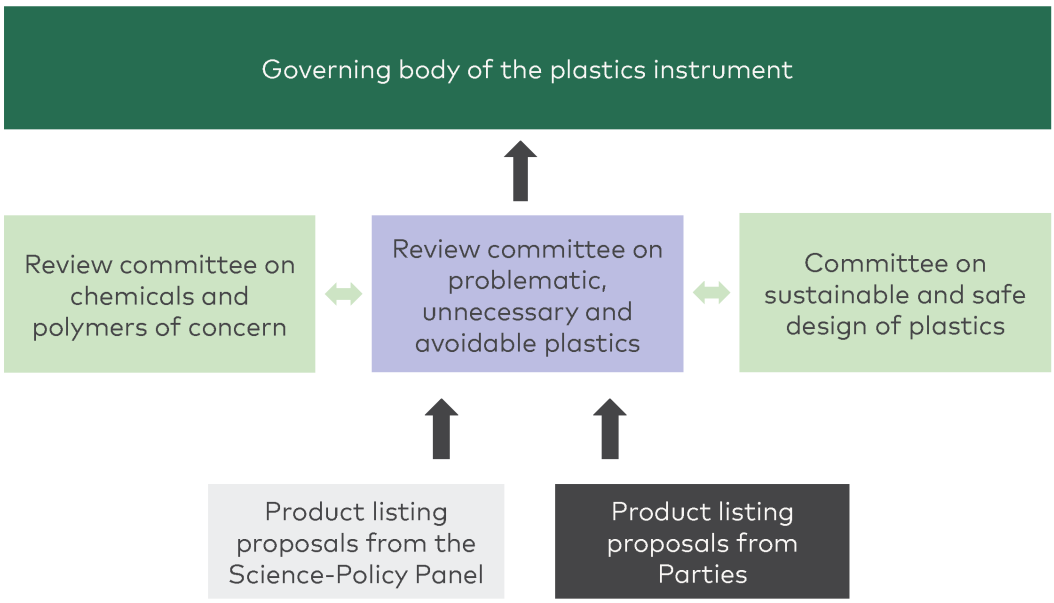

Figure C. The science-policy interface of the plastics instrument.

1. Introduction

The rapid growth in the production and use of plastic products in the past few decades has emerged as a pressing issue of global concern, posing multifaceted challenges to human health and the environment, and slowing the achievement of a sustainable circular economy. The most problematic, unnecessary and avoidable (PUA) of these products often come in the form of single-use plastics, such as carrier bags, straws, disposable cutlery, and packaging materials. These represent approximately 36% of plastic production, of which an estimated 85% is mismanaged (UNEP, 2023a).

Single-use plastic products have repeatedly accounted for the majority of product categories in the top ten items found in coastal areas (ICC, 2020), with cigarette butts being the most common item. Microplastics from tyre and road wear are major contributors to plastic pollution (Järlskog et al., 2020), while emissions of microplastics and chemicals of concern from artificial turf and crumb rubber infill have warranted attention by policymakers (Zuccaro et al., 2022).

However, the plastic pollution problem extends well beyond single-use applications. For the upcoming global agreement to end plastic pollution, there is a need to develop global criteria for determining single-use plastics, as well as other applications and categories of products which can be considered problematic, unnecessary or avoidable. The criteria can be used to regulate current and future plastic products at the global and national level.

1.1 Objective and scope of the report

The goal of this report is to contribute to the development of control measures for PUA plastic products under the international legally binding instrument on plastic pollution, including in the marine environment (hereafter: plastics instrument), by adding to the following:

- Strengthening the understanding of the **characteristics** of PUA plastic products.
- Provide potential criteria for **determination** of PUA plastic products.
- Provide potential **governance approaches** needed to control PUA plastic products.

The aim of determining problematic, unnecessary and avoidable plastic products is to establish appropriate measures at the global and national levels to, e.g.:

1. remove them from the market,
   or
2. reduce their production by promoting alternate practices or non-plastic substitutes,
   and
3. redesign problematic products to be safe and functional for intended uses, and according to criteria for sustainable and safe product design.

In support of these goals, the report also addresses:

- The linkages with other potential control measures of the plastics instrument as they relate to the global regulation of PUA products, such as the regulation of chemicals and polymers of concern and sustainable and safe design.
- The role of a potential scientific mechanism under the plastics instrument to support the governance of PUA products.

The focus of the report is all plastic products placed on the market, including consumer products. The aim is to facilitate their determination under the plastics instrument as problematic, unnecessary or avoidable, based on different sets of criteria elaborated for this purpose.

Figure 1 illustrates the scope of this report in blue, in context of the three sets of criteria proposed in the Zero Draft text (UNEP, 2023b). Criteria for identifying problematic plastic products are closely linked to potential criteria for chemicals and polymers of concern, as the latter may contribute to the determination of what is considered "problematic plastic products". Criteria for problematic and avoidable plastic products are also closely linked to potential criteria for sustainable and safe design, as the latter may be the preferred endpoint for transitioning away from products and polymers identified as problematic and/or avoidable.

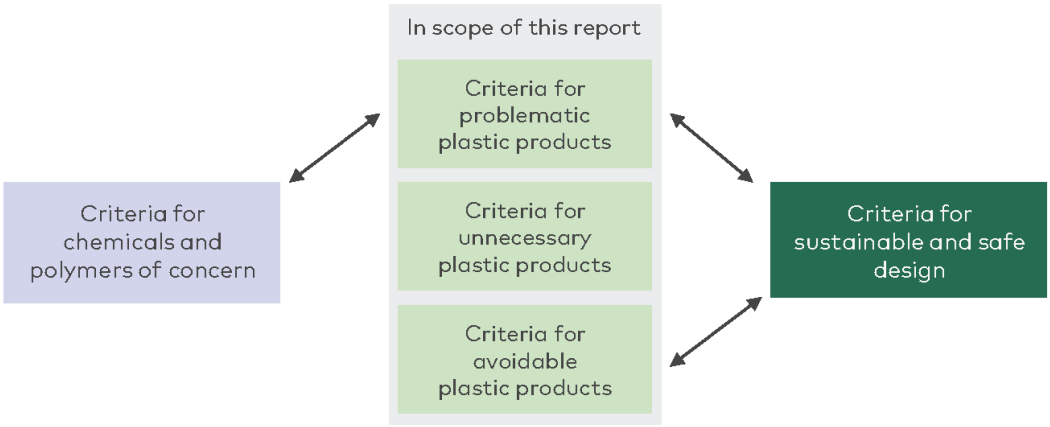

Figure 1. Interlinkages between criteria sets in the upstream phase of the plastics life cycle.

Section 1 of the report outlines the background to the topic, which is followed by a description of the methodology of the report, including the basis for the selection of criteria in section 2. Section 3 lists potential criteria for identifying PUA products, while section 4 discusses a potential process for determining and listing such products. Lastly, section 5 outlines possible institutional arrangements for listing PUA products. Box 1 provides definitions and terms used in this report.

Box 1: Definitions and terms used in this report.

- **Alternate design:** Variations on design of a product that provide an equivalent function and to a performance level as necessary. Such design could lead to removal of plastic or reduction of plastic use, as well as removal of problematic elements.
- **Alternate practice:** A modified and/or replacement business model or production system that provides an equivalent and environmentally sound function or end-use to the original product. Such practices could lead to a removal of plastic or a reduction of plastic use, as well as removal of problematic elements.
- **Exceptions:** Special allowances applied to specific products, usually to exclude those products from restrictions.
- **Exemptions:** Requests submitted by Parties to the Secretariat of the plastics instrument for an extension on the agreed timelines for phase-out or phase-down of restricted products.
- **Essential use:** The Montreal Protocol provides an example of the substantive criteria for essential use exemptions "Use of a controlled substance should qualify as essential only if: (i) it is necessary for health, safety or is critical for the functioning of society (encompassing cultural and intellectual aspects); and (ii) there are no available technically and economically feasible alternatives or substitutes that are acceptable from the standpoint of environment and health" (Decision IV/25, para 1a).
- **Non-plastic substitutes**: Materials derived from natural, non-fossil sources like plants or minerals that are not considered plastic, offering similar utility as plastics, but are safer and less harmful to the environment (adapted from UNCTAD, 2023). Such substitutes could lead to removal of plastic or reduction of plastic use, as well as removal of problematic elements.
- **Oxo-degradable plastic:** plastic materials that include additives which, through oxidation, lead to the fragmentation of the plastic material into micro-fragments or to chemical decomposition (EU, 2019a).
- **Plastic products:** Products, including packaging, made entirely of plastic, or containing plastic (UNEP, 2023a).
- **Plastic polymer:** Any synthetic and semisynthetic macromolecular substance obtained by polymerization of monomers, including monomers, additives and processing aids.
- **Product:** An identifiable physical or tangible item offered for sale and used in the manufacture of plastic products, including precursors of plastic products.
- **Secondary plastics:** Plastic polymers made from recycled material (OECD, 2022).

1.2 Background

In 2019, the production of plastics soared to 460 million tonnes per annum, representing a doubling from the year 2000 (OECD, 2022). At the same time, plastic waste generation more than doubled to 353 million tonnes per annum. Of this, 50% was allocated to sanitary landfills, 19% incinerated, and 9% recycled, while the remaining 22% was either dumped in unregulated sites, burned in open pits, or leaked into the environment. Without international intervention, the annual volume of mismanaged plastic could nearly double, and the production of new plastics could rise by 66% by 2040, compared to 2019 figures (NCM, 2023).

Plastics affect both terrestrial and marine species in many ways, as well as contribute to increased releases of greenhouse gas (GHG) emissions. Plastics are also linked to health concerns, in particular due to the presence of numerous chemicals of concern (Landrigan et al., 2023). The identification and gradual **removal** of unsafe and unsustainable plastic items, accompanied by **redesign** and **detoxification** of indispensable products, will play a vital role in reducing plastic pollution. It will help in stemming production levels, as well as reducing waste generation and subsequent leakage to the environment and biota (UNEP, 2022).

In recent years, the issue of problematic, unnecessary and avoidable (PUA) plastic products has gained prominence, leading to the implementation of bans, restrictions and voluntary measures worldwide for a limited set of problematic plastic products and polymers.[1] In addition, an estimated 4% of chemicals of concern used in plastics are regulated under current global agreements, although polymers of concern are mostly unregulated (BRS, 2023). This growing concern is reflected in the Zero Draft text of the plastics instrument.

The development of the plastics instrument presents a unique opportunity to establish control measures and associated global criteria on PUA products that can harmonize national efforts in restricting their use, thereby creating a level playing field for both companies and countries. The Zero Draft refers to "problematic and avoidable plastic products, including short-lived and single-use products and intentionally added microplastics."[2] It notes that a definition of "problematic and avoidable plastic products" may be needed.[3] The Zero Draft proposes to develop a **procedure for listing** problematic and avoidable plastic products in a "negative list" to be operationalized through an annex, which includes:[4]

- **criteria** for the determination of problematic and avoidable products or groups of products,

1. Refer to Table 1 and Table 2, Appendix 1 and Appendix 2.
2. Zero Draft, Part II, Control Measure 3. See paragraphs a, b.
3. Zero Draft, footnote 13.
4. Zero Draft, footnote 16.

- a **listing** of specific products or groups of products determined to be problematic and avoidable, and **timeframes** for their phase-down or phase-out, and
- potential **exceptions** as needed, for example for essential uses.

A country-led informal technical dialogue, co-chaired by the United Kingdom and Brazil, developed a briefing report to inform the third meeting of the Intergovernmental Negotiating Committee (INC-3) on possible criteria for control measures, including for problematic plastic products (UK and Brazil, 2023). This and other stakeholder input provided momentum for informed discussions at INC-3 that are reflected in the Co-chairs' summary of Contact Group I. The summary states that various opinions emerged regarding the Zero Draft options, with some members advocating for no change, others emphasizing exceptions for critical uses in healthcare and food, and concerns about the potential negative effects on vulnerable groups, especially in developing countries (UNEP, 2023c). Additionally, there were calls for implementation methods, criteria sets for specific products, and consideration of factors such as traditional knowledge, health, environmental impacts, and the importance of feasible, accessible, and non-harmful alternatives, tailored to national circumstances (UNEP, 2023c).

The 2020 Nordic report on possible elements of a new global agreement to prevent plastic pollution proposes controlling problematic, unnecessary and/or avoidable plastic products at the global level as a key element (NCM, 2020). Other relevant reports and initiatives include:

- WWF's report by Eunomia identifies 17 core product groups for regulation, categorized into those in need of elimination or reduction, and those requiring safe circulation and management, based on a risk-based analysis and a feasibility study (WWF, 2023).
- The New Plastics Economy Global Commitment promotes the use of voluntary criteria for problematic and unnecessary plastic packaging or plastic packaging components among global commitment signatories in several countries (EMF, 2023).
- Annex I to the Commission proposal for a European Union (EU) Regulation setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC proposes product parameters for sustainable product regulation (European Commission, 2022a).
- A report from the Forum on Trade, Environment & the SDGs (TESS) outlines options for Trade-related cooperation on problematic and avoidable plastics building on existing experiences with single-use plastics (Sugathan & Birbeck, 2023).

- The report published by the Secretariat of the Basel, Rotterdam and Stockholm (BRS) conventions on global governance of plastics and associated chemicals conceptualizes a potential scope for plastic pollution, including problematic, unnecessary and avoidable plastic products to be prioritized based on selection criteria (BRS, 2023).
- A concept note from Plastics Europe proposes the use of a decision-tree assessment (instead of a negative list) consisting of a hierarchical flow of questions to help identify and address either problematic and/or avoidable plastic applications (Plastics Europe, 2023).
- The Australian Packaging Covenant Organisation (APCO) has identified criteria for problematic plastic packaging, noting that future technological advancements might reclassify some of these products (APCO, 2020).

Findings from the review of the above found the following tendencies that this report aims to supplement:

- A focus on single-use plastics and packaging.
- A scope that is mostly limited to the end-of-life issues and leakage of plastic products.
- Provision of criteria for two classifications, such as problematic and avoidable, for which the distinction was not always clear.
- Poor representation of alternative business practices.
- Criteria were not always appropriate to a wide range of country contexts, i.e. appropriately flexible for the global level.
- Application to new types of products placed on the market in the future was not a key objective.
- Promotion of alternatives and non-plastic substitutes only if they were considered economically and socially feasible. This could disincentivise the development of new solutions or the scaling of existing solutions.

The review of current suggestions for addressing problematic, unnecessary and avoidable plastic products indicates a need to develop criteria sets that cover **all potential PUA products** in a holistic way.

1.3 Summary of current restrictions of products, polymers and monomers

This report builds on existing products and product-specific polymers that are currently regulated. Some plastic polymers and many products that would be classified as PUA under the criteria suggested in this report have already been regulated in many countries and some at the regional level (Table 1 and Table 2).

Current research indicates that a total of 141 countries have banned or restricted some form of plastic products, and 33 countries have banned or restricted one or more plastic polymers or monomers (in some cases, for particular applications only). Figure 2 illustrates the countries and regions that have regulations in place for one or more plastic products, as per current research.

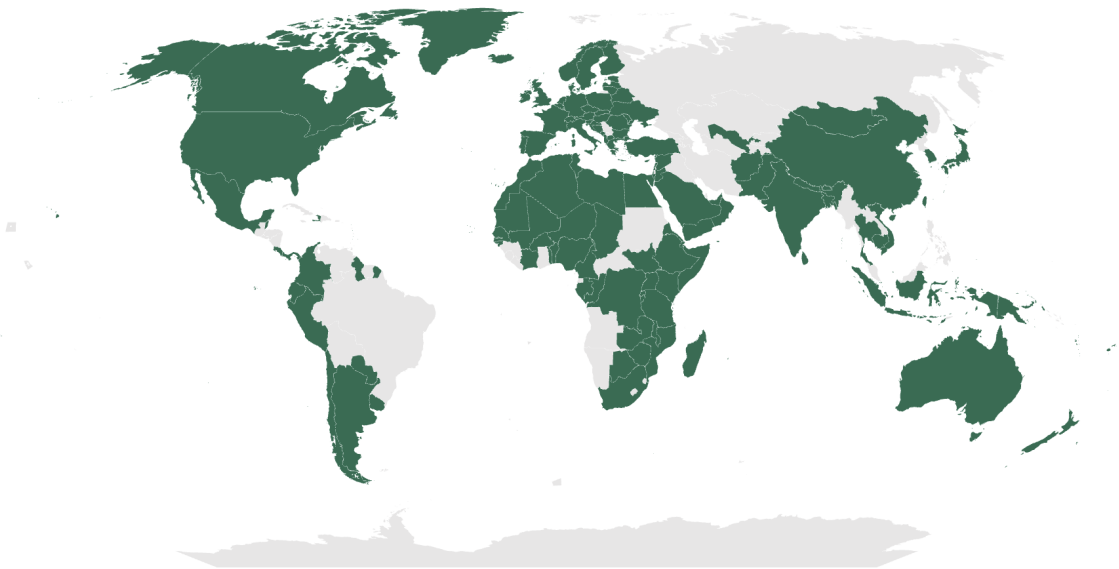

Figure 2. Geographical view of countries in which at least one plastic product is banned or restricted at the national or regional level (n=141).

As shown in Table 1, a range of plastic products have been banned or restricted at the national and, in some cases, the regional level. The examples provided are summarised from existing research with further details and a full set of references are provided in Appendix 1 and Appendix 2, respectively. Notably, developing countries were early adopters in banning single-use plastic bags, with Bhutan setting a precedent in 1999 (Knoblauch, 2018). Following this, the EU took a significant step two decades later by introducing the Single-Use Plastics Directive, marking the first comprehensive effort to tackle SUPs. This move prompted a wave of similar legislation in other nations. In countries without national bans or restrictions, many states, cities and municipalities have independently implemented local bans on certain plastic products (Karasik et al., 2020). Regulatory approaches have also been complemented with voluntary interventions, including actions from citizens, non-government actors and private sector (Schnurr et al., 2018). However, despite these varied national and regional efforts, a cohesive, consistent and effective strategy to manage PUA plastic products is yet to be established.

Table 1. Plastic products banned or restricted at the national[5] or regional level.

Plastic product	Banned	Restricted
Agricultural film	1 Country	-
Banners (signs)	2 Countries	-
Board stock	1 Country	-
Beverage bottles	7 Countries & 1 Region (EEA – 30 member states)	28 Countries & 1 Region (EEA – 30 member states)
Boxes	1 Country	2 Countries
Cotton swabs/ear buds	8 Countries & 1 Region (EEA – 30 member states)	1 Country
Cups/glasses (and their lids)	20 Countries& 1 Region (EEA – 30 member states)	1 Country & 1 Region (EEA – 30 member states)
Cutlery/utensils (incl. forks, knives, spoons, chopsticks, stir-sticks, candy sticks, ice-cream sticks)	21 Countries & 1 Region (EEA – 30 member states)	4 Countries
Egg cartons	3 Countries	1 Country
Fishing gear	-	1 Region (EEA – 30 member states)
Food containers (and their lids) incl. clamshells	17 Countries & 1 Region (EEA – 30 member states)	1 Country & 1 Region (EEA – 30 member states)
Horticultural netting	2 Countries	-
Invitation cards	1 Country	-
Microbeads[6]	14 Countries & 1 Region (EEA – 30 member states)	-
Newspaper/Magazine cover/bag	3 Countries	-

5. In this summary, 'countries' are counted and not 'Member States' of the United Nations. For example, the constituent countries of the United Kingdom (England, Wales, Scotland, and Northern Ireland) are counted individually as they legislate plastic products separately.
6. These regulations apply to microbeads only, a form of intentionally-added microplastic defined as an extremely small piece of material manufactured for various applications, especially one made of plastic and used in personal care products, cosmetics, and detergents.

Plastic bags	94 Countries & 1 Region (EEA – 30 member states)	44 Countries & 2 Regions (EEA – 30 member states, & Barcelona Convention – 21 contracting parties + the EU[7])
Plastic confetti	1 Country	-
Plastic laundry covers	2 Countries	-
Plastic packaging (general)	7 Countries	21 Countries & 1 Region (EEA – 30 member states)
Plastic flags	1 Country	-
Plastic produce labels	2 Countries	-
Plastic trays/platters	5 Countries	2 Countries
Plates and bowls	23 Countries & 1 Region (EEA – 30 member states)	8 Countries
Ring carriers[8]	2 Countries	-
Sanitary towels	-	1 Region (EEA – 30 member states)
Sticks to support balloons	6 Countries & 1 Region (EEA – 30 member states)	-
Straws	18 Countries & 1 Region (EEA – 30 member states)	1 Country
Tobacco products (incl. cigarette filters and packets)	1 Country	1 Region (EEA – 30 member states)
Wet wipes	-	1 Region (EEA – 30 member states)

7. The European Economic Area and the Barcelona Convention overlap by 8 countries, therefore the total number of countries counted here is 43 (30 from the EEA and the 13 countries from the Barcelona Convention that are not members of the EEA).
8. Ring carriers are flexible and designed to surround beverage containers in order to carry them together.

Table 2 lists examples of plastic-related polymers and monomers that have been banned or restricted, noting that some are for specific applications only. For example, the use of expanded polystyrene (EPS) in food and beverage packaging is limited in multiple countries and across the EEA. See Appendix 1 for further details of these regulations at the national and regional level, and Appendix 2 for the full set of references.

Table 2. Plastic monomers and polymers banned or restricted at the national or regional level.[9]

Plastic monomer or polymer	Banned	Restricted
Acrylonitrile butadiene styrene	1 Country	-
Ethene	1 Country	-
Ethylene	1 Country	1 Country
Polybutylene terephthalate	1 Country	-
Polycarbonate	1 Country	-
Polyethylene	5 Countries	1 Country
Polyethylene terephthalate (PET)	4 Countries	3 Countries & 1 Region (EEA – 30 member states)
Polyphenylene oxide	1 Country	-
Polypropylene	3 Countries	-
Polystyrene	18 Countries	1 Region (EEA – 30 member states)-
Styrene	1 Country	1 Country
Polythene	3 Countries	1 Region (EAC – 8 partner states)
Vinyl	1 Country	-
Polyvinyl	1 Country	-
Vinyl chloride	1 Country	1 Country
Polyvinyl chloride (PVC)	3 Countries	1 Country

9. See Appendix 2 for research reviewed to compile this table and related maps.

Although the examples of current regulations highlighted above represent a small component of the full range of polymers and products that may be identified as PUA, the overview provides a strong basis for broadening the scope of action through a globally harmonised approach.

2. Methodology and basis for selection of criteria

Development of the product criteria presented in this report was underpinned by a literature review on the issues presented by PUA products, their drivers and the solutions suggested, including relevant criteria for determination. The report was supported by an Advisory Group comprising key experts from governments, secretariats of multilateral environmental agreements (MEAs), UN agencies, science networks, non-governmental organizations (NGOs) and other relevant stakeholders (see Acknowledgements). One online workshop was held with the Advisory Group, who also provided two rounds of comments on draft versions of the report. The steering group of the Nordic Council of Ministers' Vision project "The Nordics - a driving force in fighting marine plastic pollution regionally and globally" also provided multiple reviews.

2.1 Selection of classifications

Numerous voluntary instruments have been developed over recent years that include definitions and criteria of relevance for determining unnecessary, avoidable and/or problematic plastic products or groups of products.[10] It was found that most of the instruments provide criteria for only one or two of the three classifications proposed in this report - either unnecessary, avoidable or problematic products. The Zero Draft of the plastics instrument also refers only to problematic and avoidable plastic products. There is consequently a need to develop criteria sets that cover all potential PUA products in a holistic way.

The intention of including a separate classification for "unnecessary" when developing criteria is to provide distinct control measures for **elimination without replacement.** This is important to avoid creating new environmental problems in the attempt to address the problem of plastic pollution. In this sense, it provides the strongest classification, following a "start and strengthen" approach. This implies that products initially deemed avoidable could in the future be reclassified as unnecessary. Such an approach could effectively accelerate the transition towards the prevention, reduction and elimination of plastic pollution in line with the United Nations Environment Assembly (UNEA) Resolution 5/14.

10. Examples include the Plastics Pacts developed under the Ellen MacArthur Foundation and the Australian Packaging Covenant Organisation (APCO).

2.2 Selection of criteria

The development of product criteria presented in this report considered existing and draft legislation, as well as voluntary initiatives containing criteria of relevance. Key research undertaken and proposals made by many stakeholders were also reviewed. These are summarised in Appendix 3.

In this report, the intention is to suggest potential criteria that can determine the classification of both existing products and products that are yet to be developed and placed on the market. Such criteria will be important in the development of control measures that ensure lasting effectiveness of the plastic instrument in years to come. To support this, a process is suggested that can assist in determining the appropriate classification of a product or group of products (refer to section 4.1).

The selection of criteria presented in this report was guided by the following principles. The criteria should:

- Consider issues across the full life cycle of products, not only those associated with the end-of-life and leakage.
- Be sufficiently broad to include a wide range of products beyond single-use products and packaging.
- Provide flexibility to capture new products placed on the market in the future.
- Differentiate the three classifications of problematic, unnecessary and avoidable to provide a clear pathway to distinguishable policy interventions for each.
- Avoid overlap with criteria for elements of concern (e.g. hazardous chemicals) and sustainable/circular design of products, while providing entry points for these sets of criteria developed separately under the plastics instrument.
- Not limit the control measures because of a lack of available information or current technical and economic feasibility, considering these barriers may be overcome within the lifetime of the plastics instrument.
- Stimulate innovation and not restrict alternatives and non-plastic substitutes to those that are currently available.
- Recognise the variations across countries in waste management services and leakage rates. A high leakage rate in one country may not apply in another and should thus not necessarily demand a listing under the plastics instrument as problematic. Instead, criteria developed under the plastics instrument can promote determination as problematic at the national level leading to national listings.
- Be designed to act in isolation and not require more than one criterion to be met to allow determination as problematic, unnecessary or avoidable.

3. Potential criteria for problematic, unnecessary and avoidable plastic products

The global regulation of plastic products can draw inspiration from the identification and management of chemicals of concern under existing MEAs. Examples include ozone-depleting substances and persistent organic pollutants (POPs) regulated under the Montreal Protocol and Stockholm Convention respectively. Part II of the Zero Draft outlines a similar approach for control measures in the plastics instrument. The development of criteria to facilitate listing is proposed for chemicals and polymers of concern under proposed Control Measure 2, as well as criteria for listing problematic and avoidable plastics under proposed Control Measure 3.

This report outlines **potential criteria** for the classification of products as problematic, unnecessary or avoidable for consideration under the plastics instrument, while acknowledging their linkages to other related criteria. The report is intended to support the development of criteria for products of concern as suggested in Part II, Control Measure 3 of the Zero Draft.

There is a potential for a product to fall under more than one classification when assessing it against the criteria. Consequently, there is a need for a simple decision hierarchy (illustrated in Figure 4) to outline the pathways for determining actions to address problematic, unnecessary and avoidable plastic products.

The criteria outlined below are based on a determination of a product's function or end-use, and whether it is deemed essential or not. The criteria listed assume life cycle and socio-economic assessments are conducted to help understand environmental fate of substitutes, while accounting for socio-economic impacts of restrictions, including industry concerns, impacts on socio-economically disadvantaged communities, and the informal recycling sector (Nøklebye et al., 2023).

3.1 Potential criteria for problematic plastic products

Problematic plastic products refer to products which have adverse impacts across the life cycle of the products (environmental and human health).

Table 3 outlines potential criteria for determining problematic products, towards nomination for listing under the plastics instrument. The criteria suggested have taken inspiration from existing examples of policies and actions and have been tailored to suit the objectives of the "problematic" grouping specifically.

Table 3. Potential criteria for determining problematic plastic products

Cluster	Potential criteria	Examples of products	Examples of existing regulations and initiatives
Hazards	The product contains chemicals or polymers of concern[11], including those derived from secondary plastics, or represents a health or environmental hazard.	Artificial turf contains almost 200 possible carcinogenic chemicals (Perkins et al., 2019), including Per- and Polyfluoroalkyl Substances (PFAS).	In the U.S., states such as Massachusetts, California, Connecticut, and Vermont have proposed legislation to prohibit use of PFAS in artificial turf (EWG, 2023). Additionally, the U.S. Plastics Pact is voluntarily addressing the issue of PFAS in artificial turf (Plastics Pact, 2020).
Emissions generation	The product releases nano-, micro- and macroplastics during its production, intended use[12] or end-of-life.	Products containing intentionally added nano- and microplastics, such as microplastics in cosmetics and personal care products.	Addressed through legislation in many countries, including South Korea which banned production and sale of rinse-off cosmetics containing microbeads in July 2017.
		Tyres generate significant microplastics releases due to wear and tear from road friction	New standards in the EU set thresholds for tyre and brake dust from 2025 (European Commission, 2022b).

11. Based on a separate set/s of criteria to determine elements of concern developed under the plastics instrument.
12. Microplastic releases could be due to the intentional addition of microplastics or the breakdown/abrasion of macroplastics, fibres and other materials.

	Artificial turfs are made from plastic fibres, with granular infill materials consisting of microplastics that are released to the environment.	Granular infill material used on artificial sport surfaces has been banned in the EU and the European Economic Association (EEA) from 2031 (EU, 2023).
The product releases chemicals of concern[13] during its intended use.	Toys and food contact plastics are of particular concern due to high exposure (BRS, 2023).	The EU Food Contacts Plastic Regulation 10/2021 establishes an overall migration limit of 10 mg/dm2 for all plastic substances in contact with food (EU, 2011).
The product is falsely promoted to be biodegradable under certain conditions.	Oxo-degradable plastic products	The EU single-use plastics (SUP) Directive 2019/904 (EU, 2019a) and the South Australia Single-use and Other Plastic Products (Waste Avoidance) Regulations 2021 (South Australia, 2021) are examples of legislations that ban the use of oxo-degradable plastics. Voluntary initiatives include Plastics Pacts adopted in the U.S. (Plastics Pact, 2020) and Kenya (Plastics Pact, 2023).
Tendency to be dispersed to the environment due to direct application in nature.	Polymer coated fertilizers are commonly made with thermoplastic resin such as polyolefin, polyvinylidene chloride and copolymers.	The EU Fertilizing Products Regulation 2019/1009 bans polymer coated fertilizers unless they comply with the EU's biodegradability criteria (EU, 2019b).
	Fishing and farming gear (FAO, 2021).	In 2019, China banned the use of thin plastic mulch (less than 10 microns). The use of thicker mulch is expected to facilitate reuse, collection, and recycling (NDRC, 2019).

13. Based on a separate set/s of criteria to determine elements of concern, which also address usage of chemicals of concern in products.

Impediment of circularity[14]	The product is non-recyclable as per established recyclability criteria.[15]	Opaque or pigmented polyethylene terephthalate (PET) bottles (any color other than transparent blue or green).	Addressed through voluntary Plastics Pacts in the U.S. (Plastics Pact, 2020) and Australia, New Zealand and the Pacific Islands (Plastics Pact, 2021).
		Problematic label constructions, including adhesives, inks, materials, such as polyethylene terephthalate glycol (PETG), polyvinyl chloride (PVC), and polylactic acid (PLA).	Addressed through voluntary Plastics Pact in the U.S. (Plastics Pact, 2020).
		Non-PET plastic caps on PET bottles that must be separated during recycling (Plastics News, 2023)	The EU Regulation 2019/2024 requires caps to be attached to bottles, but the polymer is not regulated (EU, 2019b)
	The product has a high likelihood of not being collected and a high likelihood of not being properly disposed of or managed.	All plastic closures that are separable from the primary packaging and are below approximately 50 x 50mm in size.	Addressed through voluntary initiatives, such as by the Plastic Pact for Australia, New Zealand and the Pacific Islands (Plastics Pact, 2021).
		Non-compostable fruit and vegetable stickers and tea and coffee bags can contaminate compost when they are disposed of via food waste collections.	Addressed through voluntary initiatives, including the Plastic Pact in the UK (Plastics Pact, 2018).
	The product does not comply with existing labeling schemes to guide correct end-of-life treatment, (including for easy identification, sorting and separation), impeding circularity and leading to avoidable production of the product.[16]	Packaging products with multiple components made of different polymers (e.g. PET tub and plastic film covering).	The EU SUP Directive 2019/904 mandates labels on SUPs to guide consumers on proper waste management, warn against improper disposal, and highlight the environmental impact of plastic littering (EU, 2019a).

14. This could include impeding the circularity of other products.
15. Recyclability criteria could be a subset of sustainability criteria, developed separately under the plastics instrument.
16. See for example the Australasian Recycling Label (ARL) Program, "an on-pack labelling scheme that is helping consumers to recycle correctly and supporting brand owners and packaging manufacturers to design packaging that is recyclable at end-of-life." https://apco.org.au/the-australasian-recycling-label

Lack of transparency	The product lacks data to determine safety for the environment and human health across the full life cycle.	Environmental and human exposure to elements of concern may take place during product acquisition or use, e.g. PFAS chemicals in containers used for a variety of household consumer, pesticide, fuel, automotive and other industrial products.	The Safe Drinking Water and Toxic Enforcement Act of California ("Proposition 65") requires businesses to inform residents about exposures to chemicals causing cancer, birth defects or other reproductive harm (California State, 1986).

3.2 Potential criteria for unnecessary plastic products

Unnecessary plastic products refer to products with a function that is not essential because they do not provide significant added value to society.

The aim of determining unnecessary plastic products is to develop measures to foster removing such products from the market without the need to identify non-plastic substitutes or alternate practices that require some form of plastic. The latter would support the goal of reducing production of primary and secondary polymers.

Table 4 outlines potential criteria for determining unnecessary products, towards nomination for listing under the plastics instrument. The criteria suggested have taken inspiration from existing examples of policies and actions and have been tailored to suit the objectives of the "unnecessary" grouping specifically.

Table 4. Potential criteria for determining unnecessary plastic products.

Cluster	Potential Criteria	Examples of products	Examples of regulations and initiatives
Availability or potential for availability of alternate practices that do not require plastic (elimination)	Feasible and safe modified/alternate practices are available or possible that eliminate the need for the plastic product.	Some primary, secondary and tertiary packaging (e.g., packaging for bananas).	Zero-packaging shops have been trialed with success in some countries (Beitzen-Heineke et al., 2017).
		Plastic-coated fertilizers removed by transitioning to agroecology principles[17] (as promoted by the United Nations Food and Agricultural Organization (FAO, 2018) and reflected in Target 10 of the Global Biodiversity Framework) that eliminate the need for fertilizer (FAO, 2021).	EU Fertilising Products Regulation 2019/1009 (EU, 2019c) bans plastic-coated fertilizers unless they comply with the European Union's biodegradability criteria (in force 2026) (FAO, 2021).
		Helium-filled balloons intended for release into the air[18] at celebrations and memorials replaced by the planting of a tree, flowers or an entire garden (NCM, 2023b).	Western Australia has banned helium-filled balloons intended for release into the air (Western Australia, 2018).
Availability or potential for availability of alternate designs that remove plastic component/s (elimination)	The product has plastic components that can be removed without requiring a replacement or compromising the primary function of the product.	Excessive packaging such as excess headspace increases the volume and weight of plastic used without providing additional function.	Proposed revisions to the EU Packaging and Packaging Waste Directive suggests limiting the empty space ratio in packaging (including space filled with filling material) to a maximum of 40% (European Parliament, 2023).

17. **Agroecology:** Form of agriculture that seeks to transform food and agricultural systems rather than improve current unsustainable practices, using nature-based soil enhancement and pest control measures (FAO, 2018).
18. This may be deemed an action that is not acceptable versus the product itself.

3.3 Potential criteria for avoidable plastic products

Avoidable plastic products refer to products with a function that is essential, but demand for the product can be reduced through non-plastic substitutes, alternate designs and alternate practices.

The aim of determining avoidable plastic products is to reduce the need to produce such products, in full or in part, irrespective of whether they are manufactured from primary or secondary materials. Reducing their production can be achieved, for example, through alternate practices, such as reuse and refill business models.

Table 3 outlines potential criteria for determining avoidable plastic products towards nomination for listing under the plastics instrument. The criteria suggested have taken inspiration from existing examples of policies and actions and have been tailored to suit the objectives of the "avoidable" grouping specifically.

Table 5. Potential criteria for determining avoidable plastic products.

Cluster	Potential criteria	Examples of products	Examples of regulations and initiatives
Availability or potential for availability of alternate practices that reduce the need for new versions of the product (reduction)	A feasible reuse or refill business model is available or can be developed.	Groceries delivered in reusable packaging, which is picked up at next delivery.	Reuse and refill have been shown to significantly reduce the consumption of packaging material (Hekkert et al., 2000).
	A feasible remanufacture business model exists or can be developed.	Aircraft seat frames remanufactured, adding new cushions, screens and chargers.	Remanufacture of hard to recycle plastic waste is a focus of the Australian Government's budget (DAWE, 2022)

	The lifespan of the product can be extended, e.g. through the right to repair, removing early obsolescence, and the provision of sharing services that also reduce associated waste generation.[19]	Right to repair (e.g., electronics and wheelchairs).	Right to Repair Legislation (US, 2023).
		Removal of early obsolescence (e.g., electronic, and electrical products).	A proposed EU Directive would ban certain practices related to the early obsolescence of goods (European Council, 2023).
		Provision of sharing services (e.g. communal washing machines, rental scooters, and cars).	The City of Helsingborg provides digital sharing services, including through smart phones (City Council of Helsingborg, 2019).
Availability or potential for availability of non-plastic substitutes that reduce the need for the product (reduction)	The product can be replaced completely with a nature-based product.	Plastics plates replaced with banana leaves.	282 codes for materials and products have been identified in the Harmonized System of Codes (HS), which can act as non-plastic substitutes (UNCTAD, 2023)
	The product can be produced using a non-plastic substitute material.	Plastic plates replaced with bamboo plates.	
Availability or potential for availability of alternate design that reduces the need for new versions of the product (reduction)	Options for improved resource efficiency exist or can be developed, including extending the longevity of the product.	Products are redesigned to make them fit-for-purpose for circularity, including the sharing economy, recycling, reuse, repair, etc.	Design features that improve product performance complicate "closing the loop" on plastics, leading to linear life cycle and increased production (OECD, 2019).

19. In some cases, the provision of sharing services (or the "sharing economy") can shorten a product's lifespan, generating greater volumes of waste. EPR and other schemes could possibly assist in this regard.

4. Potential process for determining and listing PUA plastic products

4.1 A simple decision hierarchy for determination

Figure 6 provides a simple decision hierarchy for determination of problematic, unnecessary and avoidable plastic products. Three decision points are provided to help prioritise actions towards a safe and sustainable plastics economy, based on the criteria presented in Section 3.

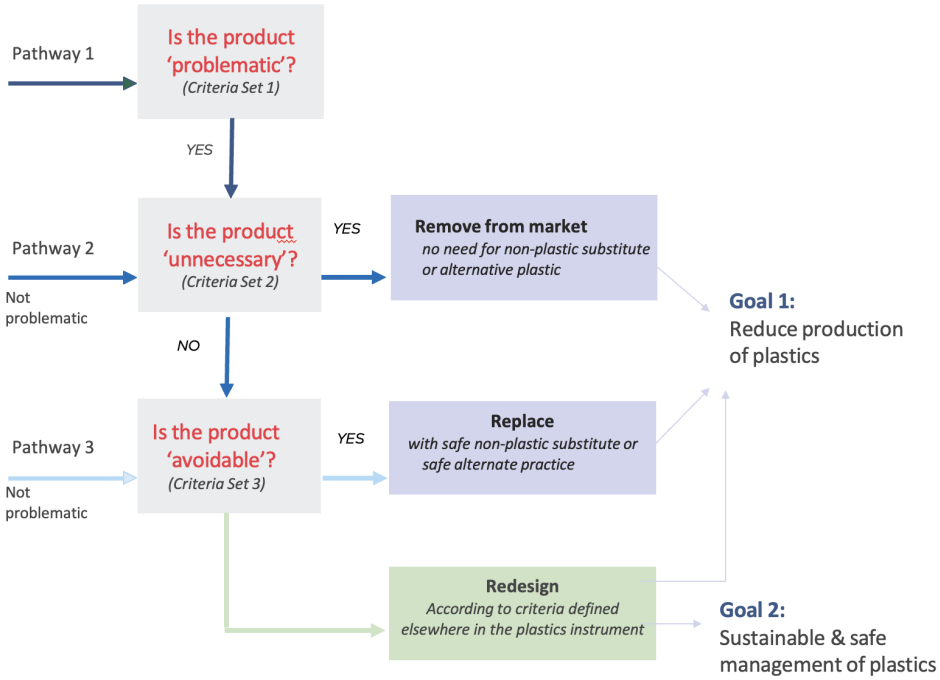

Figure 3. A simple decision tree to determine actions to address problematic, unnecessary and avoidable plastic products

Products that are not considered "problematic" could follow pathways 2 or 3. All actions should contribute to the two main goals of:

- **Goal 1 – Reduce production of plastics** through the removal of unnecessary products from the market, replacement with safe non-plastic substitutes and alternate business practices.
- **Goal 2 – Sustainable and safe management of plastics** that remain on the market through redesign according to sustainability criteria, including safe alternatives, and circular business practices.

Figure 8 illustrates the desired outcomes of the criteria for problematic, unnecessary, and avoidable plastic products. If the product fits only into the problematic classification, these products should be prioritised for redesign. The figure also illustrates that problematic plastics can overlap with unnecessary products, potentially changing their management action to removal. Similarly, where problematic products overlap with avoidable products, their management action could change to replacement, possibly also requiring redesign.

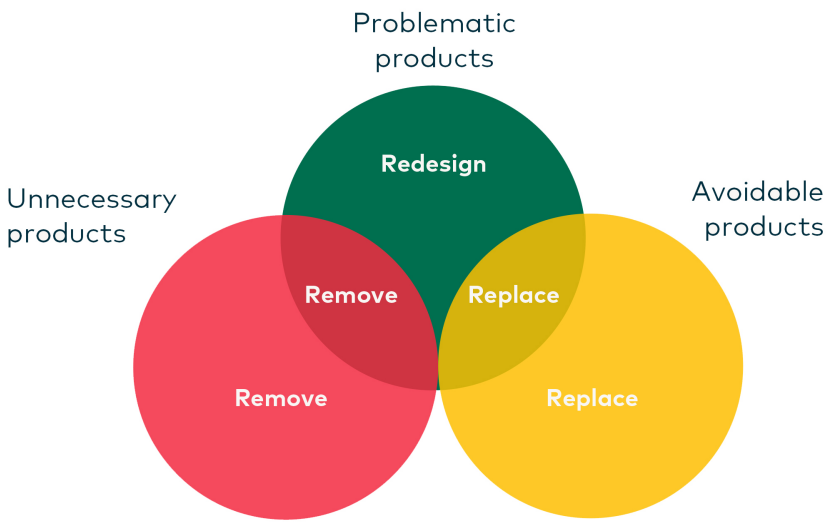

Figure 4. Desired outcomes of criteria for problematic, unnecessary and avoidable plastic products

4.2 Product exceptions and exemption processes

Product exceptions, such as acceptable purposes and essential uses, are provided for in existing MEAs and allow for special cases in which restrictions would not apply. See Box 2 for examples of acceptable purposes and essential use processes under the Stockholm Convention and the Montreal Protocol.

Under special conditions, parties may be granted time-bound exemptions for restricted products. This would allow Parties to seek alternatives to the restricted product, to extend the phase out period for uses of regulated substances or meet other requirements as per the MEA.

Product exceptions and Party exemptions under the plastics instrument could be granted based on a life cycle and socio-economic analysis and could consider the following criteria:[20]

- Socio-economic benefits must outweigh risks to human health and the environment,
- No suitable alternative substances or technologies are available, and
- Additional control measures that can be implemented to minimize the impacts.

20. These criteria are suggested by the authors based on criteria in existing MEAs for determining essential uses, exceptions and exemptions, as well as comments from the Advisory Group. See Box 2 for examples from existing MEAs.

Box 2: Examples of exemption processes under MEAs.

The **Stockholm Convention** provides a mechanism for determining time-limited "specific exemptions" and time-unlimited "acceptable purposes" for particular use(s) and production of chemicals otherwise restricted by the Convention's control measures. The granting of such exemptions is informed by recommendations from the Persistent Organic Pollutants Review Committee (POPRC) based on a risk management evaluation, ensuring a scientifically credible approach to exemptions (see section 5). Should alternatives not exist or not be readily available for regulated substances, Parties can still continue their specific use by registering for a specific exemption or acceptable purpose as per Annexes A and B to the Convention. Article 4 establishes a registry for this purpose, listing the specific exemptions under Annexes A and B, the Parties that have specific exemptions and the expiry dates for each registered exemption. All registrations of specific exemptions expire five years after the Convention entered into force. A review process is in place for each exemption registered and Parties wishing to extend the exemption may submit a report to justify this. The extension may be for up to five years and a Party may withdraw a registry entry at any point, with no new registrations allowed should there no longer be any registrations for a specific exemption. Parties that have registered a specific exemption or acceptable purpose as per Annex A or B must prevent or minimise human exposure and releases to the environment from production or use (Art. 3.6).

Parties to the **Montreal Protocol** have adopted various Decisions on essential uses. [21] Decision IV/25 provides criteria and procedure for assessing an essential use in relation to Article 2 of the Protocol. The following criteria apply (para. 1):

1. A use of a controlled substance should qualify as "essential" only if:
    a. it is necessary for the health, safety or is critical for the functioning of society (encompassing cultural and intellectual aspects); and
    b. there are no available technically and economically feasible alternatives or substitutes that are acceptable from the standpoint of environment and health.
2. Production and consumption, if any, of a controlled substance for essential uses should be permitted only if:
    a. all economically feasible steps have been taken to minimize the essential use and any associated emission of the controlled substance; and
    b. the controlled substance is not available in sufficient quantity and quality from existing stocks of banked or recycled controlled substances, also bearing in mind the developing countries' need for controlled substances.

21. https://ozone.unep.org/treaties/decisions-essential-uses

3. Production, if any, for essential use, will be in addition to production to supply the basic domestic needs of the Parties operating under paragraph 1 of Article 5 of the Protocol prior to the phase-out of the controlled substances in those countries.

In addition to defining the criteria for determining "essential use" in Decision IV/25, the Technology and Economic Assessment Panel and its Technical and Economic Options Committee is requested to make recommendations on nominations by Parties based on the above criteria and considering the environmental acceptability, health effects, economic feasibility, availability, and regulatory status of alternatives and substitutes. Recommendations must address:

- "the essential use (substance, quantity, quality, expected duration of essential use, duration of production or import necessary to meet such essential use),
- economically feasible use and emission controls for the proposed essential use,
- sources of already produced controlled substances for the proposed essential use (quantity, quality, timing), and
- steps necessary to ensure that alternatives and substitutes are available as soon as possible for the proposed essential use."

4.3 Application of criteria at the global and national levels

To strengthen the global governance of plastics, criteria developed under the plastics instrument could act on two levels by stimulating both mandatory and voluntary measures (Figure 5):

1. **Mandatory measures for listed products**: At the international level, criteria provide the basis for identifying, nominating and listing products, potentially within annexes to the plastics instrument. Once a product is listed, related control measures mandate or promote/encourage national action by Parties to the instrument. As designed in other MEAs, the mandatory control measures could include three elements:
    - **Bans and restrictions** to be taken by Parties for products listed at the global level.
    - **Trade measures** between Parties and with non-Parties of listed products.
    - Time-restricted **exemptions** for products as deemed necessary on a case-by-case basis.
2. **Voluntary measures for non-listed products:** At the national level, Parties may use global criteria to voluntarily identify additional products not listed or regulated by the plastics instrument and take action beyond the obligations established under the instrument, thereby strengthening national action compared to the requirements of the instrument.[22] National voluntary measures can include bans and restrictions, and/or they can be included in national action plans.

Additionally, voluntary national listings could be collated into a **global database for candidate products** administered by the Secretariat of the plastics instrument. This could provide 1) an opportunity to identify candidate products that can in future be considered for global listing under the plastics instrument or 2) may inform strengthened voluntary action at the national level.

22. This can be related to the Basel Convention, Art. 1, which defines "hazardous wastes" under the Convention as "wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III," as well as "wastes that are not covered under paragraph (a) but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the Party of export, import or transit."

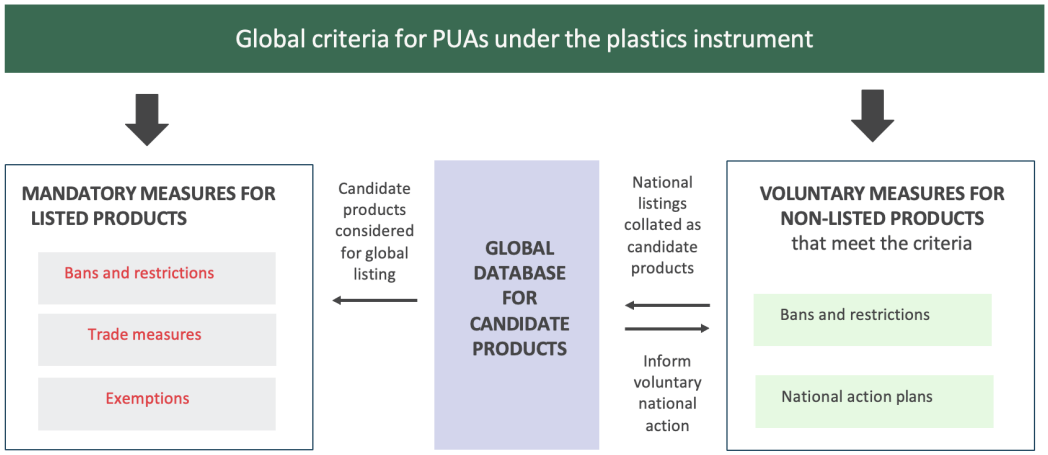

Figure 5. The role of global criteria for PUA products under the plastics instrument in stimulating both mandatory and voluntary measure.

5. Institutional arrangements

The current lack of global regulation for plastic products highlights the urgency for broader regulatory oversight. In this context, it will be prudent to consider how the science-policy interface of the plastics instrument can support the listing of PUA products. Drawing insights from established models, notably the BRS conventions, provides understanding of how such listings can be supported by collaboration between researchers and policymakers. Examples of established institutional arrangements within MEAs that list chemicals for restriction are provided below:

- **The Stockholm Convention** employs a meticulous three-step scientific process overseen by the POP Review Committee, encompassing screening, risk profile, and risk management evaluation, spanning at least three meetings/years. This process begins by assessing proposed POPs against criteria in Annex D (persistence, bioaccumulation, adverse effects, and long-range transport potential), followed by an evaluation of significant adverse effects on human health and the environment outlined in Annex E, and concludes with consideration of control measures and socio-economic aspects as per Annex F.
- **The Rotterdam Convention** relies on information already compiled and regulatory actions taken by national authorities. Article 5 of the Convention stipulates that any Party that has banned or severely restricted a chemical is required to notify this to the Secretariat. Once the Secretariat has received notifications from two parties that are from two different prior informed consent (PIC) regions regarding that chemical, the notifications shall be forwarded to the Chemical Review Committee (CRC) for review and consideration for recommending the chemical for inclusion in Annex III to the Convention.

While the listing of chemicals and polymers of concern may vary from that of products of concern, they do exhibit numerous common attributes. Notably, POPs and plastic pollution share important parallels, including traits such as enduring persistence and the capacity for long-distance transportation (Chakraborty et al., 2022). Consequently, their requisite control measures and the necessary science-policy interface might inherently mirror each other.

However, it is crucial to acknowledge the pervasiveness of plastic products that have integrated into every aspect of our daily lives and adjust the necessary scientific and technical expertise accordingly within the institutional design of the science-policy interface. This adjustment might entail the establishment of multiple committees that collaborate closely to address various facets of the problem.

Moreover, a shift from a reactive approach inherent in the Stockholm Convention to a **proactive approach** is imperative. This strategic transition involves taking pre-emptive steps under the plastics instrument, such as the removal of products of concern from the market in their early stages to prevent adverse impacts before they materialize. Independent scientific advice plays a pivotal role in this context. Additionally, steps must be taken to ensure inclusiveness, thereby giving civil society actors a voice that is heard and reflected in the work.

Here we suggest a model where the listing of PUA products includes a step-by-step process, which is described in five steps below:

1. **Submission and review of proposals**
   Proposals for the listing of PUA plastic products are initiated through submissions by Parties. These submissions are directed to the scientific and technical committee on PUA products. This will require the development of guidelines on the format and content of submissions, ensuring Parties provide sufficient information for an informed review. In parallel, the Science-Policy Panel (SPP) on chemicals, waste, and pollution prevention can play a crucial role by being empowered to put forward independent scientific proposals. This proactive approach, fuelled by the horizon scanning function of the SPP, offers a more robust perspective to the listing process.
2. **Comprehensive review by the Review Committee on PUA plastic products**
   The Review Committee evaluates proposals based on specific criteria detailed in Annex A (criteria for problematic plastic products), Annex B (criteria for unnecessary plastic products), and Annex C (criteria for avoidable plastic products). This process could encompass a product assessment[23] to evaluate compliance with listing criteria, succeeded by an environmental cost and benefit analysis, incorporating life cycle assessment, carbon footprint evaluations, and investigations into pollution levels and biodiversity effects. This analysis should factor in possible impacts of alternate practices, alternate designs, and non-plastic substitutes. A more in-depth socio-economic assessment may also be considered, but it will be important to set limits on the extent and depth of analysis that can help prevent over-analysis and keep the focus on action. The review process could be designed to include two meetings, scheduled at intervals that permit thorough data collection and analysis to support informed review.
3. **Cooperation with other possible committees and stakeholder consultation**
   The plastics instrument could also include other scientific and technical committees to help deliver on control measures related to the upstream phase of the plastics life cycle (Grid-Arendal, 2023). In scenarios where PUA products fall within either the avoidable or problematic classifications, collaboration with a possible committee on sustainable and safe design of

23. Risk assessment and management aspect could be addressed under criteria for 'elements of concern' and associated control measures.

plastics would be beneficial to help understand the potential for redesigning the product as a risk management option.

Also, for proposed PUA products that strictly align with the problematic classification, collaboration with a possible committee on chemicals and polymers of concern becomes important in cases where hazard is of concern. This applies specifically to two proposed criteria that address "elements of concern" currently listed under criteria for problematic products, namely:

- The product contains chemicals or polymers of concern, including those derived from secondary materials, or represents a health or environmental hazard.
- The product releases chemicals of concern during its intended use.

Moreover, conducting stakeholder consultations, such as through written submissions, will be crucial to capture a range of perspectives and insights, enhancing the comprehensiveness of the assessments. These consultations should involve experts from NGOs, industry representatives, UN agencies and MEAs.

4. **Governing body decision**

Informed by recommendations stemming from the Review Committee on PUA plastic products, the governing body is mandated to make decisions regarding the identification, classification and listing of PUA products in respective annexes. This should encompass an adaptive management approach, allowing for periodic reassessment and adjustments to listings as new information emerges or circumstances change. Figure 9 summarizes how the institutional design of a science-policy interface of the plastics instrument could support effective and inclusive listing of PUA products.

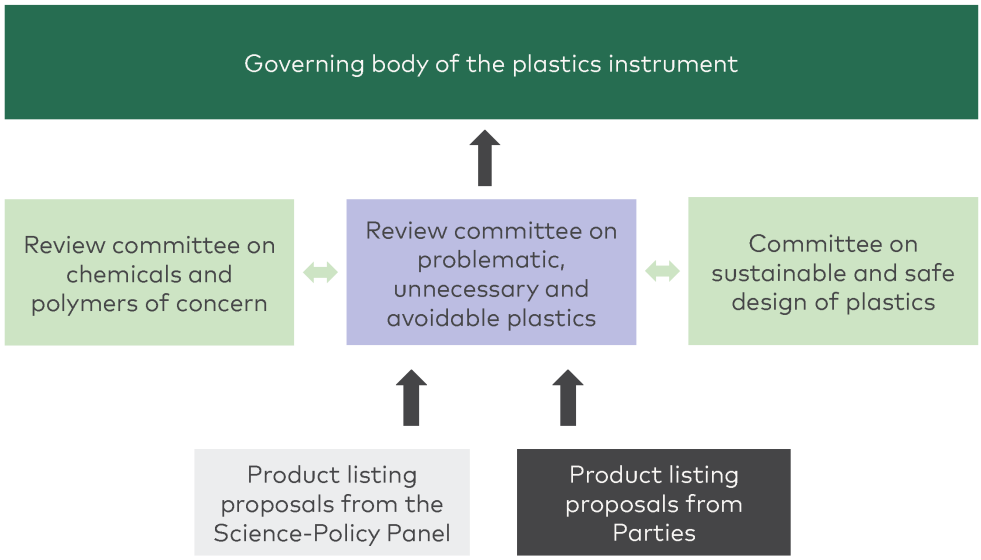

Figure 9. The science-policy interface of the plastics instrument.

5. **Monitoring**
   Monitoring and evaluation mechanisms will be needed to assess the impact of decisions and ensure they are achieving the desired outcomes. This could include environmental measures (e.g. reduction in pollution levels), socio-economic factors (e.g. changes in employment), human health (e.g. exposure) and compliance rates.
6. **Other considerations**
   It will be important to address the need for capacity building, especially for developing countries, to ensure they can effectively participate in the proposal submission and review process. This could include technical assistance, training programs, and resource sharing.

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Appendix 1: Examples of existing restrictions of products, polymers and monomers

The terms "biodegradable", "reusable", "disposable" or "compostable" were not included because these do not define the specific plastic monomer or polymer.

See Appendix 2 for full references.

A. Countries with one or more plastic products banned or restricted at the national or regional level (expanding on Table 1, Figure 2)

Table 6: Plastic products banned or restricted at the national or regional level, with individual countries listed (with references)

Plastic product	Bans	Sources	Restrictions (including taxes and fees)	Sources
Agricultural film	1 Country (China)	• China: Xinhua News Agency (2020)	None	N/A
Banners (signs)	2 Countries (India, Mauritius)	• India: Ministry of Environment, Forest and Climate Change (2021) • Mauritius: UNEP 2018, p.52, Table 23	None	N/A
Board stock	1 Country (Tuvalu)	• Tuvalu: UNEP 2018, p.52, Table 23	None	N/A

Bottles (incl. beverage bottles & containers)	7 Countries (Maldives & 6 countries not specified) & 1 Region (EEA – 30 member states)	• Maldives: Environment Protection and Preservation Act (Act No. 4/93) • 6 unspecified countries: UNEP 2018, p.55, Figure 9 • EEA: EU Directive 2019/904 (EPS beverage containers only)	28 Countries (Antigua and Barbuda, Barbados, Belize, Chile, Croatia, Denmark, Estonia, Fiji, Finland, Germany, Iceland, Israel, Kiribati, Macedonia, Malta, Marshall Islands, Mauritius, Montenegro, Norway, Palau, Peru, Republic of Korea, San Marino, St. Kitts & Nevis, St. Vincent and the Grenadines, Sweden, Tanzania, Uruguay) & 1 Region (EEA – 30 member states)	• A&B: UNEP 2018, p.57, Table 25 • Barbados: UNEP 2018, p.60, Table 27 • Belize: UNEP 2018, p.60, Table 27 • Chile : Law N°21.368v (2021) • Croatia: UNEP 2018, p.56, Table 25 • Denmark: UNEP 2018, p.56, Table 25 • Estonia : UNEP 2018, p.60, Table 27 • Fiji : UNEP 2018, p.51, Table 23 • Finland: UNEP 2018, p.56, Table 25 • Germany: UNEP 2018, p.60, Table 27 • Iceland : UNEP 2018, p.62, Table 28 • Israel : UNEP 2018, p.51, Table 23 • Kiribati : UNEP 2018, p.61, Table 28 • Macedonia: UNEP 2018, p.56, Table 25 • Malta : UNEP 2018, p.51, Table 23 • Marshall Is.: UNEP 2018, p.56, Table 25 • Mauritius : Karasik et al. 2020 p.191 • Montenegro: UNEP 2018, p.57, Table 25 • Norway: UNEP 2018, p.57, Table 25 • Palau: UNEP 2018, p.56, Table 25 • Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables • ROK: UNEP 2018, p.52, Table 23 • San Marino: UNEP 2018, p.52, Table 23 • St. K&N: UNEP 2018, p.57, Table 25 • St. V&G: UNEP 2018, p.57, Table 25 • Sweden: UNEP 2018, p.62, Table 28 • Tanzania: Karasik et al. 2020 p.195 • Uruguay: UNEP 2018, p.57, Table 25 • EEA: EU Directive 2019/904

Boxes	1 Country (Seychelles)	• Seychelles: UNEP 2018, p.52, Table 23	2 Countries (Belize, Sri Lanka)	• Belize: Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022 • Sri Lanka: UNEP 2018, p.52, Table 23
Cotton swabs/ear buds	8 Countries (China, Colombia, France, India, Italy, Maldives, Panama, Wales) & 1 Region (EEA – 30 member states)	• China: Xinhua News Agency (2020) • Colombia: Proyecto de Ley 010 de 2020 Cámara • France: UNEP 2018, p.51, Table 23 • Italy: UNEP 2018, p.51, Table 23 • India: Ministry of Environment, Forest and Climate Change (2021) • Maldives: Environment Protection and Preservation Act (Act No. 4/93) • Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021 • Wales: Act of Senedd Cymru 2023 asc 2 • EEA: EU Directive 2019/904	1 Country (England)	• England: UK Statutory Instruments 2020 No. 971

Cups/glasses (and their lids)	20 Countries (Belize, Canada, Chile, Colombia, Dominica, Ecuador, England, France, India, Marshall Islands, Maldives, Mauritius, Peru Saint Lucia, Saudi Arabia, Scotland, Sri Lanka, Tuvalu, Vanuatu, Wales) & 1 Region (EEA – 30 member states)	• Belize: Environmental Protection (Pollution from Plastics) Regulations, 2020 • Canada: Single-use Plastics Prohibition Regulations (SOR/2022-138) • Chile: Law Nº21.368 (2021) • Colombia: Proyecto de Ley 010 de 2020 Cámara • Dominica: Karasik et al. (2020) p.230 • Ecuador: *Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso* (2020) • England: UK Statutory Instruments 2023 No. 982 • France: UNEP 2018, p.51, Table 23 • India: Ministry of Environment, Forest and Climate Change (2021) • Marshall Islands: P 2018, p.52, Table 23 • Maldives: Environment Protection and Preservation Act (Act No. 4/93) • Mauritius: Government of Mauritius Notice No. 156 of 2020. • Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables • Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019 • Saudi Arabia: UNEP 2018, p.52, Table 23 • Scotland: Scottish Statutory Instruments 2021 No. 410	6 Countries (Bulgaria, Macedonia, Malta, Republic of Korea, San Marino, Slovenia) & 1 Region (EEA – 30 member states)	• Bulgaria: UNEP 2018, p.56, Table 25 • Macedonia: UNEP 2018, p.56, Table 25 • Malta: UNEP 2018, p.51, Table 23 • ROK: UNEP 2018, p.52, Table 23 • San Marino: UNEP 2018, p.52, Table 23 • Slovenia: UNEP 2018, p.57, Table 25 • EEA: EU Directive 2019/904

		• Sri Lanka: UNEP 2018, p.52, Table 23 • Tuvalu: UNEP 2018, p.52, Table 23 • Vanuatu: UNEP 2018, p.53, Table 23 • Wales: Act of Senedd Cymru 2023 asc 2 • EEA: EU Directive 2019/904 (EPS only		
Cutlery/utensils (incl. forks, knives, spoons, chopsticks, stir-sticks, cocktail sticks, candy sticks, ice-cream sticks, toothpicks)	21 Countries (Belize, Canada, Chile, China, Colombia, Dominica, Ecuador, England, India, Maldives, Monaco, Mauritius, New Zealand, Panama, Peru, Saint Lucia, Saudi Arabia, Scotland, Seychelles, Sri Lanka, Wales) & 1 Region (EEA – 30 member states)	• Belize: Environmental Protection (Pollution from Plastics) Regulations, 2020 • Canada: Single-use Plastics Prohibition Regulations (SOR/2022-138) • Chile: Law N°21.368v (2021) • China: Xinhua News Agency (2020) • Colombia: Proyecto de Ley 010 de 2020 Cámara • Dominica: Karasik et al. (2020) p.230 • Ecuador: *Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso* (2020) • England: UK Statutory Instruments 2023 No. 982 • India: Ministry of Environment, Forest and Climate Change (2021) • Maldives: Environment Protection and Preservation Act (Act No. 4/93) • Monaco: UNEP 2018, p.52, Table 23 • Mauritius: Government of Mauritius Notice No. 156 of 2020. • New Zealand: Plastic and Related Products Regulations 2022	4 Countries (Denmark, Latvia, Republic of Korea, San Marino)	• Denmark: UNEP 2018, p.56, Table 25 • Latvia: UNEP 2018, p.56, Table 25 • ROK: UNEP 2018, p.52, Table 23 • San Marino: UNEP 2018, p.52, Table 23

		• Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021 • Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables • Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019 • Saudi Arabia: UNEP 2018, p.52, Table 23 • Scotland: Scottish Statutory Instruments 2021 No. 410 • Seychelles: UNEP 2018, p.52, Table 23 • Sri Lanka: UNEP 2018, p.52, Table 23 • Wales: Act of Senedd Cymru 2023 asc 2 • EEA: EU Directive 2019/904		
Egg cartons	3 Countries (Panama, Saint Lucia, Tuvalu)	• Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021 • Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019 • Tuvalu: UNEP 2018, p.52, Table 23	1 Country (Belize)	• Belize: Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022
Fishing gear	None	N/A	1 Region (EEA – 30 member states)	• EEA: EU Directive 2019/904

Food containers (and their lids) incl. clamshells	17 Countries (Belize, Canada, Chile, Colombia, Dominica, England, Haiti, Indonesia, Guyana, Maldives, Mauritius, Saint Lucia, Scotland, Sri Lanka, Tuvalu, Vanuatu, Wales) & 1 Region (EEA – 30 member states)	• Belize: Environmental Protection (Pollution from Plastics) Regulations, 2020 • Canada: Single-use Plastics Prohibition Regulations (SOR/2022-138) • Chile: Law N°21.368v (2021) • Colombia: Proyecto de Ley 010 de 2020 Cámara • Dominica: Karasik et al. (2020) p.230 • England: UK Statutory Instruments 2023 No. 982 • Haiti: Karasik et al. 2020 p.286 • Indonesia: MoEF decree No. P.75/2019 on Roadmap to Waste Reduction by Producers • Guyana: UNEP 2018, p.51, Table 23 • Maldives: Environment Protection and Preservation Act (Act No. 4/93) • Mauritius: Government of Mauritius Notice No. 156 of 2020. • Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019 • Scotland: Scottish Statutory Instruments 2021 No. 410 • Sri Lanka: UNEP 2018, p.52, Table 23 • Tuvalu: UNEP 2018, p.52, Table 23 • Vanuatu: UNEP 2018, p.53, Table 23 • Wales: Act of Senedd Cymru 2023 asc 2 • EEA: EU Directive 2019/904 (EPS only)	1 Country (China) & 1 Region (EEA – 30 member states)	• China: Xinhua News Agency (2020) • EEA: EU Directive 2019/904

Horticultural netting	2 Countries (Tuvalu, Vanuatu)	• Tuvalu: UNEP 2018, p.52, Table 23 • Vanuatu: UNEP 2018, p.53, Table 23	None	N/A
Invitation cards	1 Country (India)	• India: Ministry of Environment, Forest and Climate Change (2021)	None	N/A
Microbeads	14 Countries (Argentina, Canada, China, England, France, Ireland, Italy, New Zealand, Republic of Korea, Scotland, Sweden, Thailand, USA, Wales) & 1 Region (EEA – 30 member states)	• Argentina: Disposición 9365/2022 • Canada: Microbeads in Toiletries Regulations (SOR/2017-111) • China: Xinhua News Agency (2020) • England: UNEP 2018 p.72 Table 33 • France: UNEP 2018 p.72 Table 33 • Ireland: Microbeads (Prohibition) Act 2019 • Italy: UNEP 2018 p.72 Table 33 • New Zealand: UNEP 2018 p.72 Table 33 • ROK: Special bill on microplastic reduction and management 2023 • Scotland: UNEP 2018 p.72 Table 33 • Sweden: UNEP 2018 p.72 Table 33 • Thailand: Announcement of the Ministry of Public Health on specifying the characteristics of cosmetics Prohibited Production, Import, or Sale (No. 2) B.E. 2019 • United States of America: UNEP 2018 p.72 Table 33 • Wales: UNEP 2018 p.72 Table 33 • EEA: Commission Regulation (EU) 2023/2055	None	N/A

Newspaper/ Magazine bags	3 countries (Colombia, Ecuador, Peru)	• Colombia: Proyecto de Ley 010 de 2020 Cámara • Ecuador: *Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso* (2020) • Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables		-
Plastic bags	94 Countries* (Belize, China, Colombia, Ecuador, Indonesia, Maldives, Oman, Peru, Tanzania, Ukraine, Uruguay, & 83 countries not specified) & 1 Region (EAC – 8 partner states)	• Belize: Environmental Protection (Pollution from Plastics) Regulations, 2020 • China: Xinhua News Agency (2020) • Colombia: Proyecto de Ley 010 de 2020 Cámara • Ecuador : *Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso (2020)* • Indonesia: MoEF decree No. P.75/2019 on Roadmap to Waste Reduction by Producers • Maldives: Environment Protection and Preservation Act (Act No. 4/93) • Oman: Ministerial Decision 519/2022 regarding the ban on the import of plastic bags • Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables • Tanzania: Environmental Management (Prohibition of Plastic Carrier Bags) Regulations, 2019	44 Countries (Individual countries not specified) & 2 Regions (EEA – 30 member states & Barcelona Convention – 21 contracting parties, of which 8 are also EEA member states)	• 44 Countries: UNEP 2018, p.13 • EEA: EU Directive 2015/720 and EU Directive 2019/904 • Barcelona Convention: Regional Plan on Marine Litter Management in the Mediterranean 2021

		• Ukraine: Law "On Restricting the Circulation of Plastic Bags on the Territory of Ukraine" №1489-IX (2021) • Uruguay: Ley N° 19655 – Declaración de interés general. Prevención y Reducción del Impacto Ambiental Derivado de la Utilización de Bolsas Plasticas. • 83 Countries: UNEP 2018, p.13 (Key Finding #2) • EAC: East African Community Polythene Materials Control Bill 2016 **Individually named countries have introduced bans since the UNEP 2018 report*		
Plastic confetti	1 Country (Colombia)	• Colombia: Proyecto de Ley 010 de 2020 Cámara	None	N/A
Plastic laundry covers	2 Countries (Colombia, Panama)	• Colombia: Proyecto de Ley 010 de 2020 Cámara • Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021	None	N/A

Plastic packaging (general)	7 Countries (Burkina Faso, Cameroon, Djibouti, India, Panama, United Arab Emirates, Zimbabwe)	• Burkina Faso: UNEP, 2018, p.51, Table 23 • Cameroon: Karasik et al. 2020 p.193 • K et al. 2020 p.195Djibouti: Karasi • India: Ministry of Environment, Forest and Climate Change (2021) • Panama: Karasik et al. (2020) p.230 • UAE: UNEP 2018, p.53, Table 23 • Zimbabwe: UNEP 2018, p.53, Table 23	21 Countries (Albania, Belarus, Benin, Bulgaria, Estonia, Hungary, Italy, Latvia, Lesotho, Liechtenstein, Lithuania, Macedonia, Malta, Mexico, Moldova, Netherlands, Norway, Republic of Korea, Togo, Uruguay, Uzbekistan) & 1 Region (EEA – 30 member states)	• Albania: UNEP 2018, p.56, Table 25 • Belarus: Presidential Decree No. 16 On improvement of the procedure for waste and package management • Benin: UNEP 2018, p.56, Table 25 • Bulgaria: UNEP 2018, p.56, Table 25 • Estonia: UNEP 2018, p.56, Table 25 • Hungary: UNEP 2018, p.56, Table 25 • Italy: UNEP 2018, p.56, Table 25 • Latvia: UNEP 2018, p.56, Table 25 • Lesotho: UNEP 2018, p.56, Table 25 • Liechtenstein: UNEP 2018, p.51, Table 23 • Lithuania: UNEP 2018, p.56, Table 25 • Macedonia: UNEP 2018, p.56, Table 25 • Malta: UNEP 2018, p.51, Table 23 • Mexico: National Sustainable Waste Management Bill (2019) • Moldova: UNEP 2018, p.57, Table 25 • Netherlands: UNEP 2018 p.60 Table 27 • Norway: UNEP 2018 p.60 Table 27 • ROK: UNEP 2018, p.52, Table 23 • Togo: Karasik et al. 2020 p.192 • Uruguay: UNEP 2018 p.60 Table 27 • Uzbekistan: UNEP 2018, p.57, Table 25 • EEA: EU Directive 2004/12/EC
Plastic flags	1 Country (India)	• India: Ministry of Environment, Forest and Climate Change (2021)	None	N/A

Plastic produce labels	2 Countries (Colombia, New Zealand)	• Colombia: Proyecto de Ley 010 de 2020 Cámara • New Zealand: Plastic and Related Products Regulations 2022	None	N/A
Plastic trays/platters	5 Countries (Colombia, India, Mauritius, New Zealand, Saint Lucia)	• Colombia: Proyecto de Ley 010 de 2020 Cámara • India: Ministry of Environment, Forest and Climate Change (2021) • Mauritius: Government of Mauritius Notice No. 156 of 2020. • New Zealand: Plastic and Related Products Regulations 2022 • Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019	2 Countries (Belize, England)	• Belize: Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022 • England: UK Statutory Instruments 2023 No. 982
Plates and bowls	23 Countries (Belize, Canada, Chile, China, Colombia, Dominica, Ecuador, France, Haiti, India, Maldives, Marshall Islands, Mauritius, New Zealand, Panama, Peru, Saint Lucia, Saudi Arabia, Scotland, Sri Lanka, Tuvalu, Vanuatu, Wales) & 1 Region (EEA – 30 member states	• Belize: Environmental Protection (Pollution from Plastics) Regulations, 2020 • Canada: Single-use Plastics Prohibition Regulations (SOR/2022-138) • Chile: Law Nº21.368v (2021) • China: Xinhua News Agency (2020) • Colombia: Proyecto de Ley 010 de 2020 Cámara • Dominica: Karasik et al. (2020) p.230 • Ecuador : *Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso (2020)* • France: UNEP 2018, p.51, Table 23	8 Countries (Denmark, England, Latvia, Macedonia, Malta, Republic of Korea, San Marino, Slovenia)	• Denmark: UNEP 2018, p.56, Table 25 • England: UK Statutory Instruments 2023 No. 982 • Latvia: UNEP 2018, p.56, Table 25 • Macedonia: UNEP 2018, p.56, Table 25 • Malta: UNEP 2018, p.51, Table 23 • ROK: UNEP 2018, p.52, Table 23 • San Marino: UNEP 2018, p.52, Table 23 • Slovenia: UNEP 2018, p.57, Table 25

- Haiti: Karasik et al. 2020 p.286
- India: Ministry of Environment, Forest and Climate Change (2021)
- Maldives: Environment Protection and Preservation Act (Act No. 4/93)
- Marshall Islands: UNEP 2018, p.52, Table 23
- Mauritius: Government of Mauritius Notice No. 156 of 2020.
- New Zealand: Plastic and Related Products Regulations 2022
- Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021
- Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables
- Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019
- Saudi Arabia: UNEP 2018, p.52, Table 23
- Scotland: Scottish Statutory Instruments 2021 No. 410
- Sri Lanka: UNEP 2018, p.52, Table 23
- Tuvalu: UNEP 2018, p.52, Table 23
- Vanuatu: UNEP 2018, p.53, Table 23
- Wales: Act of Senedd Cymru 2023 asc 2
- EEA: EU Directive 2019/904

Ring carriers	2 Countries (Canada, Panama)	• Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021 • Canada: Single-use Plastics Prohibition Regulations (SOR/2022-138)	None	N/A
Sanitary towels	None	N/A	1 Region (EEA – 30 member states)	EU Directive 2019/904
Sticks to support balloons	6 Countries (Colombia, England, India, Panama, Scotland, Wales) 1 Region (EEA – 30 member states)	• Colombia: Proyecto de Ley 010 de 2020 Cámara • England: UK Statutory Instruments 2023 No. 982 • India: Ministry of Environment, Forest and Climate Change (2021) • Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021 • Scotland: Scottish Statutory Instruments 2021 No. 410 • Wales: Act of Senedd Cymru 2023 asc 2 • EEA: EU Directive 2019/904		

Straws	17 Countries (Belize, Canada, Chile, China, Colombia, Dominica, Ecuador, India, Indonesia, Maldives, Mauritius, New Zealand, Panama, Peru, Saint Lucia, Scotland, Vanuatu, Wales) & 1 Region (EEA – 30 member states)	• Belize: Environmental Protection (Pollution from Plastics) Regulations, 2020 • Canada: Single-use Plastics Prohibition Regulations (SOR/2022-138) • Chile: Law Nº21.368v (2021) • China: Xinhua News Agency (2020) • Colombia: Proyecto de Ley 010 de 2020 Cámara • Dominica: Karasik et al. (2020) p.230 • Ecuador: *Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso* (2020) • India: Ministry of Environment, Forest and Climate Change of India, 2021 • Indonesia: MoEF decree No. P.75/2019 on Roadmap to Waste Reduction by Producers • Maldives: Environment Protection and Preservation Act (Act No. 4/93) • Mauritius: Government of Mauritius Notice No. 156 of 2020. • New Zealand: Plastic and Related Products Regulations 2022 • Panama: Law No. 187 - Regulating the Reduction and Progressive Replacement of Single-Use Plastics in 2021	1 Country (England)	• England: UK Statutory Instruments 2020 No. 971

		• Peru: Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables • Saint Lucia: Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019 • Scotland: Scottish Statutory Instruments 2021 No. 410 • Vanuatu: UNEP 2018, p.53, Table 23 • Wales: Act of Senedd Cymru 2023 asc 2 • EEA: EU Directive 2019/904		
Tobacco products (incl. cigarette filters and packets)	1 Country (India)	• India: Ministry of Environment, Forest and Climate Change (2021)	1 Region (EEA – 30 member states)	EU Directive 2019/904
Wet wipes	None	N/A	1 Region (EEA – 30 member states)	EU Directive 2019/904

B. Examples of existing restrictions of polymers and monomers by countries and regions (expanding on Table 2)

Table 7: Number and list of countries regulating each type of monomer or polymer

Monomer/Polymer	Countries
Ethylene	
Ethylene (ethene)	4 countries (Belize, Macedonia, Sri Lanka, Uganda)
Polyethylene (Polythene)	9 countries (China, Haiti, Panama, Paraguay, Rwanda, Saudi Arabia, Seychelles, Sri Lanka, Uganda) & 1 region (EAC – 8 countries)
Polyethylene terephthalate (PET)	7 countries (China, Germany, Mauritius, Norway, Republic of Korea, Seychelles, Switzerland) & 1 region (EEA - (30 countries)
Styrene	
Styrene	3 countries (Belize, China, Sri Lanka)
Polystyrene	18 countries (Belize, Costa Rica, Dominica, Ecuador, England, Guyana, Haiti, Marshall Islands, Palau, Saint Lucia, Saint Vincent and the Grenadines, Scotland, Seychelles, Sri Lanka, Tuvalu, Uganda, Wales, Zimbabwe)
Expanded polystyrene (EPS)	3 countries (Antigua & Barbuda, Canada, Peru) & 1 region (EEA - (30 countries)
Acrylonitrile butadiene styrene	1 country (Seychelles)
Propylene	
Propylene	1 country (Belize)
Polypropylene	3 countries (Belize, Seychelles, Sri Lanka)
Vinyl	
Vinyl	1 country (Seychelles)
Vinyl chloride	2 countries (Macedonia, Sri Lanka)
Polyvinyl	1 country (China)
Polyvinyl chloride (PVC)	4 countries (Canada, Republic of Korea, Seychelles, Switzerland)
Others	
Polybutylene terephthalate	1 country (Seychelles)
Polycarbonate	1 country (Seychelles)
Polyphenylene oxide	1 country (Seychelles)

Table 8: Details of monomer and polymer restrictions

Regions	Monomer/Polymer	Restriction	Source
East African Community (EAC) (8 countries)	Polythene	Use, sale, manufacturing, and importation of **polythene** is regulated in all the East African Community Partner States. For the avoidance of any doubt, the elimination of **polythene** bags shall be complete in all the Partner States within one year from the coming into force of this Act.	The East African Community Polythene Materials Control Bill 2016
European Economic Area (EEA) (30 countries)	Polyethylene terephthalate (PET)	With regard to beverage bottles listed in Part F of the Annex, each Member State shall ensure that: (a) from 2025, beverage bottles listed in Part F of the Annex which are manufactured from **polyethylene terephthalate** as the major component ('**PET** bottles') contain at least 25 % recycled plastic, calculated as an average for all **PET** bottles placed on the market on the territory of that Member State; and (b) from 2030, beverage bottles listed in Part F of the Annex contain at least 30 % recycled plastic, calculated as an average for all such beverage bottles placed on the market on the territory of that Member State.	Directive (EU) 2019/904 of the European Parliament
European Economic Area (EEA) (30 countries)	Expanded polystyrene (EPS)	According to Art. 5, Member States shall restrict the placing on the market single-use plastic products listed in Part B of the Annex, including food and beverage containers and cups for beverages made of **EPS**.	Directive (EU) 2019/904 of the European Parliament
Countries	**Monomer/Polymer**	**Restriction**	**Source**
Antigua and Barbuda	Expanded polystyrene (EPS)	Ban on **expanded polystyrene** products in the food service industry	UNEP 2018 p.51 Table23
Belize	Ethylene	Found in Schedule 1 - Restricted Products: Of polymers of **ethylene** (bulk material of items stated in heading: other plates, sheets, film, foil and strip, or plastics, non-cellular and not reinforced, laminated, supported or similarly combined with other materials)	Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022

Belize	Propylene	Found in Schedule 1 - Restricted Products: Of polymers of **propylene** (bulk material of items stated in heading: other plates, sheets, film, foil and strip, or plastics, non-cellular and not reinforced, laminated, supported or similarly combined with other materials)	Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022
Belize	Polypropylene	Found in Schedule 1 - Restricted Products: **Polypropylene** (raw material for manufacturing of restricted product)	Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022
Belize	Styrene	Found in Schedule 1 - Restricted Products: Of polymers of **styrene** (bulk material of items stated in heading: other plates, sheets, film, foil and strip, or plastics, non-cellular and not reinforced, laminated, supported or similarly combined with other materials)	Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022
Belize	Polystyrene	Found in Schedule 1 - Restricted Products: **Polystyrene** (raw material for manufacturing of restricted product)	Environmental Protection (Pollution from Plastics) (Amendment) Regulations, 2022
Canada	Expanded polystyrene	Ban on foodservice made of **expanded**/extruded **polystyrene**	Single-use Plastics Prohibition Regulations (SOR/2022-138)
Canada	Polyvinyl chloride (PVC)	Ban on foodservice ware made of **polyvinyl chloride**	Single-use Plastics Prohibition Regulations (SOR/2022-138)
China	Polyethylene	(...) prohibitions on the production and use of thin plastic bags and **polyethylene** agricultural films, as well as on the production of plastic products with medical waste and imports of plastic waste.	Government of the PRC (2020)
China	Polyethylene terephthalate (PET)	Ban on the import of used plastics for use as raw materials, including plastic bags, films, and nets, and polyvinyl, styrene polymer, **PET**	UNEP 2018 p.51 Table 23
China	Polyvinyl	Ban on the import of used plastics for use as raw materials, including plastic bags, films, and nets, and **polyvinyl**, styrene polymer, PET	UNEP 2018 p.51 Table 23

China	Styrene	Ban on the import of used plastics for use as raw materials, including plastic bags, films, and nets, and polyvinyl, **styrene** polymer, PET	UNEP 2018 p.51 Table 23
Costa Rica	Polystyrene	A ban on single-use plastics (including **polystyrene**) in food service areas of government institutions.	UNEP 2018 p.51 Table 23
Dominica	Polystyrene	Ban on **styrofoam** cups and containers.	Karasik et al. 2020 p.285
Ecuador	Polystyrene	The manufacture and import, distribution, marketing, delivery, and use of containers or containers and glasses for food and beverages for human consumption when the containers are derived from **polystyrene**—whether expanded, extruded, or foam—and do not contain the minimum percentage of post-consumer recycled material in their composition	Government of Ecuador. (2020). Ley orgánica para la racionalización, reutilización, y reducción de plásticos de un solo uso.
England	Polystyrene	Single-use **polystyrene** food or drink containers, including cups, are banned.	UK Statutory Instruments 2023 No. 982
Germany	Polyethylene terephthalate (PET)	Mandatory deposit-refund scheme for disposable beverage bottles, including **PET** bottles	UNEP 2018 p.60 Table 27
Guyana	Polystyrene	The manufacture, use, distribution, and import of **polystyrene** containers for food service establishments is banned	UNEP 2018 p.51 Table 23
Haiti	Polyethylene	Ban on importing, manufacturing of black plastic **polyethylene** bags.	UNEP 2018 p.24 Table 7
Haiti	Polystyrene	The manufacture, import, and use of **polystyrene** products is banned.	UNEP 2018 p.51 Table 23
Macedonia	Ethylene	It is prohibited to release on the market bags for transport of goods made of **ethylene** polymers, poly (vinyl chloride) and/or other plastic materials.	Karasik et al. 2020 p.224

Macedonia	Vinyl chloride	It is prohibited to release on the market bags for transport of goods made of ethylene polymers, **poly (vinyl chloride)** and/or other plastic materials.	Karasik et al. 2020 p.224
Marshall Islands	Polystyrene	Ban on the importation, manufacture, sale and distribution of **polystyrene** cups and plates.	UNEP 2018 p.52 Table 23
Mauritius	Polyethylene terephthalate (PET)	No responsible person shall bottle or cause to be bottled any beverage in a **PET** bottle unless he is in possession of a permit, and shall submit to the Department an annual return in respect of the number of PET bottles produced, collected, recycled and exported.	Karasik et al. 2020
Norway	Polyethylene terephthalate (PET)	Environmental tax on manufacturers and importers of recyclable bottles in **PET** plastic.	UNEP 2018 p.57 Table 25
Palau	Polystyrene	Ban on disposable plastic and **polystyrene** beverage containers in government offices	Karasik et al. 2020 p.286
Panama	Polyethylene	The use of **polyethylene** bags in supermarkets, self-service checkout, warehouses or shops in general for the transport of products or merchandise is prohibited.	Karasik et al. 2020 p.236
Paraguay	Polyethylene	Gradual replacement of **polyethylene** bags with biodegradable bags	UNEP 2018 p.21 Table 4
Peru	Expanded polystyrene	The law prohibits production (for national use), import, distribution, and sale of the following: - **expanded polystyrene** (Styrofoam) plates, cups and utensils for human food consumption	Ley No. 30884 que Regula el Plástico de Un Solo Uso y los Recipientes o Envases Descartables
Republic of Korea	Polyethylene terephthalate (PET)	Ban on free distribution of disposable products, including **PET bottles**, plastic plates, utensils, cups and other disposable packages - these cannot be provided free of charge	UNEP 2018 p.52 Table 23
Republic of Korea	Polyvinyl chloride (PVC)	Manufacturers should not laminate or shrink-wrap with **PVC .**	Karasik et al. 2020 p.286

Rwanda	Polythene	Imported consumer goods packaged in **polythene** bags or single-use plastic items are subject to an environmental levy in accordance with relevant laws. The manufacturing, use, importation or sale of **polythene** bags and single-use plastic items are prohibited. Every authorized manufacturer, wholesaler or retailer of **polythene** bags or single use plastic items must put in place the mechanisms to collect and segregate used **polythene** bags or single use plastic items and hand them over to the recycling plants.	Karasik et al. 2020 p.196
Saint Lucia	Polystyrene	A person shall not import, manufacture, sell, use, or distribute a **Styrofoam** or plastic food service container as specified in Part A and B of the Schedule.	Styrofoam and Plastic Food Service Containers (Prohibition) Act No. 22 of 2019.
Saint Vincent and the Grenadines	Polystyrene	Ban on manufacture, use, sale, and import of all expanded **polystyrene** products in the food service industry.	UNEP 2018 p.52 Table 23
Saudi Arabia	Polyethylene	Prohibited to manufacture, advertise, sell, import, or use polypropylene and **polyethylene** plastics intended for one-time use, including personal care products, plastic bags intended for one-time use, and disposable foot products such as spoons, plates, and cups.	UNEP 2018 p.52 Table 23
Saudi Arabia	Polypropylene	Prohibited to manufacture, advertise, sell, import, or use **polypropylene** and polyethylene plastics intended for one-time use, including personal care products, plastic bags intended for one-time use, and disposable foot products such as spoons, plates, and cups.	UNEP 2018 p.52 Table 23
Scotland	Polystyrene	The Regulations make it an offence to supply, in the course of business, and to manufacture: single-use expanded polystyrene beverage cups, single-use expanded polystyrene beverage containers, and single-use expanded polystyrene food containers	Scottish Statutory Instruments 2021 No. 410

Seychelles	Acrylonitrile butadiene styrene	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, vinyl, lowdensity polyethylene, polypropylene, polystyrene resins, multi-materials like **acrylonitrile butadiene styrene**, polyphenylene oxide, polycarbonate, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23
Seychelles	Polyburtylene terephthalate	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, vinyl, lowdensity polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, **polyburtylene terephthalate.**"	UNEP 2018 p.52 Table 23
Seychelles	Polycarbonate	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, vinyl, lowdensity polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, **polycarbonate**, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23
Seychelles	Polyethylene	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, **high density polyethylene**, vinyl, **low density polyethylene**, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23

Seychelles	Polyethylene terephthalate (PET)	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as **polyethylene terephthalate**, high density polyethylene, vinyl, lowdensity polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23
		All beverage containers imported, manufactured, distributed, traded in or used shall be made of **PET** or glass. All beverage containers imported, manufactured, distributed, traded in or use shall be labeled by paper or **PET** film. All **PET** beverage containers shall have the standard symbol for PET moulded at the bottom or side wall of the container and the symbol of **PET** shall be clearly indicated on any label used.	Karasik et al. 2020 p.194
Seychelles	Polyphenylene oxide	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, vinyl, lowdensity polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, **polyphenylene oxide**, polycarbonate, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23
Seychelles	Polypropylene	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, vinyl, lowdensity polyethylene, **polypropylene**, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23
Seychelles	Polystyrene	Prohibition on the manufacture, import, distribution, and sale of **polystyrene** boxes.	UNEP 2018 p.52 Table 23

Seychelles	Vinyl	Prohibition on the manufacture, import, distribution, and sale of plastic utensils. Plastic is defined as: "material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, **vinyl**, lowdensity polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, polyburtylene terephthalate "	UNEP 2018 p.52 Table 23
Seychelles	Polyvinyl chloride (PVC)	The import, manufacture, trade and commercial distribution of **polyvinyl chloride** (PVC) labels shall be prohibited for the purpose of labeling beverage containers for use within the Republic of Seychelles	Karasik et al. 2020 p.194
Sri Lanka	Ethylene	The import of disposable polystyrene boxes and polymers of **ethylene**, styrene and vinyl chloride are controlled.	UNEP 2018 p.52 Table 23
Sri Lanka	Polyethylene	Ban on the manufacture, distribution and use of lunch wrappers made from **polyethylene.** The use of all forms of **polyethylene**, polypropylene, **polyethylene** products or polypropylene products as decoration in political, social, religious, national, cultural or any other event or occasion is prohibited.	UNEP 2018 p.52 T.23 Karasik et al. 2020 p. 248
Sri Lanka	Polypropylene	The use of all forms of polyethylene, **polypropylene**, polyethylene products or **polypropylene** products as decoration in political, social, religious, national, cultural or any other event or occasion is prohibited.	Karasik et al. 2020 p. 248
Sri Lanka	Polystyrene	Ban on the manufacture, distribution and use of food containers, plates, cups, and spoons made from **polystyrene**. Separately, the import of disposable **polystyrene** boxes is controlled.	UNEP 2018 p.52 Table 23
Sri Lanka	Polythene	Prohibit - The manufacture of **polythene** or any polythene product of twenty microns or below in thickness for in country use; and the sale or use of **polythene** or any polythene product which is 20 microns or below in thickness.	Karasik et al. 2020 p.244

Sri Lanka	Styrene	The import of disposable polystyrene boxes and polymers of ethylene, **styrene** and vinyl chloride are controlled.	UNEP 2018 p.52 Table 23
Sri Lanka	Vinyl Chloride	The import of disposable polystyrene boxes and polymers of ethylene, styrene and **vinyl chloride** are controlled.	UNEP 2018 p.52 Table 23
Switzerland	Polyethylene terephthalate (PET)	Dealers, manufacturers and importers who supply beverages in non-refillable **PET** or metal containers to consumers and who do not ensure the disposal of all containers they supply through financial contributions to a private organization, must: a. take back such non-refillable containers at all points of sale during all opening hours; b. pass such non-refillable containers on for recycling at their own expense. Dealers, manufacturers and importers who supply beverages in non-refillable **PET** or metal containers to consumers and who do not ensure the disposal of all containers they supply through financial contributions to a private organisation, must:..c. indicate clearly in easily visible places at the points of sale that they accept the return of these types of non-refillable containers.	Karasik et al. 2020 p.217
Switzerland	Polyvinyl chloride (PVC)	Dealers, manufacturers and importers who supply beverages to consumers must: a. mark refillable containers as such; this does not apply to restaurant businesses; b. indicate the amount of the deposit charged on deposit-bearing beverage containers; c. on non-refillable **PVC** containers indicate the name and address of a company in Switzerland that is obliged to take them back. Dealers, manufacturers and importers who supply beverages in non-refillable **PVC** containers to consumers must charge a deposit. They must take back non-refillable PVC containers of all the products they stock, refund the deposit and at their own expense pass the containers on for recycling. Exempted from these obligations are holders of restaurant businesses who ensure that non-refillable **PVC** containers are collected. The deposit shall be not less than CHF 0.30 for any non-refillable **PVC** container.	Karasik et al. 2020 p.217
Tuvalu	Polystyrene	The manufacture, sale, and distribution of **plastic foam** products (including polystyrene foam, board stock, egg cartons, food containers, disposable plates and cups, and horticulture netting) is banned.	UNEP 2018 p.52 Table 23

Uganda	Ethene	The importation, local manufacture, sale or use of sacks and bags of polymers of **ethene** and polyethene is prohibited.	Karasik et al. 2020
Uganda	Polyethene	The importation, local manufacture, sale or use of sacks and bags of polymers of ethene and **polyethene** is prohibited.	Karasik et al. 2020
Vanuatu	Polystyrene	The manufacture, distribution, use, and import of **polystyrene** products, including takeout boxes, food packaging, disposable plates and cups, and horticultural netting is banned.	UNEP 2018 p.53 Table 23
Wales	Polystyrene	EPS or XPS cups, takeaway food containers, and lids for cups or takeaway food containers are prohibited.	Acts of Senedd Cymru 2023 asc 2
Zimbabwe	Polystyrene	The manufacture, distribution, use, and import of **polystyrene** is prohibited, and any person who- (a) uses **polystyrene** in packaging to protect goods from damage during transportation or storage; (b) uses **polystyrene** in construction, shall take responsibility for recycling any **polystyrene** packaging material they manufacture and sell.	UNEP 2018 p.53 Table 23

Appendix 2: References for Table 1 and Table 2 on legislation for certain plastic items and polymers/monomers

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Appendix 3: Existing criteria and proposals for criteria for PUA products

1. A country-led informal technical dialogue, co-chaired by the United Kingdom and Brazil, developed a briefing report to inform INC-3 on possible criteria for control measures, including for problematic plastic products (UK and Brazil, 2023). The following criteria for **problematic plastics** gained highest level of agreement among experts nominated to take part in the process:

    - The product has a high propensity for being littered or ending up in the environment with low probability of degradation to safe chemicals.
    - The product has a high propensity for being littered or ending up in the environment.
    - The product contains microplastics that were generated and/or added during production (to obtain new product characteristics).
    - The product is made of oxo-degradable plastics that easily break down into microplastics.
    - The product has a high potential for being avoided (or replaced by a reuse model) while maintaining utility.
    - The product is not reusable, recyclable or compostable in practice and at scale.
    - The product has a propensity to create entanglement (esp. marine animals).
    - The product hinders or disrupts the recyclability or composability of other items.
    - The product has a propensity to be ingested by animals and microorganisms (aquatic and terrestrial).
    - The product contains polymers and chemicals of concern (subject to criteria being determined).

2. WWF's report by Eunomia identifies 17 core product groups for regulation, categorized into those needing elimination or reduction, and those requiring safe circulation and management (WWF, 2023). The report does not outline specific criteria, but uses a **risk-based approach for prioritization that factors in:**

    - Probability of the plastic ending up in the environment, and
    - The impacts on the environment and human health when this occurs.

3. European Commission proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC states that the following Annex I Product Parameters may be used as a basis for improving the product aspects referred to in Article 5(1) (European Commission, 2022b):

    - Durability and reliability of the product or its components.
    - Ease of repair and maintenance.
    - Ease of upgrading, re-use, remanufacturing and refurbishment.
    - Ease and quality of recycling.
    - Avoidance of technical solutions detrimental to re-use, upgrading, repair, maintenance, refurbishment, remanufacturing and recycling of products and components.
    - Use of substances, on their own, as constituents of substances or in mixtures, during the production process of products, or leading to their presence in products, including once these products become waste.
    - Consumption of energy, water and other resources in one or more life cycle stages of the product.
    - Use or content of recycled materials.
    - Weight and volume of the product and its packaging, and the product-to-packaging ratio.
    - Incorporation of used components.
    - Quantity, characteristics and availability of consumables needed for proper use and maintenance.
    - The environmental footprint of the product.
    - The carbon footprint of the product.
    - Microplastic release.
    - Emissions to air, water or soil released in one or more life cycle stages of the product.
    - Amounts of waste generated, including plastic waste and packaging waste and their ease of re-use, and amounts of hazardous waste generated.
    - Conditions for use.

4. The New Plastics Economy Global Commitment promotes the use of voluntary criteria for **problematic and unnecessary plastic packaging or plastic packaging components** among global commitment signatories in several countries (EMF, 2023). It includes the following list of criteria:
    - It is not reusable, recyclable, or compostable in practice and at scale.
    - It contains, or its manufacturing requires, hazardous chemicals that pose a significant risk to human health or the environment (applying the precautionary principle).
    - It can be avoided (or replaced by a reuse model) while maintaining utility.
    - It hinders or disrupts the recyclability or compostability of other items.
    - It has a high likelihood of becoming litter or ending up in the natural environment.
5. The report published by the Secretariat of the BRS conventions on global governance of plastics and associated chemicals conceptualizes a potential scope for plastic pollution (BRS, 2023). It includes a proposal to develop selection criteria for two following two groups of plastics products:
    A. **Problematic plastic products** may include plastics of any size that ultimately place unnecessary pressure on natural resources due to characteristics such as:
        - Made using, manufactured with, containing, or has contained chemicals or polymers of concern.
        - Difficult to reuse, recycle or compost.
        - A material that hinders, disrupts or obstructs opportunities to recover other materials or resources.
        - A proven contribution to the plastic litter problem
    B. **Unnecessary and avoidable plastic** may include those that:
        - Contain amounts of plastics that can be reduced, e.g., through development of alternate social and technical solutions to avoid the need for plastic.
        - Can be substituted with non-plastic fit-for-purpose alternatives,
        - Can be eliminated entirely without compromising the consumer's access to the intended functionality provided by the original product.
6. A concept note from Plastics Europe proposes the use of a decision-tree assessment (instead of a negative list) consisting of a hierarchical flow of questions to help identify and address either **problematic and/or avoidable plastic applications** (Plastics Europe, 2023). The following (non-exhaustive) criteria may be considered as part of this methodology:
    - An application's likelihood of contributing to plastic pollution during production, use or after use.

- Risks for human or animal health.
- The capacity to extend shelf life and ensure food and water safety while meeting sector-specific safety requirements.
- Environmental and climate benefits of the application.
- Socio-economic benefits of the application
- Compliance with minimum chemical safety requirements and good manufacturing practices (as laid out in the internationally recognised regulations such as REACH, GHS, CSA, TSCA, ISO and others)
- The capacity to optimize plastic content.
- Availability of recycling and waste management infrastructure and/ or feasibility to set up such within a reasonable timeframe.
- Potential for behavioural changes (at local/regional/national level)
    - Potential for redesigning the application in line with a life-cycle assessment including evaluation of the material usage to facilitate sorting of waste and the value of materials at their end of life.
    - Safe, responsible, and environmentally sound end-of-life treatment.

7. The Australian Packaging Covenant Organisation (APCO) acknowledges that although certain products are currently classified as problematic plastics, advancements in technology may eventually lead to their reclassification out of this category. According to APCO (2020), problematic plastic packaging refers to packaging that, at present, is:

    - Difficult to collect/recover for reuse, recycling or composting purposes; or
    - A material that hinders, disrupts or obstructs opportunities to recover other materials or resources; or
    - A significant contribution to the plastic litter problem; or
    - Manufactured with, contains or has contained hazardous chemicals or materials (e.g., PFAS, BPA) that pose a significant risk to human health or the environment.

8. The Canadian Single-use Plastics Prohibition Regulations (SOR/2022-138) provide technical guidelines that include performance criteria that differentiate between single-use and reusable items for four of the six product categories regulated, namely checkout bags, cutlery, foodservice ware, and straws (Government of Canada, 2023). Para A.5.1 states: Please note that the Government is aware of the issue of plastic straws and cutlery that may meet the reusability criteria of the Regulations but are essentially

single-use in practice. Analysis is underway to determine how to address this issue, so that only items that will actually be reused are allowed.

I. *Single-use plastic checkout bags (para B.1.1)*

   a. whose plastic is not a **fabric**[24] as defined in section 2 of the *Textile Labelling Act*; or

   b. whose plastic is a **fabric** as defined in section 2 of the *Textile Labelling Act* that will break or tear if the bag is

      i. used to carry 10 kg over a distance of 53 m 100 times; or

      ii. washed in accordance with the washing procedures specified for a single domestic wash in the International Organization for Standardization standard ISO 6330 entitled *Textiles—Domestic washing and drying procedures for textile testing*

II. *Single-use plastic cutlery (para B.2.1)*

   a. contains polystyrene or polyethylene, or

   b. changes its physical properties after being run through an electrically operated household dishwasher 100 times.

III. *Single-use plastic foodservice ware (para B.3.1)*

   a. is formed in the shape of a clamshell container, lidded container, box, cup, plate or bowl

   b. is designed for serving or transporting food or beverage that is ready to be consumed, and

   c. contains expanded polystyrene foam, extruded polystyrene foam, polyvinyl chloride, a plastic that contains a black pigment produced through the partial or incomplete combustion of hydrocarbons or an oxo-degradable plastic.
   SUP foodservice ware prohibited by the Regulations includes any plastic manufactured item that meets **all 3 of the criteria above (a, b and c)**.

IV. *Single-use plastic straws (para B.6.1)*

   a. contains polystyrene or polyethylene or

   b. changes its physical properties after being run through an electrically operated household dishwasher 100 times.
   Plastic straws made from a resin other than polystyrene or polyethylene and that can be washed in an electrically operated household dishwasher 100 times without causing changes to their physical properties are considered reusable.

24. Fabric means any material woven, knitted, crocheted, knotted, braided, felted, bonded, laminated or otherwise produced from, or in combination with, a textile fibre.

About this publication

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