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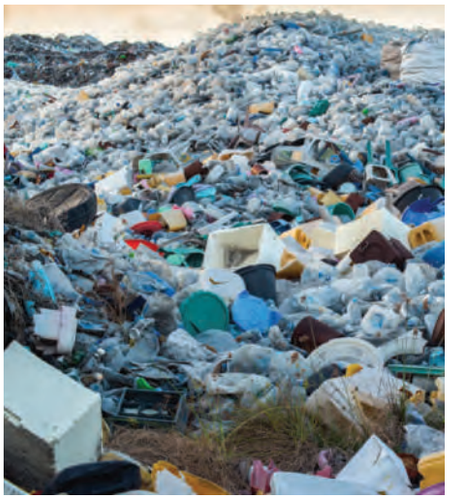
TACKLING PLASTIC POLLUTION:

Legislative Guide for the Regulation of Single-Use Plastic Products



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Abbreviations

CEN	European Committee for Standardization
EPR	extended producer responsibility
EUROPEN	European Organization for Packaging and the Environment
ISO	International Organization for Standardization
OECD	Organization for Economic Cooperation and Development
PE	polyethylene (polythene)
PET	polyethylene terephthalate
PP	polypropylene
UK	United Kingdom of Great Britain and Northern Ireland
UNEP	United Nations Environment Programme
US	United States of America
WRI	World Resources Institute

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Executive Summary

Overview

- Plastic products designed to be used only once before they are disposed of, termed "single-use plastic products", are increasingly regulated by Governments concerned about the environmental, social, health or other impacts of plastic waste and pollution.

- This guide is a tool to help legislators and policymakers explore options for reducing the harmful impacts of single-use plastic products by regulating their production and consumption, promoting alternatives and/or improving the management, recycling and final disposal of single-use plastic waste.

- The guide outlines the most used regulatory approaches and explains the main elements that legislators will need to consider when drafting legislation.

- Each type of regulatory approach is illustrated by examples of actions taken by governments around the world, including sample legal provisions.

Context

Concerns about the environmental and social harm caused by plastic waste and pollution have led to a surge in laws and policies designed to control the production and use of single-use plastic products. The legislation is not, however, always comprehensive or effective, and there is a lack of clear guidance on what should be included – guidance that governments will increasingly need.

This guide was developed to support the implementation of resolutions 1/6, 2/11, 3/7, 4/6 and 4/9 of the United Nations Environment Assembly, adopted at its first, second, third and fourth sessions in 2014, 2016, 2017 and 2019 respectively, which call on States to address the environmental impacts of marine plastic litter and pollution from single-use plastic products. Furthermore, in 2019 the European Union issued a new directive, 2019/904, on the reduction of the impact of certain plastic products on the environment, that will require member States to adopt national legislation banning certain single-use plastic products. The guide aims to aid legislators and policymakers around the globe, including those without expertise in the subject, in understanding possible regulatory approaches and the elements that should be included when they draft legislation.

About the guide

The guide is intended to be a practical tool for those working to develop laws and regulations to limit or manage single-use plastic products. It provides guidance on how to develop legislation on single-use plastic products, outlines the main regulatory alternatives, and suggests the key elements that each should include. It also provides guidance on the writing of clear and comprehensive laws and suggests key policy and drafting considerations. The guide gives examples of provisions from existing laws regulating single-use plastic products and more detailed information in the form of national case studies.

The guide draws upon a comprehensive global review of existing plastics legislation, *Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulations*, conducted by UNEP and WRI in 2018 (UNEP 2018c). The review mapped the status of legislation in 193 countries and classified the various forms of legislation. In addition, the guide relies on a review of literature on the impacts of these regulatory interventions, to the extent that such literature exists, conducted in the first half of 2019.

In writing the guide, existing regulatory approaches were mapped relying on the global review. Under each of the identified regulatory approaches, key elements were identified and then defined as the minimum components that legislators should incorporate or consider when crafting legislation or regulations using that particular approach. The elements were taken from a combination of better practices identified during the literature review, approaches used in existing laws and legal drafting principles. In each category of regulatory approach, representative legal provisions were selected, ensuring that the examples reflected a diversity of policy goals and geographical locations.

Developing legislation on single-use plastic products

Establish a baseline, consider the objectives and policymaking principles, select the right regulatory approach and engage in transparent and diverse consultations.

Baseline assessments can provide information on the environmental harm caused by single-use plastics, the realities of the market, consumer attitudes and the potential social impacts of a policy. They can also address the availability of sustainable alternatives and assess the comparative environmental impact of those alternatives throughout the product life cycle. Careful selection of the policy priorities and the regulatory approach can result in a law that is tailored to concerns identified in the baseline assessment. Rigorous, expansive consultations will limit later implementation challenges and ensure that stakeholders' concerns are incorporated into the legislation.

Use clear definitions, incorporate transparency and accountability mechanisms and articulate precise institutional roles and responsibilities

Single-use plastic regulation can involve technical terms that must be clearly explained to avoid confusion. Clear definitions will

aid subsequent implementation and interpretation. Transparency and accountability mechanisms must be considered where taxes or fees are collected, funds are created, and licences are allocated. Accountability mechanisms should ensure that there are opportunities for appealing enforcement of the law and making complaints. Institutional roles must be clearly defined, appropriate resources allocated and sufficient mandates for implementation granted to the appropriate authorities.

Principal regulatory approaches

Bans and restrictions directly prohibit the production, importation or exportation, distribution, sale or use of one or more single-use plastic products. When preparing legislation to ban single-use plastics, this guide recommends consideration of the following:

- Which single-use products the ban will target, along with precise definitions of each product.
- Which activities the legislation will target. It can cover any part of a product's life cycle from production through to use, or target one specific behaviour, such as the sale of the product.
- What exemptions will be established in the legislation. Certain types of plastic or certain uses of single-use plastics may be exempted from the ban for a variety of reasons, such as health and safety concerns or the lack of sustainable alternatives.
- Which alternatives to the banned products should be exempted from the scope of or promoted by the legislation, based on their environmental and other impacts.
- What the effective period of implementation should be, possibly involving a grace period for the implementation of a ban or a phased approach to the introduction of the new requirements.
- Which authorities should be responsible for enforcement, what enforcement mechanisms are needed and what penalties should be imposed for violation of the ban.

Economic instruments impose taxes to deter production or use of single-use plastics or offer tax breaks, subsidies or other fiscal incentives to encourage the production and use of alternatives to single-use plastic products.

In the preparation of legislation to impose taxes on single-use plastic products, the guide recommends consideration of the following:

- The point of charge, meaning when the tax is imposed, the level at which it is set and who will pay it.
- Which products are covered by the tax and what exceptions are allowed.
- The unit on which the tax is imposed, such as a single plastic bag or plastic amounting to a certain weight.
- How the tax will be documented, reported and collected, and which people or entities will be responsible for collecting it.
- How the tax revenues will be managed and by which agency and for what purpose the revenues will be used.

Fiscal incentives can take a wide variety of forms, depending on the behaviour that they are intended to incentivize. Laws can create tax incentives or subsidies for the production or sale of alternatives to single-use plastic products.

Product standards, certification and labelling requirements can be designed to target sustainable alternatives to single-use plastics or to mitigate the harm caused by single-use plastics.

In the preparation of legislation that includes standards, the guide recommends consideration of the following:

- What criteria and specifications will be imposed on single-use plastics, such as requirements related to the specific material composition or to features such as recyclability, reusability, compostability and biodegradability.
- How compliance with legislated standards will be verified and by which authorities or entities.
- What labels or marking on products will be required to show compliance with environmental standards.
- What enforcement mechanisms will ensure compliance with any legislated standards.

Extended producer responsibility (EPR) schemes use a combination of regulatory approaches to extend manufacturers' responsibility for single-use plastic products throughout their life cycle, including to the end-of-life stage.

An EPR scheme will include an "upstream" component, which focuses on the design and material content of products, with the goal of promoting more sustainable products (eco-design), and a "downstream" component, which requires that producers directly or indirectly take responsibility for the plastic waste from their products. In the preparation of legislation that includes EPR upstream, the guide recommends consideration of the following:

- Which producers and products will be targeted with the policy.
- Which types of product will be exempt from eco-design requirements.
- Which eco-design standards will be chosen, such as those that prioritize human health and safety (e.g., permitted levels of harmful substances) or technical performance (e.g., the degree of recyclability or permitted levels of recycled content).
- Whether economic instruments can contribute to the scheme by creating incentives for eco-design.
- How labelling requirements can help consumers understand which products meet eco-design standards.

Considerations for EPR downstream include the following:

- How to define the parties responsible, including which entities will be considered a producer.

- Which single-use plastic products will be covered by the EPR scheme.
- The type of EPR system, meaning the form of responsibility that will be imposed on producers.
- The roles and responsibilities of those responsible for implementing the EPR scheme, including whether producer responsibility organizations will be established.
- How to regulate the costs of the scheme and any fee structures.

Waste management legislation can be amended so that it better fosters opportunities for single-use plastics to be recovered, recycled or reused.

Waste management policies can take numerous forms, but involve support for the separate collection of different waste streams, either through the mandating of separate collection at the household and/or commercial level or waste separation at a later stage. Economic instruments such as landfill fees can target waste management practices. Legislation can support the waste management work of the informal sector or "waste pickers" by, for example, increasing compensation for their work or supporting formal recognition of their collectives. Legislators and policymakers may also need to address rules relating to exports or imports of plastic waste, including how new rules under the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) impact national practices. Similarly, national-level waste management legislation can support efforts to recycle single-use plastics. This support can take myriad forms, including funding for research and development, funding for acquisition of technologies for the recycling of single-use plastics, the harmonization of recycling standards at the local level or support for the design of recyclable products. Legislators may consider setting recycling targets, for example, a certain percentage of products to be recycled or of recycled content in new plastics. Targets may be paired with economic instruments, such as incentives and sanctions. Deposit-refund schemes, which require a deposit when plastic packaging is purchased, to be refunded if the packaging is returned, also seek to improve collection rates for higher-quality recycling. In the preparation of legislation that includes deposit-refund schemes, the guide recommends consideration of the following:

- What types of product the deposit will be imposed on and which products will be eligible for return.
- Whether the scheme will be centralized, with a deposit company that arranges and collects the fee, or use of a decentralized system with multiple different schemes for different products.
- How much the fee will be, how it will be collected and refunded, how uncollected deposits will be used and how the funds will be managed.
- What labelling requirements can signal that an item is subject to the scheme and inform customers that the item is returnable for a refund.

This guide also highlights the potential for governments to be creative in combining approaches or generating other solutions.

Other regulatory approaches that have been legislated to effect a change in consumer and producer behaviour include consumer education programmes, funds or prizes; public procurement requirements; reuse incentives; and public-private partnerships.

1. Introduction

Single-use plastic products, also referred to as disposable plastics, are common plastic items intended to be used only once by the consumer before they are disposed of. The definition of such plastics is discussed in box 1. Concerns about the environmental and social harm caused by plastic waste and pollution have led, in recent years, to a surge in laws and policies designed to control the production and use of single-use plastics. This trend dates from the early 2000s, when efforts to target the use of plastic bags first began. Since that time, there has been a steady increase in such legislation globally; by July 2018, at least 127 countries had adopted some form of legislation regulating plastics (UNEP, 2018d). Much of this legislation, however, is not comprehensive, addressing only certain single-use plastic products or only specific circumstances, and overall global consumption and circulation of single-use plastic products remains high.

Accordingly, policymakers are increasingly calling for more encompassing limitations on the production and consumption of single-use plastics and for improved post-use management. The United Nations Environment Assembly, at its first, second, third and fourth sessions, in 2014, 2016, 2017 and 2019 respectively, adopted resolutions 1/6, 2/11, 3/7, 4/6 and 4/9 to address the environmental impacts of marine plastic litter and pollution from single-use plastic products. Stressing the importance of the long-term elimination of the discharge of litter and microplastics to the oceans, the resolutions call on States Members to develop national actions to address the environmental impacts of single-use plastics. Resolution 4/9 also encourages States Members to develop and implement national or regional actions, as appropriate, in order to address the environmental impact of single-use plastic products, to take comprehensive action with regard to single-use plastic products in addressing related waste through, where appropriate, legislation and to take other actions to promote alternatives to single-use plastics, improve waste management and develop sustainable consumption patterns. Policymakers are also urging all actors to step up actions to achieve Sustainable Development Goal 14, which is, by 2025, to prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution (United Nations, 2015). This guide therefore aims to help States that are developing national legislation on plastic, including single-use plastics, in response to these resolutions.

Regionally, in 2019, the European Union issued a new directive, 2019/904, on the reduction of the impact of certain plastic products on the environment, which will require States Members to adopt national legislation banning certain single-use plastic products and improving the management of others to reduce their impact on the marine environment. Some of the measures, including a ban on specified products, must be in place by 3 July 2021. Although less authoritative than the European Union, other regions, such the Caribbean and the Pacific, have seen some momentum in the coordination of legislation on single-use plastic products (Chappell, 2018). The East African Community has for several years been considering a polythene materials control bill, which would create a common commitment to banning plastic bags.

Recent developments relating to global waste management may provide further incentive for countries to amend laws on single-use plastic products. After China introduced a ban on the importation of 24 kinds of solid waste, including plastics, in 2017, top waste-producing countries have scrambled to deal with accumulating plastic waste. Much of that waste has been diverted to poorer countries, which object to being treated as a dumping ground (Freytas-Tamura, 2018; Holden, 2019).

In May 2019, at its fourteenth meeting, the Conference of the Parties to the Basel Convention, which comprises 186 countries and one regional economic integration organization, amended Annexes II, VIII and IX to the Convention with a view to enhancing control of the transboundary movements of plastic waste and clarifying the scope of the Convention as it applies to such waste. These changes will require adjustments to national policies and regulations regarding plastic waste management worldwide.

1.1 About the guide

This legislative guide is intended to help policymakers and legislators who are seeking to develop legislation that addresses the continuing reliance on single-use plastic products to avert the longer-term environmental, social and economic harm caused by plastic litter and plastic pollution. It complements existing documents available to policymakers and legislators, providing guidance on the development of legislation on plastic pollution, outlining the main regulatory options and making recommendations on the elements to be included in each option. It provides guidance on the writing of clear and comprehensive laws and suggests key policy and drafting considerations. It also gives examples of provisions from existing laws regulating single-use plastic products.

The main audiences of the guide are policymakers, lawyers and legislators. Civil society and the broader community working to develop better regulations on plastic pollution may also find it useful. The guide is designed in such a way that policymakers themselves can determine which sections are relevant to their policy approach and the legislation that they are crafting. Nevertheless, it is hoped that this guide will be used in a holistic manner. Some of the most effective plastic pollution policies are those that combine a variety of legislative approaches. Furthermore, a holistic reading of the guide will help policymakers understand the range of approaches available to them. While comprehensive research on the environmental and other impacts of each of these approaches is lacking, some preliminary comments on the potential challenges relating to each of them is offered. Policymakers will need to consider these carefully, preferably in the light of environmental studies and consultations that explore further the potential environmental, social, economic and other impacts of each given approach.

There is no one-size-fits-all approach to regulating single-use plastic products. This guide gives examples of existing legislation and identifies common elements of such legislation based on a global comparative study. Nevertheless, economic, political, social and other contexts will always require the tailoring of policies to the local context. For this reason, the present guide emphasizes the importance of baseline studies and extensive consultations with key stakeholders.

Box 1: What is a single-use plastic product?

The guide considers single-use plastic products to be plastic bags and plastics commonly used for the packaging, wrapping or handling of goods, cutlery, plates, straws, drink stirrers, drink and food containers, plastic cotton buds, balloons, tobacco products with filters, wet wipes and sanitary towels. It does not include in the definition microbeads, plastic toys, fishing gear or pellets.

Different jurisdictions, however, should determine the scope of any such definition based on the materials to be regulated. Laws may therefore differ in terms of the types of plastic that they cover. For example, the 2019 European Union directive, 2019/904, on the reduction of the impact of certain plastic products on the environment provides the following guidance to member States in defining single-use plastics:

> "(12) … the term **'single-use plastic product'** should be defined. The definition should exclude plastic products that are conceived, designed and placed on the market to accomplish within their life span multiple trips or rotations by being refilled or reused for the same purpose for which they are conceived. Single-use plastic products are typically intended to be used just once or for a short period of time before being disposed of. Wet wipes for personal care and domestic use should also be within the scope of this Directive, whereas industrial wet wipes should be excluded. To further clarify whether a product is to be considered a single-use plastic product for the purposes of this Directive, the Commission should develop guidelines on single-use plastic products. In view of the criteria set out in this Directive, examples of food containers to be considered as single-use plastic products for the purposes of this Directive are fast-food containers or meal, sandwich, wrap and salad boxes with cold or hot food, or food containers of fresh or processed food that does not need further preparation, such as fruits, vegetables or desserts. Examples of food containers that are not to be considered as single-use plastic products for the purposes of this Directive are food containers with dried food or food that is sold cold requiring further preparation, containers containing food in more than single-serve portions or single-serve portion-sized food containers sold in more than one unit. …*"Article 3*
>
> Definitions
>
> …
>
> (2) **'single-use plastic product'** means a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for refill or re-used for the same purpose for which it was conceived;"

Single-use plastic products may be composed of a variety of types of plastic but differentiating between these various types may be important for recycling or waste management purposes. The Plastics Industry Association provides a categorization that is commonly used by manufacturers and consumers. These are:

1. Polyethylene terephthalate (PETE or PET)
2. High-density polyethylene (HPDE)
3. Polyvinyl chloride (PVC or V)
4. Low-density polyethylene (LPDE)
5. Polypropylene (PP)
6. Polystyrene (PS)
7. Other plastics (OTHER)

The guide comprises four sections. This first section introduces the challenges posed by single-use plastics and describes the purpose of the guide, its intended audiences and the limitations of its use. It also sets out the methodology employed in preparing the guide. The second section outlines the preliminary assessments that policymakers should undertake before developing a new law or regulation. The third and main section of the guide examines the regulatory approaches currently being used to manage the impact of single-use plastic products. For each approach, the guide examines the key elements that should be included in potential interventions, offers sample legal provisions from existing legislation and provides at least one case study. The fourth section examines some of the alternative approaches that countries have developed to address single-use plastics.

1.2 Caveats and limitations

Comprehensive research on the social, environmental and economic consequences of the various policy interventions used to regulate single-use plastics products is lacking. There is, however, a pool of relatively robust literature evaluating whether plastic bag bans and levies have resulted in reduced plastic bag consumption. Nevertheless, even in that area, research into the broader impacts of the policies and their effectiveness remains limited and the literature inadequately addresses the impacts of such policies in lower-income countries. The literature on other policies that target single-use plastic products remains sparse, partly because many of the policies are relatively new. The lack of a strong evidence base limits the ability of this guide

to make recommendations regarding good practices; in some instances, the authors were able only to map existing examples of legislation and not their ensuing success or failure. It is therefore particularly important that Governments conduct their own assessments of and research into the potential impact of the policies proposed.

Some preliminary consideration has been given to the potential effects of the various policy approaches, informed by a review of the literature. This guide does not, however, engage in a broader debate about the best policy approaches for regulating single-use plastic products. For example, concerns exist about the wider environmental impact of banning certain single-use plastics if consumers replace them with other environmentally harmful choices. Some of these policy issues are briefly discussed, such as those relating to the use of alternatives to plastics, but more comprehensive discussion is beyond the scope of this guide.

Finally, while a wide variety of laws are examined to show potential regulatory options, the fact that this is an English-language guide means that the selection of legal provisions is skewed towards English-speaking countries or countries where good translations are available. Where possible, we have summarized non-English laws in a narrative form, including some French- and Spanish-language laws.

1.3 Methodology

This legislative guide draws upon two streams of research. The first is a comprehensive global review of existing plastics legislation carried out by UNEP and WRI, *Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulations* (UNEP, 2018c). The review examined legislation in 193 countries, using one set of indicators relating to plastic bag regulations and a similar set of indicators relating to single-use plastics regulations more generally. The indicators, which can be examined in full in tables 42 and 43 of the review, provide a detailed classification of the scope and nature of the regulations examined with respect to manufacture and production, use, disposal and trade for plastic bags and for single-use plastic products. For each of the four categories there were indicators relating to the overall regulatory approach, the materials being regulated, responsibility for the payment of fees and taxes, and the extent of the prohibition or ban. This information was used to comprehensively map the existing landscape of single-use plastic regulations.

The second research stream is a literature review that was conducted in the first half of 2019 to examine the impact of existing laws and policies and related successes and challenges. The literature review focused on reports from authoritative sources, published academic studies and policy documents. Owing, however, to the limited existence of literature evaluating the impact of specific regulatory approaches, news articles, websites and other less formal sources were also considered. The literature review sought to identify the following:

- Legislative approaches with some positive impact on single-use plastic reduction, reuse or recycling
- Evidence of gaps in legislative or regulatory approaches
- Information indicating successes, failures or unintended consequences in implementation, enforcement or compliance
- Legal regulations using a circular economy approach
- The reasons for adoption of the chosen method of regulation

Initially, the literature review focused on identifying any studies or reports that provided overall commentary on regulatory approaches, followed by review of those that focused on specific approaches. The findings of the 2018 global review were then used to delve deeper into certain issues. For example, using the countries identified in the global review as having specific types of policies, specific searches were conducted to try to identify any subsequent information on the implementation or impacts of that particular regulatory approach in those countries.

The legislative guidance covers four categories of regulatory approach that can be adopted for single-use plastic products: bans and restrictions; economic instruments; standards, certification and labelling; and post-consumer use and product end of life. In each of these categories, threefold analysis was conducted, informed by (i) the legislation review; (ii) the literature review and basic principles of legislative drafting; and (iii) applicable provisions in relevant international soft law documents.

First, under each of the four categories, the range of existing national regulatory approaches were mapped, using the global review of legislation to identify the main types and the extent to which had been adopted by countries. Key elements under each regulatory approach were then identified, which were defined as the minimum components that need to be incorporated or considered during the design of that type of legislation. The elements were chosen based on a review of existing laws and legal drafting principles.

Second, representative legal provisions were selected to highlight various features of the regulatory approach examined in each section. In selecting these provisions, the following factors were considered:

- Whether the examples were representative of the major regulatory approaches
- Whether the examples reflected diverse policy approaches to regulating single-use plastic products and diverse legal avenues for achieving those goals
- Whether there was geographic diversity among the countries that had enacted the selected provisions

Although the provisions were selected to highlight a diversity of approaches rather than good practices, consideration was made on whether they reflected principles of international environmental law, such as the "polluter pays" principle, and other standards in other international instruments; whether the choice of approach was rooted in a baseline assessment of the particular country's reliance on single-use plastic products; and whether the policy had had an actual impact on the management of single-use plastic products, where evidence was available.

Third, although this guide does not attempt to map in a comprehensive manner the impact or policy consequences of the various interventions, each section includes a short summary of policy concerns and possible unintended impacts that drafters may want to consider. Case studies are also featured throughout the guide, which may offer insight into the impacts, lessons learned and challenges resulting from a particular regulatory intervention. These sections of the guide are informed by the literature review and deal with the environmental impacts of various approaches, implementation and enforcement issues and possible secondary consequences, such as social or economic impacts. Given the limited existing literature on these issues, however, the sections should be considered as preliminary. They are included to offer guidance on what kinds of questions policymakers should ask as they conduct impact assessments or engage in consultations in relation to a proposed single-use plastic regulation.

2. Key considerations in drafting legislation on single-use plastics

The first part of this section looks at the main choices policymakers must make when developing legislation on single-use plastic legislation. These include:

- establishing a baseline
- considering objectives and policymaking principles
- selecting the appropriate regulatory approach
- engaging in transparent and diverse consultations.

The second part makes some recommendations to guide the legal drafting process, focusing on how drafters can plan ahead to avoid common difficulties in implementing legislation on single-use plastics, including the monitoring and evaluation of enforcement.

2.1 Developing legislation on single-use plastic

Establish a baseline

Before enacting legislation regulating single-use plastics, Governments should consider conducting their own baseline assessments to obtain an understanding of which single-use plastic products are most prevalent and problematic in their nation. In the assessment, Governments should identify the sources of those plastics and the reasons that they are problematic and identify their social, economic and environmental impacts (UNEP 2018d). Assessments should also seek to determine the perceptions of consumers, industry and other stakeholders regarding single-use plastics and their willingness to accept regulatory interventions. This is important for anticipating potential implementation challenges or public backlash. Establishment of a baseline will also facilitate the monitoring of results, which is essential for measuring the effectiveness of a policy intervention in combating plastic waste and pollution.

Baseline assessments can ensure that the legislation targets the most problematic plastic products and determine what alternatives are already known and available. For example, the 2019 European Union directive, 2019/904, on the reduction of the impact of certain plastic products on the environment identifies a list of single-use plastic products that will no longer be marketed in the region based on the most common sources of plastic litter in the Union. It is estimated that the plastics on the list account for 86 per cent of plastic litter on European beaches. For some other plastics, a ban was not considered a feasible option because sustainable alternatives were not yet available. For these, the directive adopted alternative regulatory approaches. In this way, it combined consideration of which products were harmful with consideration of the extent of change that consumers could realistically handle.

Another key tool for policymakers is a regulatory impact assessment, which maps the potential impacts of a proposed policy approach. Good practice is for such assessments to examine the potential economic, social and environmental consequences of the proposed regulatory change, including who will likely benefit and who will bear the costs. They also identify what mix of policies would be needed to achieve the identified public policy goals (Organization for Economic Cooperation and Development (OECD), 2012).

Regulatory impact assessments are helpful for planning specific regulations. For example, a recent study prepared for the Government of the United Kingdom of Great Britain and Northern Ireland evaluated a proposed ban on plastic straws, plastic-stem cotton buds and plastic drink stirrers. The study examined two different scenarios – a ban or no ban – to aid legislators in choosing the approach. Under each scenario, it assessed the current market for each product, evaluated stakeholder perceptions of a ban, examined social and economic impacts and identified implementation risks. It also looked at the environmental impacts of each approach and conducted a life-cycle assessment (United Kingdom, 2019).

A life-cycle assessment is a key tool at this stage. It entails a "cradle-to-grave" evaluation of the resource use and environmental risks associated with a product (Curran, 2016). This tool can guide legislators in considering how to regulate a product throughout its life cycle, thereby minimizing the harm caused by the product at various stages, and in considering what alternatives to promote over others.

Consider the objectives and policymaking principles

Generally, Governments should bear in mind the relevant international treaty obligations by which they are bound, such as those of the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention) and the Basel Convention. States may have responsibilities under such treaties to take steps to minimize the generation of plastic waste, ensure the environmentally sound management of plastic waste and control transboundary movements of hazardous plastic waste. Members of the European Union also have obligations under the 2019 directive 2019/904 on the reduction of the impact of certain plastic products on the environment.

Beyond their international commitments, policymakers should decide what they wish to accomplish through the legislation. The main objectives will vary depending on domestic factors such as local policy priorities, environmental and pollution concerns, consumer habits, industry and business concerns, national and local government goals and the political situation.

Possible objectives include:

- Reducing plastic pollution
- Reducing the amount of plastic in landfills
- Easing waste management burdens or reducing costs for the Government
- Addressing the specific public health impacts of plastic as opposed to other materials

- Complying with regional regulations and standards
- Reducing marine ocean debris and harm to wildlife
- Encouraging a shift in consumer behaviour towards the use of more sustainable alternatives
- Improving overall environmental regulatory standards
- Reducing the volume of single-use plastic products entering the market or increasing recycling

Table 1 gives examples of how different types of legislation can support different policy aims.

- **Circular economy:** In a traditional linear economy model, resources are extracted, made into products and disposed of. A circular economy model may emphasize eliminating waste; increasing reuse, recycling and recovery of materials; reducing use of finite resources and shifting to renewable alternatives; and decreasing negative elements such as pollution (Ellen MacArthur Foundation, 2015; Kirchherr, Reike and Hekkert, 2017; World Economic Forum, 2014). Box 2 gives an example of how this policy approach might influence legislation.
- **"Polluter pays" principle:** Under the "polluter pays" principle, environmental policies seek to place the cost of pollution on the person or entity responsible for generating it. Such approaches may suggest the use of economic instruments to internalize the costs of health, environmental or other harm caused by producers.

Table 1: Examples of policy approaches and possible legislative responses

Type of policy	Ban	EPR up-stream	EPR down-stream	Tax	Procurement rules	Fees	Standards/ labelling
Supporting alternatives to single-use plastic products	✓	✓		✓	✓	✓	✓
Promoting reuse	✓	✓			✓	✓	✓
Developing recycling markets		✓	✓	✓	✓		✓
Shifting economies away from the production of single-use plastic products	✓	✓		✓		✓	✓
Increasing the provision of funding to improve waste collection			✓	✓		✓	
Reducing problematic single-use plastic products	✓	✓		✓		✓	✓

Governments should also consider the environmental policymaking approaches that they wish to govern the legislation. The following are particularly important in the context of legislation on single-use plastic products and are well developed in international discourse:

- **Waste management hierarchy:** At the global level, the waste management hierarchy concept encompasses prevention, minimization, reuse, recycling, other types of recovery, including energy recovery, and final disposal. Waste prevention should be the preferred option in any waste management policy. This policy approach may inspire a regulatory choice focused on the production of and consumer demand for single-use plastic products instead of on recycling and waste recovery efforts.
- **Just transition:** The concept of "just transition" involves ensuring that the move to a sustainable economy integrates the "goals of decent work for all, social inclusion and the eradication of poverty" (International Labour Organization, 2015). This principle can help legislators consider the impacts of single-use plastic policies on groups that may not have a voice in high-level environmental policy debates or people that may lose their jobs because of legislative changes. It may mean developing creative policies that promote economic and employment opportunities relating to alternatives to single-use plastic products; supporting those whose livelihood is highly dependent on single-use

plastic products; and involving representatives of diverse sectors and backgrounds into the policymaking process.

The clear definition of the objectives and policymaking approaches is crucial when choosing a regulatory approach that will help accomplish objectives while reflecting government priorities. The objectives and principles can be incorporated into preambular language or set out in an objectives section of a law to guide subsequent interpretation and implementation of that law. Such principles can also be helpful in situating legislation in a broader policy framework, by informing the direction of government policies and strategies that accompany the development of that legislation.

Box 2: The European Union circular economy strategy and single-use plastic products

In the European Union, the circular economy concept is a key component of environmental policy. The European Union Action Plan for a Circular Economy (European Commission, 2015) identified plastics as a priority, resulting in the adoption of a European Strategy for Plastics in a Circular Economy (European Commission, 2018). The strategy focuses on the identification of materials, products and business models that are alternatives to traditional plastic use and on the identification of "circular after-use pathways for plastics" (Crippa and others, 2019).

The 2019 European Union directive, 2019/904, on the reduction of the impact of certain plastic products on the environment also incorporates the principle of the circular economy:

> "(1) … The European Strategy for Plastics is a step towards establishing a circular economy in which the design and production of plastics and plastic products fully respect reuse, repair and recycling needs and in which more sustainable materials are developed and promoted. The significant negative environmental, health and economic impact of certain plastic products calls for the setting up of a specific legal framework to effectively reduce those negative effects.
>
> (2) This Directive promotes circular approaches that give priority to sustainable and non-toxic reusable products and reuse systems rather than to single-use products, aiming first and foremost to reduce the quantity of waste generated."

Select the appropriate regulatory approach or combination of approaches

Which regulatory approach, or combination of regulatory approaches, will lead to the desired policy outcome? Section 3 of this guide explores some of the main regulatory approaches currently in use and offers a brief commentary on the potential challenges associated with each approach. It does not give definitive recommendations, however, given the lack of conclusive evidence of the impacts of each approach. For this reason, it is crucial that Governments, when choosing an approach, take measures such as the conduct of baseline assessments, life-cycle assessments and environmental impact assessments.

One of the most visible and well-known regulatory approaches is the banning of one or more types of single-use plastic products. Bans can prohibit production, importation, use, sale and/or possession of certain products. Plastic bags, for example, are common targets for retail bans, but some Governments are now considering bans on Styrofoam, plastic straws and other single-use plastics (Schnurr and others, 2018). Bans, however, generally contain exceptions for certain uses or in certain contexts (UNEP, 2018d).

Economic instruments can be used to shrink the market for single-use plastics by altering behaviour. These may include economic disincentives such as levies, including special environmental taxes or fees for those who manufacture, import, sell or buy single-use plastic products. Incentive-based approaches may provide funding, for example via grants or awards, for projects such as new recycling initiatives or design innovations relating to sustainable alternatives to single-use plastic products. Some approaches combine incentives and disincentives, such as deposit-refund schemes, which impose an initial financial penalty, but then reimburse that cost after some compensatory behaviour occurs (such as the return of a bottle for recycling).

Regulatory standards compel public- and private-sector actors to adopt certain kinds of behaviour. Product design standards require manufacturers to comply with measures designed to make plastic products more reusable or less harmful after their disposal. Standards for waste management can require local or municipal governments and the private sector to engage in some minimum level of recycling, waste sorting or other waste management activities. Governments may also impose internal rules requiring government entities or government contractors to reduce their own use of single-use plastic products, by influencing public procurement.

Other regulatory interventions include consumer-education initiatives; support for research into alternatives to single-use plastics; collaboration with industry to develop voluntary initiatives or agreements to reduce the manufacture or circulation of single-use plastic products; and support for smaller-scale businesses or cooperatives that produce sustainable alternative products.

This legislative guide is structured by type of regulatory mechanism, such as bans, economic instruments and standards. Regulators should, however, consider whether they need one instrument per policy objective or a combination of instruments to target various types of consumer behaviour,

address multiple points of the life cycle of a single-use plastic and combine long-term and short-term initiatives, thereby creating a more comprehensive policy intervention. A combination of waste collection, product replacement and regulatory strategies, for example, may be more effective than relying on a single strategy (Godfrey, 2019). Failure to consider a range of approaches can have unintended consequences. For example, a product ban, particularly one that is not well enforced, may create a black market for the product which, in turn, can create a waste management problem because there are no longer any programmes for recycling or otherwise disposing of the banned item. Similarly, failing to engage in education and awareness-raising campaigns may translate into insufficient public support for an initiative and a lack of change in consumer behaviour.

Legislators should consider how different mechanisms can be used to complement one another to address the entire plastic life cycle. They should also consider the focus of the policy, some of which are outlined in table 2.

A combination of national, subnational and city-based approaches may also be appropriate to ensure that local policies complement national legislation. The time frame for implementation of the measures should also be evaluated. More ambitious legislative initiatives, such as a total ban on certain products, may not be immediately feasible. A gradual or incremental approach may sometimes be preferable to allow for shifts in the economy or in public sentiment. Box 3 provides examples of countries that have adopted a combination of regulatory approaches.

Engage in transparent and diverse consultations

Standards for transparency and participation in the development of policy and legislation can be found in Principle 10 of the Rio Declaration adopted by some 128 countries at the United Nations Conference on Environment and Development (United Nations General Assembly, 1992). The Declaration establishes that "environmental issues are best handled with the participation of all concerned citizens, at the relevant level." To enable such participation, Governments should ensure that all information related to policymaking on single-use plastics is readily available to the public. Draft laws, proposed regulations, background documents, survey results, research reports and any other information should be freely available online and through other widely used media sources in the country.

Table 2: Potential focus of the legislative approach depending on the target

Focus	Production/importation	Distribution	Purchase/use	Disposal/ end of life
Producer-focused	Downstream EPR Material content and design Taxes Bans/restrictions Incentives		Labelling Standards	Downstream EPR Material content and design
Retailer-focused		Bans/restrictions Downstream EPR	Fees Downstream EPR	
Customer-focused (Household/ industry)			Shifting consumers towards sustainable alternatives Pay-as-you-go schemes Information Awareness Downstream EPR Taxes Procurement rules	Waste management legislation Post-consumer regulation

Box 3: Country examples: combining regulatory approaches

In **Paraguay**, Law No. 5414 of 2015 on promotion of the reduction of polyethylene plastic use and establishment of a prior importation licence regime for plastic bags and biodegradable bags combined a consumer plastic bag fee with a requirement that retailers gradually phase out single-use plastic bags and replace them with reusable bags or those made with alternative materials.

In **Israel**, during the first weeks following the introduction of a plastic bag levy under the 2016 Law for the Reduction of the Use of Disposable Carrying Bags, the Ministry of Environmental Protection subsidized the distribution of reusable bags at participating supermarkets (Israel, 2017).

Finland has combined several interventions, including a beverage packaging tax (applied when products enter the market), a voluntary deposit-refund scheme and a behavioural-change campaign. The combination of approaches has helped to ensure high rates of return under the deposit system. Producers who participated in the voluntary deposit-refund scheme were eligible for exemption from the beverage packaging tax, creating an incentive to join the deposit-refund scheme (Ettlinger, 2016). The deposit system covers a large spectrum of beverage containers and the return rates of plastic beverage packaging are as high as 92 per cent.

Governments should also actively engage with and consult key stakeholders. An example of such engagement can be found in box 4. In the case of single-use plastic products, retailers and manufacturers can be a powerful lobby that crosses national borders, and they may be significantly affected by a ban. Consultations early in the process can help prevent challenges later. It is equally important, however, that Governments reach out to less organized and less vocal groups. Smaller retailers and street vendors may be disproportionately affected by price fluctuations caused by policies targeting single-use products because they are less able to absorb the cost. In some countries, waste pickers and waste-picker associations manage part of the plastic waste and should be included in discussions about proposed regulatory changes.

Consultations should also offer opportunities for various consumer groups to voice concerns about the impact that a policy may have on them. This can be accompanied by outreach specifically to organizations representing the interests of women, minority groups, persons with disabilities, young people and others.

Engaging in consultations can be key to the success of a policy. In Antigua and Barbuda, a comprehensive, multiple-round consultation process helped identify and resolve challenges, strengthening the subsequent success of the ban (UNEP, 2018b). In contrast, Botswana suspended its implementation of a planned plastic bag ban in order to conduct further rounds of public consultation. This was partly due to backlash from the business sector, which felt that it had been inadequately consulted about the policy (Selatlhwa, 2018; Tebele, 2018).

Box 4: Example of a consultative approach: Western Australia

In 2017, the Department of Water and Environmental Regulation of the state of Western Australia released a discussion paper describing its planned approach to public consultations on a proposed phase-out of single-use plastic bags and sought feedback on the proposed policy. It presented the government's "preferred option" (in this case, a state-wide ban), but also invited suggestions for alternative approaches. The paper included precise instructions on how to submit opinions, which could be done through an online survey or in writing. It clearly explained the planned policy and the government's reasons for wanting to adopt it. It also presented specific questions, targeted to various stakeholders (Australia, 2017).

Following the release of the discussion paper, the Department also conducted a telephone survey of 400 people, held 6 initial stakeholder workshops, then conducted a series of 15 community workshops (Australia, 2018). The consultations were conducted in partnership with the Boomerang Alliance, a coalition of community and environmental groups familiar with campaigning on plastic waste issues. The consultation resulted in a greater number of options being presented for action and provided information important for implementation. A total of 84 per cent of respondents supported a ban on lightweight single-use plastic bags, including biodegradable and compostable bags. The state government decided to reduce plastic bags through a state-wide ban that targeted lightweight single-use plastic bags but included a number of exemptions, including dog waste bags, nappy bags and produce (barrier) bags

2.2 Legal drafting considerations

A comprehensive discussion of good legal drafting practices is beyond the scope of this guide. This section instead highlights a few areas where, based on the law and the literature reviews, we believe that special care should be taken by legislative drafters.

Definitions

It is crucial to establish clear definitions in the law to avoid confusion during implementation and to facilitate interpretation and enforcement by the courts. Precise definitions of which products and materials are governed by the policy are particularly important, as are explanations of the activities that are regulated. Care should be taken when setting standards, as terms such as biodegradability and compostability, if poorly defined, can create confusion and have unintended environmental impacts. The is further discussion of standards in the subsection 3.1, "Bans and restrictions". Some technical standards or terms may be better defined in regulations rather than in a primary law, in which case the primary legislation should clearly identify who is responsible for defining such terms in the subsequent regulation.

Transparency

The principle of transparency should be followed throughout the legislation or policy, but it is particularly important in legal provisions governing the funds used to implement policies and the funds raised as a result of any intervention. This means considering:

- How and when any taxes, levies, fees or penalties will be collected
- Who will collect them
- Where these funds will be held and managed
- What accounting system will be used
- What the funds will be used for
- How and when updates will be provided to the relevant stakeholder groups

There must also be transparency about the allocation of licences and the awarding of any grants or contracts in order to facilitate public trust in waste management and recycling schemes.

Accountability mechanisms can be a means of ensuring greater transparency. Policymakers should consider providing for a complaints mechanism in the law to allow the public to report misconduct or object to the way single-use plastics policies are being enforced. Similarly, where the laws impose fines or other penalties, opportunities for appeal should exist, to allow for the contesting of mistakes and to guard against the corrupt or otherwise improper imposition of penalties.

Roles and responsibilities

Precise definitions of institutional roles and responsibilities can prevent subsequent inter-agency disputes or implementation challenges. Legislators should consider factors such as:

- Which authorities are responsible for carrying out the tasks created by the new policy
- Whether these authorities have a sufficient mandate to fulfil those responsibilities
- Whether these authorities have sufficient financial and human resources to fulfil their mandate and whether estimates of the anticipated costs and necessary resources are available
- Whether there are mechanisms in place to ensure institutional cooperation
- Whether the responsibilities are clearly allocated among federal and local or state authorities and whether local authorities have the resources to implement federal directives
- Which agencies are responsible for data collection, whether monitoring and evaluation or assessment of compliance have been considered and how institutions will work together
- Which institutions are responsible for accountability measures and which are empowered to receive complaints or provide redress to aggrieved stakeholders

These considerations are particularly important when establishing committees, task forces or working groups responsible for implementing a law. Special care should be given to determining who should sit on these committees and in what capacity. For example, waste management (which is often decentralized) may involve coordination across local and national offices and among a variety of specialized departments. The potential complexity is shown in box 5, which describes the large number of people included in the committee established by the legislation in India. Given this potential complexity, legislation should consider the goals of such entities and whose voices must be included therein. In addition, the legislation should provide clear guidance on how such entities are organized, how often they must meet, the scope of their responsibilities, their means of decision-making, quorum requirements and other details. Clear deadlines for the appointment of members and transparency requirements related to their appointment can also protect the work of such committees from delays created by political obfuscation.

Box 5: Diversity of roles in monitoring committees: example from India

The 2016 Plastic Waste (Management and Handling) Rules, amended in 2018 by the Plastic Waste Management (Amendment) Rules, outline in Article 16 the following composition of the "State Level Monitoring Committee":

"(1) The State government or the union Territory shall, for the purpose of effective monitoring of implementation of these rules, constitute a State Level Advisory Committee consisting of the following persons, namely:

(a) the Secretary, Department of Urban Development	Chairman
(b) Director from State Department of Environment	Member
(c) Member Secretary from State Pollution Control Board or Pollution Control Committee	
(d) Municipal Commission	Member
(e) one expert from Local Body	Member
(f) one expert from Non-Governmental involved in Waste Management	Member
(g) Commissioner, Value Added Tax or his nominee	Member
(h) Sales Tax Commissioner or Officer	Member
(i) representative of Plastic Association, Drug Manufacturers Association, Chemical Manufacturers Association	Member
(j) one expert from the field of Industry Member	Member
(k) one expert from the field of academic institution	Member
(l) Director, Municipal Administration	Member
	Convener"

3. Regulatory approaches

This section of the guide discusses the principal measures that can be adopted by countries seeking to enact a robust framework to regulate the production, manufacture, importation, use or disposal of single-use plastic products. It contains descriptions and provides examples of the following categories of regulatory approach:

- Bans and restrictions
- Economic instruments
    - Taxes (including levies and fees)
    - Tax breaks, subsidies or other fiscal incentives
- Standards, certification and labelling
- Post-consumer use and product end of life
    - Waste management legislation
    - Extended producer responsibility
    - Reuse and recycling
    - Recovery, take-back and deposit refund schemes
- Other important measures

3.1. Bans and restrictions

Bans on single-use plastic products were among the most common regulatory measures adopted by countries as global attention to the plastic problem heightened. Bangladesh was the first country to ban single-use plastic products (plastic carrier bags) in 2002 and, since then, at least 90 countries have imposed various bans on single-use plastic products (UNEP, 2018d). Bans aim to curtail the availability in the market of products that are used once and then discarded by prohibiting their manufacture and production, importation, distribution, supply, sale and/or use. Bans have been effective in many jurisdictions in reducing consumption of single-use plastic products. For example, a comparison of plastic bag usage in China before and after the ban showed a decrease in the number of plastic bags in circulation by an estimated 40 billion just one year later (World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, 2016). In the city of San Jose, California, United States, a plastic bag ban similarly reduced by 89 per cent the number of plastic bags ending up in the city's storm drains and increased the percentage of customers employing their own reusable bags from 4 to 62 per cent in one year (Romer, 2019). More studies are needed to look at the longer-term impacts and whether bans alone or combined with other regulatory approaches are more effective in addressing the problem of plastics.

Policymakers and legislators considering a ban on single-use plastic products should consider several key elements when drafting legislation.

Single-use plastic products to be targeted

A baseline and hotspot assessment of the national context (see subsection 2.1, under "Establish a baseline") will help determine the most problematic single-use plastic products, the likely environmental and economic impacts of a ban, the existence of adequate infrastructure and enforcement capabilities and the availability of affordable, accessible and sustainable alternatives (UNEP, 2018d; European Commission, 2018). Bans on single-use plastic products have, so far, most commonly been applied to plastic carrier bags (UNEP, 2018d). Plastic carrier bags are generally made of polyethylene or polythene (PE), a tough, light, flexible, synthetic resin obtained by polymerizing ethylene. The

Box 6: Key elements: bans and restrictions

The following key elements should be considered when drafting legislation banning single-use plastic products (each element is described in more detail afterwards):

- **Single-use plastic products to be targeted:** the single-use plastic products to be banned or the component materials of single-use plastics to be restricted
- **Activities to be targeted:** the range of activities along the value chain to be regulated, from production or importation to retail distribution and use
- **Exemptions:** the single-use plastic products and types of product use that may be excluded from the ban or restriction
- **Alternatives:** the types of plastic polymer and other materials that may be mandated in lieu of conventional plastics or exempted from the ban
- **Phase-out periods and effect dates:** the date on which the ban or restriction enters into effect, including grace periods and phased implementation as relevant
- **Enforcement and penalties: t**he authorities responsible, the mechanisms for enforcement and the penalties for violation of the ban or restriction

definition of plastic bags in legislation differs across countries, but the general characteristics are similar: plastic bags are bags made of plastic with or without handles, and with or without gussets, and are used for transporting or carrying goods (UNEP, 2018c). Box 7 provides the European Union definitions relating to plastic bags, which apply in all member States. A ban can be issued on all plastic bags or it can be based on their thickness, material composition or both.

A wide range of other products are also increasingly subject to bans, the most common of which are disposable products used for food packaging or food service, including straws, cutlery, plates, cups, beverage stirrers and fast-food containers; personal items such as cotton buds with plastic stems and wet wipes; and products such as foam packing peanuts and plastic sticks attached to balloons. Examples of product bans include a ban on plastic cups, plates and cutlery in Seychelles, a ban on plastic and polystyrene containers in Haiti, and the phase-out and ban of plastic bottles in Vanuatu (UNEP, 2018c).

The legislation should typically identify the specific products to be banned. It can also ban a class of products, such as single-use food ware or oxo-degradable plastics. It should also give guidance on what products fall under the ban and which do not and permit subsequent or subsidiary regulations to define additional products. The 2019 European Union directive, 2019/904, on the reduction of the impact of certain plastic products on the environment provides an overarching definition of single-use plastics and identifies specific products and classes of products that are to be banned or subject to consumption targets by member States. The overarching definition provides regulators with the flexibility to include additional single-use plastics that become problematic in the class of products banned, while minimizing confusion in the market among manufacturers, retailers and consumers.

Material composition

The material composition of single-use plastic products is increasingly the subject of legislation. For plastic bags, thickness thresholds can be used to determine which bags will be allowed and which prohibited. There is currently no universally accepted definition or standard for the thickness or dimensions of plastic bags, so different jurisdictions impose different thickness thresholds in their bans. These thickness thresholds vary considerably, from 15 microns (0.015 mm) in Andorra to 100 microns (0.1 mm) in Jordan (UNEP, 2018c). The European Union, by Directive 2015/270, requires its member States to set targets for the reduction of consumption of plastic bags with a wall thickness of less than 50 microns, defined as lightweight plastic bags. The rationale is that lightweight plastic bags, which represent the vast majority of plastic bags used in the European Union region, are less frequently reused than thicker plastic bags (of 50 microns or more) and consequently become waste more quickly and are more prone to littering because of their light weight. Some jurisdictions specify both the size and thickness thresholds in their plastic bag bans. In Jamaica, for example, according to the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order of 2018 and the Trade (Plastic Packaging Materials Prohibition) Order of 2018, plastics bags must not exceed 610 x 610 mm (24 x 24 inches) in size and 30 microns, which subsequent increased to 60 microns, in thickness. In legislating on thresholds, each country must decide what to ban or restrict on the basis of what its own baseline assessment has shown to be the most problematic plastic bags and most likely to be discarded after one use, ending up as litter in the environment (Schnurr and others, 2018). Another option is to ban plastic bags altogether regardless of their thickness as in Tanzania, where Article 5 of the Environmental Management (Prohibition of Plastic Carrier Bags) Regulations, 2019, states that "All plastic carrier bags, regardless of their thickness are prohibited from

Box 7: Definitions of plastic bags in European Union directives

In the European Union directives 2015/720 amending Directive 94/62/EC on reducing the consumption of lightweight plastic carrier bags and 2019/904 on the reduction of the impact of certain plastic products on the environment, the following definitions are given:

"plastic" shall mean a polymer within the meaning of Article 3(5) of Regulation (EC) No. 1907/2006 of the European Parliament and of the Council, to which additives or other substances may have been added, and which is capable of functioning as a main structural component of carrier bags, with the exception of natural polymers that have not been chemically modified

"plastic carrier bags" shall mean carrier bags, with or without handle, made of plastic, which are supplied to consumers at the point of sale of goods or products

"lightweight plastic carrier bags" shall mean plastic carrier bags with a wall thickness below 50 microns

"very lightweight plastic carrier bags" shall mean plastic carrier bags with a wall thickness below 15 microns which are required for hygiene purposes or provided as primary packaging for loose food when this helps to prevent food wastage

Box 8 : Examples of national bans on single-use plastic products

Burkina Faso

Law No. 017-2014 /AN of 2014

Ban on production, importation, marketing and distribution of non-biodegradable plastic packaging and plastic bags.

France

Energy Transition for Green Growth Act No. 2015-992 of 2015

Ban on lightweight bags under 50 microns, except compostable bags made of bio-sourced materials. Minimum bio-sourced content of single-use plastic bags to gradually increase from 30 per cent on 1 January 2017 to 60 per cent on 1 January 2025. By 1 January 2020, distribution of disposable kitchen cups, glasses and plates made out of plastic and cotton swabs with plastic sticks is prohibited.

Jamaica

Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order of 2018 and the Trade (Plastic Packaging Materials Prohibition) Order of 2018

Ban on single-use plastics including single-use plastic bags, packaging made wholly or in part of expanded polystyrene foam and single-use drinking straws made wholly or in part of PE or PP. Single-use plastic bags under the ban are those with dimensions not exceeding 610 x 610 m" (24""x 24"), with a thickness of 0.03 mm (1.2 mils), which are to be banned by 1 January 2021, and of 0.06 mm (2.5 mils), which are to be banned on or after 1 January 2021, regardless of whether the bag is, or is labelled as, degradable, biodegradable, oxo-degradable, photo degradable or compostable.

Marshall Islands

Styrofoam Cups and Plates and Plastic Products Prohibition and Container Deposit Act of 2016

Ban on the importation, manufacture, sale or distribution of Styrofoam cups and plates, disposable plastic cups and plates and plastic shopping bags.

Monaco

Sovereign Ordinance No. 5.831 and Ministerial Decree No. 2016-307, both of 2016

Ban on plastic bags under 50 microns , except compostable bags or those made wholly or partly of bio-based materials. A ban on the manufacture, distribution or sale of plastic utensils made of less than 40 per cent bio-based materials.

Sri Lanka

Imports and Exports Control Act No. 1 of 1969; Executive Order under the National Environmental Act, No. 47 of 1980, Gazette Extraordinary 2034/34 of 2017; Regulations under the Imports and Exports Control Act No. 1 of 1969, Gazette Extraordinary 2044/40 and Gazette Extraordinary 2044/41, both of 2017

Ban on plastic bags of 20 microns or less, unless with written approval from the Central Environmental Authority. Ban on the manufacture, distribution and use of food containers, plates, cups and spoons made from polystyrene and lunch wrappers (a commonly used item in Sri Lanka) made from PE. Controls on the importation of disposable polystyrene boxes and polymers of ethylene, styrene and vinyl chloride.

Vanuatu

Waste Management Act No. 24 of 2014

Ban on the importation of non-biodegradable single-use plastic bags. Local manufacturers of plastic bags to use only biodegradable plastics as of 31 January 2018. Ban on plastic bags less than 35 microns thick.

Zimbabwe

Environmental Management (Plastic Packaging and Plastic Bottles) Regulations of 2010 as amended by Statutory amendment 84 of 2012

Ban on the manufacture, distribution, use and importation of plastic packaging of a thickness of greater than 30 microns. Ban on polystyrene.

being imported, exported, manufactured, sold, stored, supplied and used in Mainland Tanzania". Nevertheless, simply banning plastic bags of a certain threshold while allowing others to continued being used may fail to result in an overall reduction of plastic bag use (Boshra and Luft, 2020). Similarly, a complete ban without alternatives already in place may lead to unintended consequences, such as an increase in the use of other types of plastic bags, such garbage bin liners, or the creation of black markets for the banned bags. These are discussed further later in this subsection, under "Implementation challenges and unintended impacts".

A particular material that is targeted on the grounds of significant environmental and health hazards is expanded polystyrene (commonly known as Styrofoam), used for disposable food containers and cups. It easily breaks into small pieces, littering the environment and liable to being ingested by birds and other animals. It is also extremely hard to collect the discarded products and recycle them, as they are hard to clean when exposed to food and are easily blown by the wind and carried into the ocean because of their light weight. They can take thousands of years to decompose, contaminating soil and water (Davis, 2019; UNEP, 2018c; UNEP 2018d).

There is a growing trend towards biodegradable and compostable products or bio-based materials, also called bioplastics. Box 9 provides definitions of these and other terms. Examples of countries that have legislated on alternative plastics are France, where Decree No. 2019-1451 on the Prohibition of Certain Single-use Plastic Products mandates single-use plastic products (including plastic cups, plates, cutlery, straws, still water bottles, etc.) to be compostable and biodegradable as of January 2020, and Costa Rica, which announced in 2017 a strategy to phase out all forms of single-use plastics (including plastic bags, plastic bottles and cutlery, straws, Styrofoam containers and coffee stirrers) by 2021 and replace them with alternatives that biodegrade within six months. Single-use plastic products that are biodegradable, compostable or made with bio-sourced materials are deemed environmentally safer and more sustainable alternatives because they supposedly break down or decay faster than conventional plastics, which can take decades to hundreds of years to decompose. There is evidence, however, that these materials can also be highly problematic for many reasons, including that they do not biodegrade in the natural environment. This problem and others are collated in table 3. Another alternative mandated in some countries, such as Pakistan, Saudi Arabia and the United Arab Emirates, is oxo-degradable plastic, which is a conventional plastic treated with additives to hasten degradation (UNEP, 2018a). Studies have shown, however, that this plastic material can be harmful because it increases microplastics in the environment (UNEP, 2018a; World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, 2016). The mandating of alternative plastic materials therefore requires appropriate assessment of the pros and cons for the environment and must be underpinned by technical standards and appropriate infrastructure for post-use treatment. There are more details in subsection 3.1, under "Alternatives".

Activities to be targeted

Bans typically cover production, importation and retail distribution. Box 8 gives examples of countries that ban all the aforementioned in relation to plastic bags and those that restrict only retail distribution. European Union member States, for example, tend to restrict retail distribution, while countries in Africa and the Asia-Pacific region ban both market entry and retail distribution. Only a handful of countries ban production or importation alone, such as Algeria, Lebanon, Liechtenstein and Portugal (UNEP, 2018c).

In the case of single-use plastic products other than plastic bags (straws, bottles, cutlery, etc.), fewer countries have enacted bans, although they often cover the entire spectrum of production, importation and retail distribution. Bans of other single-use plastic products are most common in small island States such as the Marshall Islands. The export of single-use plastic products is rarely banned; one of the few countries to have done so is Tanzania. On the contrary, some countries, such as Bangladesh, Mauritius and South Africa, exempt the export of single-use plastic products from bans applied to other stages of the product life cycle (UNEP, 2018c).

In a few countries, bans target the activities of certain users, particularly Government procurement practices. Costa Rica, for example, has banned single-use plastic products in the food service areas of all Government institutions, to be replaced by reusable or recyclable products. In Germany, the city of Hamburg has banned municipal use of coffee capsules and single-use bottles and utensils (OECD, 2018). Similarly, the Federal Government of Canada has made a commitment to diverting at least 75 per cent of the plastic waste from its operations by 2030, which will be accomplished partly through the procurement of more sustainable plastic products (Canada, 2019). Since Governments are large consumers of services that use plastics, they can provide leadership and send strong signals to other actors, including producers retailers, private-sector users and consumers.

Exemptions

Typically, exemptions apply to specific uses or specific products, which are often interrelated. In determining what exemptions to allow, important considerations include health, hygiene, accessibility, safety and security and the availability and affordability of alternatives. All of these should be factored into a country's baseline assessment. What is appropriate may differ between jurisdictions, given cultural, social and economic differences relating to the use of single-use plastic products.

Currently, legislation on plastic bags worldwide typically provides exemptions for a range of product uses, including the following:

- Primary packaging for fresh, perishable or other loose food and pharmaceutical products
- Transport of small retail goods (e.g., hardware items)
- Use for scientific or clinical research or other medical uses

- Use for sanitation or waste storage and disposal
- Some commercial uses (e.g., protection of bank notes and laundry/dry-cleaning bags)
- Plastic bags for export
- Agricultural uses
- Use of a product by people with disabilities
- National security uses; airport carry-on and duty-free bags and for the transport of personal effects
- Alternative bags (e.g., woven bags)
- Use for small volumes, for non-commercial purposes

The Marshall Islands stands out for having an expansive ban on single-use plastic products (see box 8) that does not explicitly provide for exemptions based on product usage. It does, however, promote recycled paper bags and reusable bags. In terms of specific products, some countries exempt plastic bags of a certain thickness, which can vary considerably. Often the exemption of the product is paired with its use. According to European Union directive 2015/720, Members States, for example, may choose to exempt very lightweight plastic bags (below 15 microns) for use as "primary packaging for loose food when required for hygiene purposes or when their use helps prevent food wastage". Lightweight or thin plastic bags tend to be exempted for the purposes of food handling and safety (for example in Andorra, Benin, Panama, the Republic of Korea and South Africa), whereas thicker bags tend to be exempted for uses that require sturdier bags (such as agriculture or bank notes) and because they can be used more than once (for example, in China, the United Kingdom and Viet Nam). Viet Nam exempts from tax "environment-friendly" bags more than 50 microns thick. Cambodia exempts plastic bags that are 30 microns or thicker and with a bottom width of at least 25 cm or 10 inches, subject to a permit from the Ministry of the Environment (UNEP, 2018c).

Alternatives

Alternative plastics

Biodegradable, compostable and bio-based plastics (see box 9 for definitions) may be classified as exempt from single-use plastic bans. Bans may also pair restrictions on single-use plastics with mandates for alternative products. The growing mandate for these types of plastics is premised on their ability to degrade or decompose in the environment more rapidly than conventional plastics, thus reducing plastic litter and the problems associated with it (UNEP, 2015).

Although the materials defined above present alternatives to conventional polymers, policymakers considering legislation on single-use plastic products should be aware of potential problems with their use, as outlined in table 3. The straightforward banning of conventional, fossil-fuel-based plastics and their replacement with alternative plastics alone will not solve plastic pollution. Complementary policies relating to the production and waste management of alternative plastics are also required

Box 9: Definitions of alternatives to conventional plastics

Oxo-degradable plastics: Conventional petroleum-based plastics, such as PE or PP containing additives (metal salts) that act as a catalyst, or pro-oxidant, to accelerate fragmentation or mechanical or physical degradation when exposed to ultraviolet radiation or heat.

Biodegradable plastics: Plastic polymers that can be metabolized by microorganisms (enzymes such as bacteria and fungi) into water, carbon dioxide and biomass under aerobic conditions and methane under anaerobic conditions. The metabolic process is called biodegradation. Whether a plastic material is biodegradable depends on its chemical structure (not on the feedstock from which it is produced, which can be either a fossil fuel or bio-based) and on the environmental conditions in which the material ends up. Biodegradable plastics are not always compostable or recyclable.

Compostable plastics: A subset of biodegradable plastics. Compostable plastics utilize microorganisms, heat and humidity to yield carbon dioxide, water, inorganic compounds and biomass that is similar in characteristic to biological composted product. Composting has the potential to transform plastics that are biodegradable under defined conditions into soil amendment products without toxic residue. According to internationally accepted criteria, to be industrially compostable, the plastic must meet specific criteria relating to chemical characteristics (at least 50 per cent organic matter, based on dry weight, and not in excess of a given concentration for some heavy metals); biodegradation rate (at least 90 per cent within six months at temperatures of 58°C, +/−2°C); disintegration rate (fragments into pieces smaller than 2 mm under controlled composting conditions within 12 weeks); and non-toxic (or the compost obtained at the end of the process should have no negative effect).

Bio-based plastics: Plastic derived fully or partially from plant materials, such as cellulose, potato or corn starch, sugar cane, maize and soy, instead of petroleum or natural gas. Bio-based plastic can be engineered to be biodegradable or compostable, but not all bio-based plastics are biodegradable. They can be designed to be structurally identical to petroleum-based plastics, in which case they can last in the environment for the same period of time.

Bioplastics: A term used for plastics that are bio-based (fully or partially), but non-biodegradable; petroleum-based and biodegradable; and both bio-based (fully or partially) and biodegradable. The term can be confusing because it can lead consumers to assume that the plastic product is completely plant-based or is biodegradable and they may dispose of it in the open environment.

Sources: Green Dot Bioplastics; Kubowicz and Booth (2017); Rujnic-Sokele and Pilipović (2017); UNEP (2015); United States (2020).

(Kubowicz and Booth, 2017; Rujnic-Sokele and Pilipović, 2017). In legislating on alternative plastics, it is crucial to have clear standards for producers and guidance for consumers regarding the terms "biodegradable," "compostable", "bio-based" plastics and "bioplastics". Such standards and guidance must accord with internationally recognized standards (see subsection 3.3 "Standards, certification and labelling"). It is also essential to have in place the proper collection and recovery systems and post-use and disposal infrastructure. Currently, many of the post-use and waste management challenges that exist in relation to conventional plastics are the same for biodegradable and compostable plastics (Kubowicz and Booth, 2017; Rujnic-Sokele and Pilipović, 2017).

Table 3: Potential problems with alternative plastics

Type of plastic	Potential problems
Oxo-degradable	• Evidence shows that oxo-degradable plastics rapidly fragment into smaller and smaller pieces, but do not break down at the polymer or molecular level. While large pieces of plastic seem to disappear faster than conventional plastics, the resulting microplastic fragments remain in the environment for a long time, contributing to microplastic pollution. It is possible that the plastic fragments are ingested by earthworms, insects, birds or animals. They may find their way into the marine environment and be ingested by marine organisms. • There is concern from plastics recyclers that the presence of oxo-degradable plastics in the recycling stream will have an adverse effect on the quality and usability of the products made from the recycled material. The presence of oxo-degradable additives will render the product more susceptible to degradation. • When oxo-degradable plastics are labelled as biodegradable it may lead to confusion on the part of consumers and cause problems such as incorrect disposal, including contamination of the waste stream.
Biodegradable	• Evidence suggests that the residence time of biodegradable plastics in the natural environment is less than that of conventional plastics, but degradation is highly dependent upon environmental conditions. Biodegradable plastics also appear to undergo processes that generate microplastics. Often biodegradable plastic items break down completely only if exposed to prolonged high temperatures above 50°C (122°F). Such conditions are met in industrial composting plants and municipal composters, but not in domestic compost heaps or if left as litter in the environment. • Biodegradable plastics are challenging to recycle. Currently, they are difficult to isolate from mixed plastic waste streams and are considered an undesired contaminant in the recycling streams of conventional plastics. Technologies exist to isolate biodegradable plastics, but the volume of biodegradable plastic needs to be sufficiently high to make this economically viable. • When plastic materials are promoted as biodegradable it may suggest to consumers that they biodegrade in the same way in many different post-use and disposal scenarios. Without qualification, the term "biodegradable" may lead people to think that they can discard the material in the natural environment, whereas it will not degrade properly and generate microplastics. When biodegradable plastics end up in landfills, they will produce methane as they decompose under anaerobic conditions. When they end up in the ocean, biodegradable plastics are as problematic as conventional plastics.
Compostable	• A claim that a product or package is compostable should be substantiated by reliable scientific evidence in accordance with internationally accepted criteria, which require that all the materials in the product or package be capable of breaking down into, or otherwise become part of, usable compost, in a safe and timely manner in an appropriate composting programme or facility or in a home compost pile or device. Most plastics labelled as compostable can be broken down only in industrial composters, which are yet to be available in many countries. • The capacity of composting facilities tends to be limited. In the European Union, for example, many composting facilities treat only garden waste. They are not adapted to processing compostable packaging and would have to undergo numerous technical modifications, particularly at the level of pre-processing, to ensure an efficient process for composting packaging. • Compostable plastic waste needs to be separated at source from normal household or industrial waste. Unless collection systems and composting facilities are available to consumers, however, the plastic waste is most likely to end up in conventional waste streams (e.g., incineration and landfill).

Type of plastic	Potential problems
Bio-based plastics	• The production of bio-based plastics may require land use to move away from the growing of food crops, at a time of growing food insecurity. Farmers may abandon food production in favour of growing bio-feedstocks, likely resulting in rising food costs in many developing countries. Furthermore, intensified farming and extensive use of fertilizers can increase greenhouse gas emissions. • The conversion of grassland or forest for feedstock production, as well as monoculture production, may destroy sensitive habitat, at a time of diminishing biodiversity. • Not all types of bioplastics are biodegradable. The property of biodegradation does not depend on the source of the plastic, but is rather linked to its chemical structure. Wholly bio-based plastics may be non-biodegradable, while some wholly fossil-fuel-based plastics can biodegrade. • Biomass-based polymers is that they tend to be more expensive to produce at present than those based on fossil fuels. Nevertheless, bio-based plastics that are "drop-ins", with the same chemical and physical properties, can be introduced seamlessly into existing value chains from production to recycling.
Sources: European Bioplastics (2016); Kubowicz and Booth (2017); Rujnic-Sokele and Pilipović (2017); Thomas and others (2012); UNEP (2015); UNEP (2018b); UNEP (2018d); World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016).	

Alternative (non-plastic) materials

Before banning a single-use plastic product, policymakers should consider whether alternatives to that product are available and should consider the environmental and economic impacts of the alternatives through the whole life cycle. In many countries bans are accompanied by the promotion of alternative materials to replace the single-use plastic products, such as bags made of paper or cotton or glass bottles for soft drinks and other beverages as in the Marshall Islands, Turkey and Vanuatu. In relation to plastic bags, policy approaches that have been adopted by countries include the mandate that reusable bags be provided to consumers, either free of charge or for a fee, as in Andorra, Greece and Italy; exempting reusable bags from bans, as in the Marshall Islands, Turkey and Paraguay; or requiring or encouraging retailers to give minimal discounts to consumers who bring their own shopping bags as in Bangkok, Thailand (UNEP, 2018c). In promoting alternative materials, policymakers should, through a life-cycle assessment or an alternatives assessment, for example, determine whether the alternatives are environmentally acceptable and readily available and affordable. Such due diligence can be especially important in developing countries, where the banning of a product without cheap and readily available replacements may end up causing undue hardship to the poorer segments of the population, as occurred in Rwanda (Pilgrim, 2016).

Policymakers may also want to make sure that the promoted alternatives are fit for purpose. For instance, the materials used for food packaging are often chosen to keep the food fresh. If the available replacement does not provide the same benefits, a policy to reduce overpackaging of fresh food could unintentionally increase food loss and waste (UNEP, 2018d). A life-cycle assessment of the potential alternatives may be worthwhile to look at the range of environmental impacts across the full life cycle of a product, from the acquisition of materials through to the final disposition or treatment (United States, 1998). Policymakers can also encourage innovation and the development of materials that can replace plastics. UNEP is currently compiling a meta-study of existing studies of life-cycle assessments of several single-use materials that can replace plastic products to be submitted as an information document to the fifth session of the United Nations Environment Assembly in 2021. An example is edible packaging made of seaweed feedstock or crustacean shells (World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, 2016).

Phase-out periods and effective dates

A ban on single-use plastic product may be preceded by a grace period before compliance is required and enforcement begins. For example, in France the 2015 Energy Transition for Green Growth Act No. 2015-992 allowed a grace period until January 2020 for the phase-out of single-use foodware and cotton swabs with plastic stems.

Implementation can also be phased in, as opposed to taking full effect immediately. For instance, in Moldova plastic bags with a thickness of 50 microns or more were to be phased out by 2019, followed by lightweight plastic bags by 2020 and finally very lightweight plastic bags by 2021. In Chile, the plastic bag ban was also phased and included a period of transition, The ban came into force for major retailers one year after its enactment and two years after enactment for smaller businesses. The 2015 European Union directive, 2015/720, requires progressive reduction of annual consumption by member States from 90 lightweight plastic bags per person as at December 2019 to 40 lightweight bags per person by December 2025. In some countries where the ban is limited to one or more geographical areas, typically the capital city or major urban areas, as in Pakistan, the limited initial coverage is the beginning of another kind of a phased approach whereby the ban is gradually expanded to other areas (UNEP, 2018c).

Phased implementation and grace periods give businesses and consumers time to adjust their behaviour. Legislation can provide for technical assistance to businesses and information and awareness campaigns for consumers during the transition period. For example, the city of Berkeley, California, United States, makes available mini-grants to vendors of prepared food to help them transition to reusable foodware as mandated in

the 2019 Ordinance No. 7,639-N.S. on single-use foodware and litter reduction. In a phased approach, the Government can also take time to measure the impacts of the ban and possibly adjust future implementation plans.

Enforcement and penalties

Enforcement is essential for the success of single-use plastic bans. Legislators should consider which authorities will be responsible, the mechanisms to be used for enforcement and the penalties for violation.

The naming of the authority responsible for enforcement and the clear definition of its mandate are core components of the regulation or ordinance imposing the ban. The authority responsible may consist of more than one department or agency. In China, for example, the Notice of the General Office of the State Council on Restricting the Production and Sale of Plastic Shopping Bags by State Council Office (2007) No. 72 confers overall responsibility for enforcement of the ban on the Government department responsible for industry and commerce, while the quality inspection department is tasked with ensuring the quality of allowable bags, and local governments are responsible for ensuring compliance at the regional and local levels. In North Macedonia, the 2009 Law on Management of Packaging and Packaging Waste gives overall enforcement powers to the Ministry of Environment and Physical Planning, while inspection is conducted by the State Environmental Inspectorate, the State Market Inspectorate and municipal inspection authorities. In Bangladesh, under the Bangladesh Environment Conservation Act of 1995, amended in 2002), the Ministry of Environment, Forest and Climate Change has general responsibility for regulatory implementation of the plastic bag ban, but it may coordinate with other relevant ministries and request assistance from law enforcement agencies in enforcing the ban.

Box 10: The plastic bag ban in Antigua and Barbuda

The ban on plastic bags in Antigua and Barbuda came into force in 2016, (updated/replaced by the External Trade (Shopping Plastic Bags Prohibition) Order, 2017, No. 83) making it the first country in the Latin America and Caribbean region to have such as ban. The ban covers importation, distribution and sale and used a phased approach, starting with importation as of 1 January 2016, followed by distribution and sale in major supermarkets as of 1 July 2016 and ending with distribution and sale in small supermarkets as of 1 October, 2016. This allowed retailers to use up their existing stocks. A preliminary assessment after one year of implementation found that there had been a 15.1 per cent reduction in the amount of plastic discarded in landfills. The ban also paved the way for additional policies targeting single-use plastics. These include a ban on the importation of plastic foodware and cups as of July 2017 and a ban on plastic utensils, food trays and egg cartons as of January 2018.

The Government credits the success of the ban to complementary policies and inclusive processes. These include:

- **Extensive stakeholder consultations:** several Government agencies (the Ministry of Health, Wellness and the Environment, the Ministry of Foreign Affairs, Immigration and Trade, the customs control authority and the waste management authority) conducted four rounds of consultations with producers and retailers. The Government sought input from industry on how best to implement the ban, the challenges they might face and how best to address them. This ensured buy-in. Many small supermarkets actually implemented the ban before the end of the grace period given to them.

- **Extensive awareness-raising campaigns:** the Government conducted a media blitz before, during and after implementation of the ban. Before implementation, the Minister for the Environment appeared on television to explain the progress of the ban and provide feedback from the stakeholder consultations. The Government also launched an interschool competition to design the campaign logo, in which the winner and top ten entries were awarded prizes. During the week of the ban, Government officials held public events in which they explained the scope of the ban and the environmental impacts of plastic pollution. A jingle was produced, entitled "I'm making a difference, one bag at a time", to promote the use of reusable bags for a cleaner and healthier environment. Following the introduction of the ban, Government officials again appeared on television talk shows and responded to questions from the public. Local celebrities were tapped to be ambassadors for the campaign.

- **Free reusable bags:** the Government distributed free reusable bags on the weekend of entry into force of the ban. Personnel stationed in major supermarkets to give away the reusable bags engaged in conversations with customers about the importance of the ban and encouraged them to sign a pledge "to make a difference, one bag at a time".

- **Tax incentives for producers:** to encourage the manufacture and use of alternatives to plastic bags, materials used in the manufacture of durable bags, such as sugar cane, bamboo, paper and potato starch, were exempted from tax.

- **Training programme:** the Government launched an initiative to train seamstresses and tailors to make reusable bags to help spur demand for these bags.

The plastic bag ban was a success overall. One challenge was that members of the public forgot to take their reusable bags with them. Supermarkets, however, started charging for paper bags, which the Government required to be made of recycled material.

Sources: Hill (2016); UNEP (2018d).

The implementing authorities need clear mandates, which may include the power to investigate, inspect and impose penalties; to prepare and issue reports or analysis; to set standards or develop implementing regulations; and to engage in awareness-raising or other public information campaigns. Other mandates may be necessary for enforcement activities. Authorized officers should have appropriate inspection powers, including the power to enter and inspect premises, confiscate prohibited materials and compel the production of documents or records and their retention for later inspection. These powers should be accompanied by appropriate procedural protections, such as requirements that officers carry identification showing that they are authorized to conduct inspections or to search and seizure warrants where appropriate. In addition, a complaints mechanism may be set up to allow the public to report misconduct, object to how the ban is being enforced, appeal a penalty imposed or otherwise ensure that the enforcement authorities are held accountable.

additional costs to remedy harm caused by the violation and imprisonment. The regulation may further establish minimum and maximum penalties, which can be based on factors such as the nature and severity of the offense (i.e., possession versus production) and the offender (i.e., a small vendor versus a supermarket chain). Box 11 provides an example of a penalty provision. Additionally, regulations may include a mechanism such as a toll-free phone number to allow the public to report violations of the ban.

Implementation challenges and unintended impacts

The experience of some countries show that bans can be an effective policy instrument for curbing plastics deemed environmentally harmful. Nevertheless, challenges and unintended impacts have emerged along the way. These include:

Box 11: Graduated penalties for violations of the plastic bag ban in Tanzania

In Tanzania, there are large fines for breach of the Environment Management (Prohibition of Plastic Bags) Regulations, 2019, that can be as high as US$400,000. The text states that any person who imports, exports, manufactures, sells, stores, distributes, supplies, possesses and uses plastic bags and plastic wrappings in contravention of the relevant part of the text commits an offence and shall, upon conviction, be liable in case of:

(a) manufacturing or importation, to a fine not less than 20 million shillings (approximately US$8,000), but not exceeding one billion (approximately US$400,000), or to imprisonment for a term not exceeding two years or to both;

(b) exportation, to a fine of not less than 5 million shillings (approximately US$2,000), but not exceeding 20 million, or to imprisonment for a term not exceeding two years or to both;

(c) storing, supplying and distributing, to a fine of not less than 5 million shillings, but not exceeding 50 million (US$20,000) or to imprisonment for a term not exceeding two years or to both;

(d) selling, to a fine of not less than 100,000 shillings (approximately US$40), but not exceeding 500,000 shillings (approximately US$200), or to imprisonment for a term not exceeding three months or to both;

(e) possessing and using, to a fine of not less than 30,000 shillings (US$12), but not exceeding 200,000 shillings (approximately US$85), or to imprisonment for a term not exceeding seven days or to both.

The Court may, in addition to any conviction granted pursuant to the Regulations, issue the following orders:

(a) forfeiture of plastic carrier bags;

(b) closure of the production unit;

(c) cancellation of licenses;

(d) imposition of community service.

Legislators must also decide the type and extent of penalties that will be imposed for violating the ban. Otherwise, a single-use plastics ban will be ineffective and easily ignored. The 2019 European Union directive, 2019/904, on the reduction of the impact of certain plastic products on the environment provides some guidance, in that the "penalties provided for should be effective, proportionate and dissuasive". These suggested standards may be attained through a range of options, including warnings, fines, confiscation of banned products, payment of

- **Leakage:** A ban may lead directly to an unintended increase in consumption of other, unregulated products (Fowlie, 2009). For example, one study found that a plastic bag ban in California resulted in an increase in the sale of thicker trash bags, as customers could no longer use free bags from supermarkets in their trash cans (Taylor, 2019). The study found that the reduction of 40 million pounds of plastic carrier bags was offset by an increase of 12 million pounds of thicker trash bag purchases, resulting in leakage

of 28.5 per cent of the plastic reduction generated by the ban. Similarly, following a ban on thin plastic bags in the Northern Territory of Australia in 2011, sales of thicker bags increased, as did the littering of those thicker plastic bags (Schnurr and others, 2018; Wahlquist, 2018). Some retailers simply switched their carrier bags from the banned thin plastic bags to thicker plastics bags (Wahlquist, 2018). Producers and consumers may therefore simply shift from one type of plastic product to another, including those that may take more energy and water to produce and to transport, without a significant reduction in the total number of bags used. Some jurisdictions, such as South Africa and the US state of California, have adopted a ban/fee hybrid model, in which thin plastic bags are banned while all other carrier bags are subject to a fee, and they are seeing better results in terms of behavioural change (UNEP, 2018d; Romer, 2019).

- **Higher carbon footprint of alternatives:** Studies have shown that alternative materials can be more carbon-intensive than plastics in terms of manufacture and transport (Taylor, 2019). For example, a study by the Government of the United Kingdom (2011) found that paper bags must be used at least three times for their carbon footprint to drop below that of single-use plastic bags. Cotton bags must be used at least 131 times. While paper bags are biodegradable, they require more energy and water to produce. Cotton bags generate higher greenhouse-gas emissions than plastic bags because growing and processing cotton is highly resource-intensive (UNEP, 2018d). Policymakers risk simply trading one environmental problem for another. Life-cycle assessments are therefore required in order to assess all potential impacts of legislation, including those on ecosystems from litter, those on the climate owing to a higher carbon footprint and potential water scarcity owing to higher water requirements and those on the municipal waste stream in terms of collection infrastructure and the availability of recycling technology (Environmental Literacy Council, 2015). The shift towards a circular economy for plastic, in which unnecessary or problematic plastics are eliminated or redesigned and plastic packaging and other products are made reusable, recyclable and compostable in practice, is a more sustainable approach (Ellen MacArthur Foundation, 2015).

- **Black market:** Another potential problem is the spawning of black markets for plastic bags. In Rwanda, which has one of the most comprehensive and vigorously enforced bans, street vendors and market stall owners continue to smuggle in plastic bags from neighbouring countries such as Uganda, the Democratic Republic of the Congo and Burundi, because no affordable alternatives are available (Nielsen, Holmberg and Stripple, 2019; Pilgrim, 2016). Similarly, in Kenya, the ban prompted the creation of "bag cartels" that smuggled illegal plastic bags from neighbouring Uganda and Tanzania (Parker, 2019). In Bangladesh, market vendors covertly defied the plastic bag ban because of the shortage of cost-effective alternatives for handling perishable foods (The New Humanitarian, 2011). This issue highlights the importance of identifying the main uses of plastic bags and the segments of the population that will be most affected and then ensuring that alternative sustainable products are readily available and affordable before institution of a ban. This is especially pertinent in developing countries where the banned product may be essential for the livelihoods of the poor.

- **Industry pushback:** In many jurisdictions, bans have met with resistance from plastic manufacturers and associations, who cite economic losses. The Kenya Association of Manufacturers, for example, which unsuccessfully opposed the plastic ban in court, claimed that as many as 100,000 jobs would be lost in the plastics manufacturing industry (Parker, 2019). In the Indian state of Maharashtra (where the manufacturing hub of Mumbai is located), companies argued that the proposal by the state to ban all single-use plastic products by 2022 would result in annual revenue losses of US$2.2 billion and mass layoffs of up to 300,000 employees. They also argued that the ban would create environmental harm, owing to the current production inefficiencies involving alternative feedstocks (Phartiyal and Jadhav, 2018). This argument underscores the need for Governments to consider promoting research and innovation in technology and design.

- Enforcement challenges: Some single-use plastics bans have had very little impact. In Bangladesh, for example, the ban was ineffective owing to a lack of enforcement. Enforcement personnel from the implementing agency (the Department of Environment of the Ministry of Environment, Forest and Climate Change) were too few and too willing to accept bribes. Enforcement has similarly been challenging in rural China, where more than 80 per cent of stores continue to provide free plastic bags (Block, 2009; Xanthos and Walker, 2017).

3.2 Economic instruments

Economic instruments impose financial penalties in order to discourage certain behaviour or offer financial incentives to encourage alternative behaviour. Penalties include taxes on producers, distributers, and users of single-use plastic that are intended to discourage production and use. Incentives such as tax credits and subsidies can be granted to people or entities engaged in behaviour that reduces the production or use of single-use plastic. This section looks first at taxes and then at economic incentives.

Taxes

Taxes, which are charges imposed by Governments, can serve as penalties for certain kinds of behaviour, such as the manufacturing, sale or purchase of single-use plastics. By increasing the cost, the tax creates an economic disincentive to engage in that behaviour. While some national legislation makes a distinction between the terms "tax" and "levy", this guide regards the two as interchangeable and defers to the term used in the legislation referenced. This subsection also covers fees that are mandated, but not collected, by the Government.

Point of charge

Taxes can be imposed on the manufacturer, the importer, the distributor, the retailer or the customer. The responsibility for paying the tax may be placed on the different parties, but the

Box 12: Key elements: taxes

This subsection discusses the following elements that must be determined by policymakers in designing a tax on single-use plastic products (each element is described in more detail afterwards):

- **Point of charge:** the moment at which the tax is imposed, who will pay the tax and when it will be levied and paid
- **Taxed and exempted products:** which products are to be taxed and what exceptions will be allowed
- **Unit to be taxed:** the unit of single-use plastic on which the tax is imposed, such as a single plastic bag or plastic amounting to a certain weight
- **Tax rate:** the amount of money that must be paid per unit
- **Enforcement and compliance:** how the tax will be recorded, documented, reported and collected, and which people or entities will be responsible for each of these steps
- **Use and management of revenues:** who will manage the collected tax revenue and the destination and use of that revenue

impact of the tax will likely be felt more broadly. For example, a tax at the manufacturing stage may result in a more expensive product for the consumer, while a tax on the retail product may reduce consumer demand, impacting manufacturers and distributors. In 2015, Portugal imposed a tax on producers of €0.10 (around US$0.12) per bag for bags between 15 and 50 microns thick. The cost was mostly passed on to the consumer. Four months after the tax was introduced, the consumption of lightweight plastic bags had decreased by 74 per cent, while that of reusable plastic bags, exempted from the levy, had increased by 61 per cent (Martinho, Balaia and Pires, 2017; UNEP, 2018d).

Legislators must also determine the precise point at which the tax is to be levied and paid. Box 13 contains examples of related legal provisions. In the case of retail taxes, some countries require only certain businesses or locations to charge a plastic bag tax. For example, in England the Single Use Carrier Bags Charges (England) Order 2015 imposes a tax only on retailers with 250 or more full-time employees, while in Scotland the Single Use Carrier Charge (Scotland) Regulations apply to those with 10 or more full-time employees. In Fiji, the Environment and Climate Adaptation Levy (Plastic Bags) Regulations 2017 apply the tax to any business that uses a register, and, in Israel, the 2016 Law for the Reduction of the Use of Disposable Carrying Bags applies tax only to the 20 largest supermarkets in the country. This more selective approach avoids burdening smaller businesses, allows the public to adjust to the policy and may limit the enforcement and oversight burden on authorities. Of course, it also means that the impact of the policy will be lesser than with a more comprehensive approach.

Legislators should also consider incorporating requirements to ensure that customers are made aware of the tax and understand that they can avoid the additional cost by altering their behaviour to reduce their consumption of single-use plastic products. One option is to require retailers to display a notice informing customers of the charge, as is required by Fiji's Regulations (see box 13) and Spain's Royal Decree 292/2018. Other laws require that the amount charged be listed on the receipt given to the customer; an example is Cabo Verde's Law No. 99/VIII/2015.

Taxed and exempted products

As with bans, the scope of taxes on single-use plastic products must be determined precisely in terms of which products will be taxed and which will be exempted from the tax. One difference

Box 13: Examples of legal provisions specifying the point of charge for retail levies

In **Fiji**, the Environment and Climate Adaptation Levy (Plastic Bags) Regulations 2017 provide that:

> "The Environment and Climate Adaptation Levy charged on plastic bags must be collected by a cashier at the point at which a plastic bag is provided by the business to a consumer."

In **Hong Kong** (Special Administrative Region of China), the 2009 Product Eco-Responsibility Ordinance, amended 2015, states that:

> "The seller must charge the customer an amount not less than that prescribed in Schedule 3* for each plastic shopping bag, or each pre-packaged pack of 10 or more plastic shopping bags, provided by the seller directly or indirectly to the customer—
>
> (a) at the time of the sale;
>
> (b) for promoting the goods; or
>
> (c) otherwise in connection with the sale."

In England, **United Kingdom**, under the Single Use Carrier Bags Charges (England) Order 2015, a seller must charge for each single-use carrier bag supplied "at the place in England where the goods are sold, for the purposes of enabling the goods to be taken away".

*50 cents

between bans and taxes, however, is that there are fewer examples of taxes being used to target single-use plastic goods other than plastic bags, at least for the moment. One reason for this may be the potential complexities of taxing various plastics at the point of sale and the ability of consumers to keep track of such taxes. It may therefore be easier to tax the products at the import or manufacturing stage. Alternatively, it may be that policy interventions targeting single-use plastic items other than plastic bags are still relatively new. One example of a retail-level tax on items other than plastic bags is the 2018 Act on the Promotion of Saving and Recycling of Resources in the Republic of Korea, which prohibits the free distribution of plastic bags and other disposable items at eat-in meal service facilities and other specified locations.

A greater diversity of plastic products appear to be subject to producer taxes. Examples include the product fee on packaging materials and single-use articles such as cups in Bulgaria; the environmental tax on plastic bags and on plastic stoppers, caps, lids, and other closures in Lesotho; the environmental tax on PET bottles in Norway; and the tax on single-use plastic bags and disposable cutlery in Belgium (UNEP, 2018c).

When defining exemptions, plastic bag taxes will raise similar concerns to those raised by plastic bag bans. For example, policymakers should consider the thickness and types of bag to which the tax applies. In some respects, taxes offer more flexibility than bans in crafting exemptions, because different rates can be charged for different products. For example, in Spain (under Royal Decree 293/2018 of 2018 on the Reduction of Consumption of Plastic Bags and for the Creation of a Producer Register) there are charges of €0.05, €0.10 or €0.15, depending on the thickness of the bag and whether it contains recycled material. Taxes can be to be tailored to the biodegradability, reusability or recycling possibilities of various thicknesses of bag.

Unit to be taxed

A law or policy must determine what unit of a product will be taxed. When taxes are imposed on the consumer, the unit to be taxed is usually simple: the item being sold. For example, the typical unit for plastic bag retail tax is one plastic bag, with a charge of a certain amount for each bag .Other arrangements are possible, however, such as a charge per sale.

Determination of the unit to be taxed at other points in the supply chain may be more complex. Producers are typically taxed on the weight or volume of the material that they provide to the market. The packaging tax in many European Union countries, including Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, Latvia, Malta, the Netherlands, Romania and Slovenia, uses the volume or weight of the material as the basis for calculating the tax. Another option would be to use the value or price of the product.

In determining the unit that will be taxed, legislators should consider how taxable units are defined for other, related products, which may simplify administration. Other considerations include the nature of the material taxed, how the choice of unit will impact the total amount of tax collected, how this will in turn affect the choices of producers and the potential environmental impact of those choices.

Tax rate

Once the unit to be taxed has been determined, the level of the tax can be set in either absolute or percentage terms. Retail taxes are typically set as an absolute amount per plastic item. Tax laws can use a number of approaches to determine the level of the tax. For example, retailers may be prohibited from distributing bags for free but permitted to set the price at their discretion. Alternatively, the law may offer suggested or optional prices, specify a range of prices, set a minimum price to be charged, require that the price be at least the price paid by the retailer for the item or set an exact charge (directly or by empowering authorities to do so). Examples of some of these approaches are given in box 14.

Taxes charged to producers may be set at variable rates depending on the material used in a product. In Denmark, the weight-based packaging tax charges differentiated rates for various materials, with the lowest rate for recycled plastics and plastics substituted with other materials and the highest rate for primary plastics. Expanded polystyrene and PVC incur an even higher tax rate (OECD, 2018). Similarly, the Latvian natural resource tax on plastic packaging varies according to material, with the stated legislative aim of promoting economically efficient use of natural resources, restricting pollution, reducing the manufacture and sale of polluting substances and promoting the implementation of new environment-friendly technologies. Polystyrene source materials are charged at €1.56/kg, most plastic at €1.22/kg, single-use plastic bags weighing more than 0.3 g at €1.14/kg (lighter bags are charged at €3.70/kg) and oxo-degradable plastic at €0.70/kg (OECD, 2018).

Legislators should consider what policy goals they wish to achieve in setting the price of a levy at various levels. For example, one approach to setting the levy price is to consider what amount will cover the cost of the item and the associated waste management of that item after the consumer disposes of it. This approach could justify legal provisions that require retailers to charge at least the price that they paid or that encourage retailers to use the funds that they receive from levies for recycling programmes or the waste management of the returned plastic bags.

Similarly, when setting the tax rate, legislators may wish to consider the impact it will have on consumer and industry behaviour. On the one hand, an overly steep price may provoke industry or consumer backlash or result in widespread evasion (particularly if alternatives are not readily available). On the other hand, setting the price too low may mean that it does not have the desired deterrent effect on consumer use or producer practices. Where laws or regulations set a fixed price, there should first be research and analysis in relation to the attitudes and behaviours of key stakeholders, including an assessment of what price consumers are willing to pay.

When setting a tax rate, Governments should consider building flexibility into the law so that the price can be adjusted at a later date to respond to changing market conditions or raised if it ceases to have a deterrent effect. Regularly scheduled reviews of the price can provide this flexibility. For example, in Paraguay, Resolution No. 353/2017 of 2017, which establishes a plastic bag levy, provides set prices depending on the size of the bag, to be reviewed and revised as needed quarterly

Box 14: Illustrative provisions: setting the level of a fee

Some countries allow retailers to determine the precise price of plastic bags, merely prohibiting free distribution of such bags, and some give retailers discretion within a certain range. For example:

- **China** allows the retailer to set the price as long as it is not free or cheaper than the manufacturing cost and as long as the price is clearly marked. **Turkey**, the **Netherlands** and **Slovenia** take a similar approach (UNEP, 2018c).
- The 2004 Packaging Act in **Estonia** provides that lightweight and very lightweight plastic carrier bags shall not be supplied to consumers free of charge, with some exceptions. No further provisions mandate what charge should be imposed.

Some countries set a minimum price. For example:

- In the **United Kingdom**, in Scotland, the Single Use Carrier Charge (Scotland) Regulations 2014 state that "the amount that a supplier must charge for a single-use carrier bag is the amount that will ensure that the consideration paid by the person supplied with the bag is, for each such bag, not less than 5 pence". The law also specifies that the consideration includes any chargeable value added tax.

Some countries link the price to that paid to procure the bag. For example:

- In **Czechia**, according to the translation of the 2016 draft amendments to the Act No. 477/2001 on Packaging submitted to the European Union, the price is linked to that paid to procure the bag, such that lightweight plastic carrier bags may be supplied to consumers at the point of sale of products in exchange for at least the compensation for the expenses corresponding to the procurement cost of the bags.

Other examples:

- In **Spain**, Royal Decree 293/2018 of 2018 on the Reduction of Consumption of Plastic Bags and for the Creation of a Producer Register, which allows retailers to choose the price, but provides that they can reference an annex of suggested prices.
- In **Senegal**, Law No. 2015-09 of 2015 , on the Prohibition of the Production, Importation, Possession, Distribution and Use of Lightweight Plastic Bags and on the Rational Management of Plastic, which provides that bags of 30 microns or thicker cannot be distributed for free, leaving the price to be set by a joint ministerial order.

by an interinstitutional commission. In Turkey, the 2017 New Packaging Waste Regulation provides for a base fee to be determined annually by the relevant ministry, on the basis of market conditions and the proposal of a Packaging Commission that includes representatives of relevant sectors.

Enforcement and compliance

A clear articulation of who is responsible for reporting and collecting the tax and overseeing the process encourages transparency and accountability, while good records are necessary for monitoring effectiveness and help to ensure that the tax serves the purpose for which it is intended. In the case of taxes on producers, taxes on single-use plastics may be integrated into existing legal frameworks for tax collection. Nevertheless, legislators should still look at whether the legislation gives adequate direction regarding reporting and accounting methods and clearly indicates which authorities are responsible for collecting and managing the tax. In addition, the legislation may need to anticipate funding mechanisms to divert money to special funds, such as environmental funds. It may be appropriate to suggest the development of regulations to govern implementation.

Specifically, policymakers should check whether the law sufficiently addresses:

- Accounting methods and at what points records must be kept
- Remedies in cases of overpayment or underpayment of correctly assessed tax liability
- Record-keeping requirements for those paying taxes
- Powers to audit or otherwise screen for compliance and to whom they are granted
- The time at which payment must be made and the payment method
- The authority that manages and receives the payment
- The mechanism for diverting the revenue collected to the appropriate fund when there are dedicated environmental or other funds that the tax is meant to support

Some examples of reporting and record-keeping obligations imposed in the context of plastic bag retail taxes are provided in box 15.

Use and management of revenues

For reasons of transparency, it is good practice to establish clearly the purposes of the revenue collected through taxes on plastic products. Clarity as to the destination of funds can be important for addressing public controversy or scrutiny, particularly for unpopular taxes. In some cases, directing revenues towards environmental projects or other public interest outcomes can reinforce the idea of a "green tax". For example, in Israel, the 2016 Law for the Reduction of the Use of Disposable Carrying Bags provides that plastic bag taxes are transferred to a fund, the purpose of which is to encourage a reduction in the use of disposable bags.

Box 15: Illustrative provisions – reporting and record-keeping obligations

In **Fiji**, under the Environment and Climate Adaptation Levy (Plastic Bags) Regulations of 2017, the designated "accountable person" is responsible for paying the tax before or on the last day of the month, and submitting with the payment a report which specifies the:

"(i) number of plastic bags stocked by the business at the beginning of that month;

(ii) number of plastic bags provided to consumers in that month;

(iii) number of plastic bags remaining in the stock of the business at the end of that month;

(iv) amount of Environment and Climate Adaptation Levy collected in that month."

In **Hong Kong** (Special Administrative Region of China), the 2009 Product Eco-Responsibility Ordinance, amended 2015, sets the following record-keeping obligations:

"The records and documents are records, invoices, receipts, delivery notes or any other documents that contain sufficient details to enable the Director* to readily verify the following matters in respect of each registered retail outlet of the person—

(a) the number of plastic shopping bags provided to a customer in each retail transaction of the retail outlet, except for any bags provided from an exempted area of the retail outlet;

(b) the amount charged for those bags by the person under section 23(1) of the pre-amended Ordinance;

(c) the number of plastic shopping bags contained in each shipment of plastic shopping bags to the retail outlet, except for any bags to be provided from an exempted area of the retail outlet that is subject to the criteria for a Type 2 exemption; and

(d) the number of plastic shopping bags procured by the person and relating to each shipment referred to in paragraph (c)."

*Director of Environmental Protection

In Fiji, the Environmental Levy (Budget Amendment) Act 2017 provides that money raised by its plastic bag tax will go to an Environment and Climate Adaptation Fund. The purposes of the fund are to promote conservation of the forests, flora, fauna, wildlife, ecosystems and biodiversity of Fiji; provide funding to assist programmes, projects and activities associated with climate change, including climate change mitigation and adaptation activities; and engage in any environment or climate change-related activity approved by the Minister. Any payments from the fund must be made with the authorization of the permanent secretary responsible for finance, and the expenditure must be published and made publicly available.

Implementation considerations and challenges and unintended impacts

Well-designed taxes can ensure that the policy objectives of the legislation are met. In theory, through the imposition of an additional cost on single-use plastics, taxes will shift behaviours. In practice, taxes can have unintended consequences, so careful planning and monitoring is required for the design of a tax that accomplishes declared policy goals. When designing taxes, legislators may want to take account of the following challenges and seek to mitigate them through research and careful policy design:

- **Uncertainty over broader environmental impacts:** Research that documents the broader environmental impacts of plastic bag levies is still rather limited (Xanthos and Walker, 2017; Nielsen, Holmberg and Stripple, 2019). Interventions may have unintended environmental impacts that differ from the goals of the legislation.
- **Social impacts on low-income households and small businesses:** Taxes intended to influence consumer behaviour directly, via retail taxes, or indirectly, via producer taxes, may increase the cost of certain items. Even taxes on plastic bags, the use of which can in theory be avoided, may disproportionately burden low-income households who cannot easily absorb the cost of adapting their behaviour (Schnurr and others, 2018). Similarly, smaller retailers and street vendors have sometimes struggled to adapt to single-use plastic taxes owing to the higher cost of alternatives or because alternatives do not meet the practical needs of their products. For example, a street vendor in Kenya told *The Guardian* that biodegradable fibre bags were six times more expensive than plastic bags (Watts, 2018).
- **Lack of alternatives may affect compliance:** If consumers and retailers are not supported in transitioning to alternatives, and if cheap alternatives are not available, they may continue to use single-use plastics out of necessity. This can encourage the development of black markets.
- **Taxes may not have the intended results:** One challenge with taxes is that costs may not be allocated in the way that the legislation intended. For example, a tax on producers may have the goal of influencing not only producer behaviour, but also consumer behaviour, in the expectation that the producer will pass the extra cost on to the consumer by raising prices. One study suggests that a tax on producers will be effective only if the tax is passed on to retailers in full (UNEP, 2018d). Retailers will then be likely either to charge their customers for plastic bags or to offer a rebate/reward to customers who do not ask for plastic bags, which may promote the use of reusable bags.
- **Long-term results may be challenging to sustain:** As consumers become used to the tax, it may cease to have the desired deterrent effect. There are several examples of sharp

initial drops in consumer use following the introduction of a levy that are not then sustained in the long term, such as in the case of the 2003 plastic bag levy in South Africa. (Dikgang, Leiman and Visser, 2012).

- **Unwise use of revenues may undermine public policy goals and impact public support:** The revenue generated from taxes can support further environmental initiatives or programmes that promote economic shifts away from single-use items. Nevertheless, if the funds are mismanaged, the public does not understand how the revenue is being used, fund administration is not transparent or funds are used in a manner that does not advance public policy goals, public support for the taxes may falter (UNEP, 2018d).

Tax breaks, subsidies and other fiscal incentives

Fiscal incentives can take a wide variety of forms and there is room for significant creativity in how they are structured. Common incentives include tax breaks, which reduce normal tax burdens, and subsidies, which are direct financial payments from the Government to support behaviour that might not otherwise be economically attractive.

Some examples of fiscal incentives to reduce the prevalence of single-use plastic products offered by Governments include the following:

- As part of its plastic bag ban, the Government of Antigua and Barbuda legislated that certain materials used to manufacture alternatives shall be tax-free, including sugar cane, bamboo, paper and potato starch (UNEP, 2018d).

- In Saint Vincent and the Grenadines, the ban on the importation of Styrofoam products used for the sale or storage of food was paired with the elimination of value added tax from biodegradable alternatives to lower their cost (UNEP, 2018d).

- The phase-out of single-use plastics announced in Costa Rica includes an offer of incentives for businesses and research institutions to use alternative materials to plastic (Schnurr and others, 2018).

- The plastic bag tax on suppliers in Portugal exempts reusable bags from the tax, which led to a 74 per cent reduction in the use of lightweight plastic bags and a 61 per cent increase in the use of reusable bags four months after implementation (Martinho, Balaia and Pires, 2017).

- The Finnish beverage packaging tax incentivizes participation in a deposit-refund scheme by offering a tax exemption on products registered in the scheme (Watkins and others, 2017).

- The deposit on non-returnable beverage bottles manufactured in or imported to Saint Kitts and Nevis shall be subject to a refund on the re-exportation of the used bottles or other acceptable disposal arrangement.

- The environmental tax on manufacturers and importers of recyclable PET plastic bottles in Norway decreases in line with the return rate or number of bottles collected. The tax reduction starts at a 25 per cent return rate and the tax is eliminated completely when a 95 per cent return rate is achieved.

- In the state of Colorado, United States, there is a plastic investment tax credit, giving a credit equal to 20 per cent of the first US$10,000 of net expenditure to third parties (e.g., rent, wages, supplies, consumable tools, equipment and utilities) for new plastic recycling technology (OECD, 2018e).

A tax incentive alone may not cause the necessary economic shifts. Many of these examples show how Governments have combined tax incentives for alternatives to single-use plastic products with penalties for the use of problematic single-use plastic products. This can be an effective way of addressing the lack of affordable alternatives to single-use plastic products and/or of balancing the potential negative economic impacts of a ban or tax on them. Tax incentives, while an important tool, are not, however, a silver-bullet solution for mitigating the disruptive impacts of other single-use plastic policies. A good example is the 2008 Rwandan ban on all plastic bags, which was accompanied by tax incentives for companies willing to invest in plastic recycling equipment or in the manufacture of environmentally friendly bags. Despite the good intentions, after the entry into force of the ban, investments in recycling technologies were still lacking, as were good and cheap alternatives. As a result, people started smuggling in plastic bags from neighbouring countries and a lucrative black market emerged (UNEP, 2018d).

3.3 Standards, certification and labelling

Standardization involves establishing accepted criteria and guidelines for the quality, safety and acceptability of products and evaluating industry claims (OECD, 2018e). Standards relevant to single-use plastics are generally associated with safety risks and environmental impacts; they relate for example to harmful substances, recycled content, biodegradability, compostability, recyclability and bio-based plastics. Product standardization reduces the likelihood of off-specification single-use plastics and allows for better management of a product once it becomes waste (OECD, 2018e). Product standards also help ensure fair competition, promote commercial growth by overcoming barriers that result from unclear or inconsistent specifications and communication and help prevent fraudulent market behaviour (European Bioplastics, 2016). They are an essential component of any robust single-use plastics regulatory framework.

Standards relating to consumer safety and environmental protection

This section covers standards relating to consumer safety and environmental protection. Standards for product design or eco-design are discussed in subsection 3.4, under "Extended producer responsibility".

Criteria and specifications

Criteria and specifications refer to requirements relating to the characteristics or technical performance of a product or

Box 16: The tax on plastic bags in Ireland

The plastic bag tax in Ireland is widely cited as one of the most successful examples of an intervention designed to reduce the consumption of plastic bags. This case study provides background to the legal framework that established the tax and outlines the likely reasons for its success.

In 2001, Ireland amended its Waste Management Act to grant the Minister of the Environment and Local Government the power to make regulations providing for an environmental tax on the sale of plastic bags to customers. Under the amendment, plastic bags are defined as a bag "made wholly or in part of plastic" and "which is suitable for use by a customer at the point of sale in a supermarket, service station or other sales outlet" other than those exempted under the regulations. The amendment also provided that:

> "The levy shall be payable by the person who carries on the business of selling goods or products in or at the supermarket, service station or sales outlet concerned or, if two or more persons each carry on such a business in or at the particular premises, whichever of them causes to be made the particular supply of plastic bags concerned."

The Minister of the Environment and Local Government then developed the Waste Management (Environmental Levy) (Plastic Bag) Regulations 2001 (Statutory Instrument No. 605/2001), which imposed a tax at the point of sale of €0.15 per plastic bag. The regulations also provided a list of exceptions to the tax and required that the tax be itemized on any invoice or receipt issued to the customer.

Accountable persons, meaning those defined under the amended Waste Management Act as selling plastic bags, are responsible for imposing the tax on customers. They are also responsible for paying the tax to the collection authority, which the regulations establish as the Revenue Commissioners. Accountable persons must furnish a return to the Revenue Commissioners by the nineteenth day of the month following the end of an accounting period and authorize them to debit the appropriate amount from their account. Accountable persons are also responsible for keeping records.

If an accountable person fails to furnish a return to the Revenue Commissioners, the Commissioners are authorized to estimate the tax and serve notice that that amount must be paid. The regulations specify the procedures that must then follow, including the possibility of appeal to an appeal commissioner if the person who receives the notice claims that he or she is not responsible for paying the tax. The regulations similarly outline procedures to follow when the Revenue Commissioner believes that there has been an underpayment of the tax. For appeals procedures, the regulations refer to provisions of the relevant tax law to govern the procedure.

Finally, the regulations grant inspection powers to authorized officers of the Revenue Commission. These include the authority to require the production of records related to a tax, the power to enter premises to take note of any plastic bags found and the authority to remove and retain relevant records.

The tax had a marked impact on consumer habits in the years following its enactment. A 2007 study of the levy found that the use of plastic bags at retail outlets in Ireland had decreased by more than 90 per cent (Ferreira, Convery and McDonnell, 2007). Furthermore, the tax has had a positive impact on plastic bag litter. Plastic bags accounted for only 0.13 per cent of litter pollution in 2015, compared to an estimated 5 per cent in 2001. The tax also generated €200 million in 12 years, with the revenue going to environmental projects managed by an environmental fund (Anastasio and Nix, 2016).

Some factors accounting for this success include the following:

- The Government first conducted a survey of consumer willingness to pay for plastic bags and then set the price six times higher, probably resulting in a strong deterrent effect (UNEP, 2018d)
- When consumer use of plastic bags began to rise again in the years following introduction of the tax, the regulations were amended to raise the tax, increasing it to €0.22 in 2007 and €0.44 in 2009. Then, in 2011, the Waste Management Act was again amended to allow the Minister of the Environment and Local Government to amend the tax amount once every financial year, subject to an overall cap.
- The tax was accompanied by rigorous consultations and an awareness campaign, and public support was generally favourable to the policy (UNEP, 2018d).
- The tax had low administrative costs because the reporting and collection were integrated into existing reporting on value added tax (Ferreira, Convery and McDonnell, 2007).
- The tax had a limited impact on the plastic manufacturing sector and retailers report that it has not had a negative economic impact on their businesses (Anastasio and Nix, 2016).

How replicable is the Irish example? In South Africa, the 2002 Regulations under Section 24 (d) of the Environmental Conservation Act (Act No. 73 of 1989), combining a ban and tax (the amount depending on the thickness of the bag), were partly modelled on the Irish example, but have seen mixed results. One 2011 assessment found that the tax initially succeeded in affecting consumer behaviour, but the effect declined over time. Researchers suggested that as consumers absorbed the price, they began to use plastic bags again, perhaps because plastic bags were still relatively cheap even by the standards of the poor (Dikgang, Leiman and Visser, 2012). This suggests that the tax was set too low. Another study, which surveyed consumers about their habits, suggests that the main reason for the limited efficacy of the South African tax was the convenience of plastic bags and a lack of viable alternative options (O'Brien and Thondhlana, 2019).

material and the testing methodologies to be used to determine compliance with the relevant standards. These will vary according to the product and the policy goal. Legislators developing single-use plastic legislation may want to consider including specific standards, such as quality and safety standards for consumer goods. Alternatively, legislation may incorporate or reference technical documents developed by international or national standards agencies or incentivize voluntary compliance with such technical standards.

Legislation on single-use plastic products can incorporate or reference standards with environmental protection goals. Such standards may set requirements related to material composition, reusability, recoverability (to ensure the product can be recycled), compostability or biodegradability. Box 18 provides additional detail about existing international standards in these areas that apply to single-use plastic packaging. Legislators may also wish to incorporate consumer safety standards that regulate plastic products more generally, such as standards on the amounts of noxious substances and heavy metals permissible in plastic packaging, especially packaging that comes into contact with food. These might include treaty obligations, for instance under the Stockholm Convention, which prohibits or restricts the production and use of some of the most hazardous chemicals known as persistent organic pollutants and requires the environmentally sound management of waste consisting of or containing them.

Certification

Certification is the process of assessing and validating industry claims based on product standards (OECD, 2018). Policymakers introducing standards should consider what form of certification or other verification should accompany those standards. One option is mandatory self-certification or a declaration of compliance. This approach is common in standards relating to noxious substances or heavy metals and substances in contact with food. For example, under state-level legislation on toxics in packaging in the United States, manufacturers and suppliers of packaging must give their purchasers a certificate of compliance, signed by an authorized company official, stating that their packaging or component is in compliance with the law regarding permissible concentrations of regulated heavy metals. A copy of the certificate must be kept on file and provided to the competent authority and members of the public upon request.

Some European Union member States, in incorporating the Essential Requirements of Directive 94/62/EC of 1994 into national law, require from producers declarations of conformity stating that products comply with the standards. For example, in France packaging manufacturers are required to provide a written declaration of conformity with the Essential Requirements supported by technical documentation. In the United Kingdom, companies must keep on file technical documentation or other information showing compliance with the Essential Requirements. The technical documentation or other information must be retained for a period of four years from the date at which packaging was placed on the market. In Bulgaria, producers and importers must present a declaration of compliance with the Essential Requirements to control bodies upon request and must keep it on file for three years. (Lust, Laureysens and Acoleyen, 2009).

Compliance with the Essential Requirements is mandatory, but the CEN standards mentioned in box 18 are voluntary. Compliance based on the CEN standards is sufficient to demonstrate that the packaging or packaging materials satisfy the Essential Requirements, but if a company opts out of the CEN standards, it will have to demonstrate that it has taken alternative measures to fulfil the Essential Requirements for its plastics products. Otherwise, the related products may be barred from the European Union market (EUROPEN, 2006).

Another way of ensuring proper compliance with standards is through third-party certification. Independent third-party certification can increase the credibility and acceptance of claims that the criteria set forth in standards have been met.

Box 17: Key elements: standards, certification schemes and labelling

When developing standards, certification schemes or labelling for single-use plastics, the following elements should be considered (each element is described in more detail afterwards):

- **Criteria and specifications:** specific criteria relating to a product/material and its technical performance that must be met for single-use plastic products to be allowed onto the market
- **Verification of compliance:** the mechanisms by which companies and other parties responsible may show compliance with standards (they can be mandatory or voluntary and self-declared or third-party certified)
- **Labelling or marking:** printed information or symbols affixed to a product concerning its characteristics, as required by regulation, that demonstrate the product's compliance with environmental standards, verified by third-party certification
- **Enforcement mechanisms:** the strategies and methods employed by enforcement agencies to ensure continued compliance with standards, including inspections, prosecutions, and audits

Box 18: Existing international standards governing the characteristics and composition of packaging materials (including plastic packaging)

In the European Union, European Parliament and Council Directive 94/62/EC of 1994 on packaging and packaging waste sets forth certain criteria, called the Essential Requirements, that must be met in order for packaging to be allowed entry into the European market. The European Committee for Standardization (CEN) has developed a set of standards for implementation of the Essential Requirements. The CEN standards apply to all European Union member States and have also been adopted by Iceland, Norway and Switzerland and companies in Australia, the United States, Asia and the Middle East. The CEN standards are thus close to de facto world standards (Perchard and others, 2005; European Organization for Packaging and the Environment (EUROPEN), 2006; Lust, Laureysens and Acoleyen, 2009).

These Essential Requirements, along with their associated CEN standards, are as follows:

- Manufacture and composition of packaging: Packaging volume and weight is "limited to the minimum adequate amount needed to maintain the necessary level of safety, hygiene and acceptance" for the packed product and the consumer; noxious and other hazardous substances and materials in packaging or packaging components should have minimum impacts. The relevant standard is EN 13430:2000 (Packaging – Requirements for packaging recoverable by material recycling).
- Reusable nature of packaging: Where claimed or required, packaging must be designed and produced in such a way as to permit reuse for a number of trips or rotations in normally predictable conditions of use and to allow for recovery when no longer reused and it becomes waste. The relevant standard is EN 13429:2004 (Packaging – Requirements for relevant materials and types of reusable packaging).
- Recoverable nature of packaging: Where claimed or required, (i) packaging must be manufactured in such a way as to enable recycling of a certain percentage by weight of the materials used; (ii) packaging waste must be suitable for optimal energy recovery; (iii) packaging suitable for composting must be of such biodegradable nature that it does not hinder separate, collection or the composting process; (iv) biodegradability must be of such nature that it is capable of undergoing physical, chemical, thermal or biological decomposition with most of the finished compost decomposing into carbon dioxide, biomass and water. Three separate standards govern recoverability, namely EN 13430:2000 (Packaging – Requirements for packaging recoverable by material recycling), EN 13431:2004 (Packaging – Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value), and EN 13432:2000 (Packaging – Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging).

In addition to EN 13432:2000, noted above, other relevant international standards governing compostability and biodegradability for alternative plastics include:

- ASTM International standards, including the ASTM D6400 standard to assess compostability and degradability and the ASTM D6400-19 standard for the labelling of plastics designed to be aerobically composted in municipal and industrial facilities, which has been adopted by several US cities and states; (ASTM International, 2019).
- Standards of the International Organization for Standardization (ISO), a worldwide federation of national standards bodies, including ISO 14855:2012 – Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions – Method by analysis of evolved carbon dioxide (ISO, 2012a) and ISO 17088:2012 – Specifications for compostable plastics (ISO, 2012b).
- As yet, there are no international standards for domestic composting, but some countries have developed national standards for biodegradable plastics suitable for home composting. Examples include the Australian standard AS 5810-2010 (Biodegradable plastics – Biodegradable plastics suitable for home composting), the French standard NF T51-800:2015 (Plastics – Specifications for plastics suitable for home composting), the German standard DIN V 54900-1 (Testing of the compostability of plastics) and the Green Plan in Japan (OECD, 2018e; UNEP, 2015).

There are also standards currently under development at the international level. These include:

- ASTM standard for non-floating biodegradable plastics in the marine environment (ASTM D7081-05) and a standard for a new test method for determining aerobic biodegradation of plastics buried in sandy marine sediment under controlled laboratory conditions (ASTM WK42833) (UNEP, 2015).
- A plastics industry initiative, led by the trade association PlasticsEurope, undertakes to produce, by 2020, a set of guidelines on the eco-design of plastics packaging and design for recycling to maximize reuse and recycling of plastics packaging, with the goal of setting standards for plastics in the context of the circular economy (OECD, 2018).
- The action plan of the Ellen MacArthur Foundation and the World Economic Forum to tackle plastics includes the development of a set of global standards for packaging design and a Global Plastics Protocol, which many companies, cities and Governments have endorsed (OECD, 2018).

Several independent third-party certification organizations can verify compliance with standards. For example, the Biodegradable Products Institute in the United States, a non-profit organization with members from industry, Government, and academia, certifies compliance with ASTM standards (D6400 or D6868) on compostability of products in industrial or large-scale composting facilities (Biodegradable Products Institute, 2019). Similarly, TÜV Austria Belgium NV/SA and Din Certco GmbH, both independent companies, certify conformity with CEN standards on biodegradability and compostability (EN 13432) (OECD, 2018). In Asia, the Japan Environment Association, a non-profit organization that brings together experts from academia, Government, industry and consumer groups, certifies compliance with ISO standards 14020:2000 and 14024:2018 on environmental labels and declarations, including plastic packaging and plastic compostability claims. Third-party certifiers often attach a logo or marking to signify conformity with the referenced standards.

Labelling or marking

Labelling or marking comprises written communication or graphic symbols on plastics products and packaging. It is another way of demonstrating compliance with standards. Consumers can quickly identify those plastic products that conform with environmental standards. Labelling can provide information on the product components (polymer types, additives, recycled content, etc.); the practices used in the production, transport and treatment of the product; recyclability; or claims of compostability or biodegradability of a product (UNEP and Consumers International, 2020). Labels can also communicate recycling instructions for particular products, for example, the messages of the How2Recycle Label about recycling bottles with the cap on, which has been adopted by some major manufacturers, such as Hasbro, Target and Walmart in the United States and Nestlé in Switzerland (UNEP and Consumers International, 2020). If products are adequately labelled, users and consumers have clear and accurate information on which to base purchase decisions (UNEP, 2018d).

Policymakers may consider prescribing material coding of plastic packaging and products and may use internationally recognized coding systems. The Plastics Industry Association in the United States has developed a numerical coding system that uses a symbol of three arrows cycling clockwise to form a triangle. Inside the triangle is a number between 1 and 7 corresponding to the type of plastic resin in the product. The symbol must be moulded into or imprinted on the base of the container or product. The European Commission has established a material coding system that is a slight variation on the US system. Both systems are widely used. Plastic coding can facilitate identification and separation of used plastics for various applications, including recycling (Electronic Imaging Materials Inc., 2019; Bell and Environmental Packaging International, 2006; American Chemistry Council, n.d.).

Where single-use plastics legislation incorporates environmental standards, it may be appropriate to require labels or markings relating to those standards. For example, Article 7 of European Union Directive 2019/904 of 2019 requires member States to ensure that beverage cups, other specified single-use plastics, such as wet wipes, and the packaging used for those products bear conspicuous, clearly legible and indelible marking. The label or marking informs consumers about waste management options, the presence of plastics in the product and the resulting negative environmental impact of littering or other inappropriate waste disposal. According to the preamble to the directive, the marking requirement targets the single-use plastic products that had been found to be frequently discarded into the sewerage system or otherwise inappropriately disposed of. Legislation can also regulate the use of labels to make environmental claims. The guidelines issued by the US Federal Trade Commission provide a model. The Guides for the Use of Environmental Marketing Claims (United States, 2012) require that any claim or label be based on competent and reliable scientific evidence and be clearly qualified to avoid deception. Compostability claims must clarify the suitability of the product for home composting and the availability of municipal or institutional composting facilities in the region where the product is sold (Section 260.7). Biodegradability claims must clarify the ability of the product to degrade in the environment where it is customarily disposed of and the rate and extent of the degradation (Section 260.8). Claims of recyclability should not be made unless the product, when disposed of, can be collected, separated or otherwise recovered from the waste stream through an established recycling programme for reuse or use in manufacturing or assembling another item. Moreover, the label "recyclable" or the three-arrow triangle symbol on a packaged product must qualify whether it refers to the packaging or the product, unless the claim can be substantiated for both (Section 260.12). Claims of recycled content should be made only for materials that have been recovered or otherwise diverted from the waste stream, either during the manufacturing process (pre-consumer) or after consumer use (post-consumer). For items partially made of recycled material, the marketer should clearly and prominently qualify the claim to avoid deception about the amount or percentage, by weight, of recycled content in the finished product or package (Section 260.13).

Environmental claims and statements that fail to conform to the Guides may be deemed deceptive and subject to prosecution of the responsible party. Several US states, including California, Maryland, Minnesota and Washington, have passed legislation similar to the Guides. Box 19 gives the provisions of the California and Minnesota statutes. Other examples that can be used as models are the Principles and Guidelines for Environmental Labelling and Advertising in Canada and the Green Claims Code in the United Kingdom, which are similar to the Federal Trade Commission Guides (Bell, 2006).

Government-sponsored labelling or marking (eco-labelling): The purpose of eco-labels is to indicate the overall environmental preferability of a product or service in its product or service category. An eco-label programme may be Government-sponsored; quasi-governmental (i.e., created and supported by the Government but run by a private entity); or privately operated, either for profit or not for profit (United States, 1998). In most eco-labelling schemes, third-party certification is mandatory.

Examples of eco-labels in the plastics category include the German Blue Angel label, initiated by the country's Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, which certifies products with recycling content. The label is awarded after review by an environmental label jury

Box 19: Examples of plastic products labelling provisions

US state of California

2011 Public Resources Code; Division 30:Waste Management; Part 3: State Programs
Chapter 5.7. Plastic Products

"42355. The Legislature finds and declares all of the following:

…

(b) It is the intent of the Legislature to ensure that environmental marketing claims, including claims of biodegradation, do not lead to an increase in environmental harm associated with plastic litter by providing consumers with a false belief that certain plastic products are less harmful to the environment if littered.

…

(d) Use of the term "degradable," "biodegradable," "decomposable," or other like terms on plastic products is inherently misleading unless the claim includes a thorough disclaimer providing necessary qualifying details, including, but not limited to, the environments and timeframes in which the claimed action will take place.

…

42357. (a) (1) Except as provided in paragraph (3), a person shall not sell a plastic product in this state that is labeled with the term "compostable," "home compostable," or "marine degradable" unless, at the time of sale, the plastic product meets the applicable ASTM standard specification.

…

42357.5 (a) A manufacturer of a compostable plastic bag meeting an ASTM standard specification … shall ensure that the compostable plastic bag is readily and easily identifiable from other plastic bags in a manner that is consistent with the Federal Trade Commission Guides for the Use of Environmental Marketing Claims…

(b) For purposes of this section, "readily and easily identifiable" means labeling that meets both of the following requirements:

(1) Labeled with a certification logo indicating the bag meets the ASTM D6400 standard specification if the bag has been certified as meeting that standard by a recognized third-party independent verification.

(2) Labeled in accordance with one of the following:

(A) The bag is made of a uniform color of green and labeled with the word "compostable" on one side of the bag, and the label shall be at least one inch in height.

(B) Labeled with the word "compostable" on both sides of the bag and the label shall be one of the following:

(i) Green color lettering at least one inch in height.

(ii) Within a contrasting green color band of at least one inch in height on both sides of the bag with color contrasting lettering of at least one-half inch in height.

(c) … if the bag is smaller than 14 inches by 14 inches, the lettering and stripe shall be in proportion to the size of the bag.

(d) A compostable plastic bag sold or distributed in the state shall not display a chasing arrow resin identification code or recycling type of symbol in any form."

US state of Minnesota

2019 Minnesota Statutes; Trade Regulations, Consumer Protection
Chapter 325E

"325E.046 STANDARDS FOR LABELING PLASTIC BAGS.

Subdivision 1."Biodegradable" label. A manufacturer, distributor, or wholesaler may not offer for sale in this state a plastic bag labeled "biodegradable," "degradable," or any form of those terms, or in any way imply that the bag will chemically decompose into innocuous elements in a reasonably short period of time in a landfill, composting, or other terrestrial environment unless a scientifically based standard for biodegradability is developed and the bags are certified as meeting the standard.

Subd. 2."Compostable" label. A manufacturer, distributor, or wholesaler may not offer for sale in this state a plastic bag labeled "compostable" unless, at the time of sale, the bag meets the ASTM Standard Specification for Compostable Plastics (D6400). Each bag must be labeled to reflect that it meets the standard."

with 15 members representing environmental and consumer associations, trade unions, industry, commerce, the media, churches, academia, municipalities and federal states.

Enforcement and compliance

The principal types of enforcement mechanism that policymakers could consider include mandatory periodic inspections, prosecutions and sanctions and, for eco-labels, partner audits and monitoring. Additionally, allowing public access to records increases transparency and contributes to compliance.

When legislating on standards, drafters should give particular consideration to mandating periodic inspection as a mechanism for enforcing compliance. Inspections can be routine or random and can comprise both an inspection of compliance documents or records and a sampling of the product subject to inspection. For example, in the United Kingdom, the Packaging (Essential Requirements) Regulations of 2015, which transposed the Essential Requirements under European Union Directive 94/62/EC of 1994, empowers enforcement authorities to require a company to submit its compliance documentation, including its declaration of conformity and supporting technical documents, and makes reference to the broad enforcement powers granted in the Consumer Rights Act 2015. These include the following powers:

- to enter a premise without warrant
- to inspect products
- to test equipment
- to seize goods and documents

Similarly, in the US state of Washington, the Revised Code of Washington of 1991, amended in 2020, empowers the Department of Ecology, as enforcing agency, to require the production of compliance documents. Failure to respond within 60 days is grounds for prohibiting the sale of any package produced by the manufacturer (Chapters 70A.222.060 and 70A.222.040).

European countries provide other examples of good practices that facilitate inspection:

- The Netherlands and the United Kingdom have developed inspection lists and a toolkit to assist inspection officers who often have a wide range of laws in their remit and who are often not plastics or packaging experts (Bio Intelligence Service, 2011). In the Netherlands, the inspection list consists of general questions concerning plastic packaging prevention and awareness of the Essential Requirements and specific questions regarding particular packaging samples or packed products and heavy metals. Prior notice of inspection is provided to the company. In the United Kingdom, the toolkit for standards enforcement officers includes a checklist, information and examples of good packaging design, links to the data and case studies of the UK Waste Reduction Action Programme, information on past prosecutions, flow charts and standard letters (Bio Intelligence Service, 2011).
- In Belgium, the Federal Environment Inspectorate conducts annual inspection campaigns to check the heavy metal content of packaging, using a handheld X-ray fluorescence analyser to detect excessive concentrations of heavy metals and allow non-destructive on-site analysis within seconds. The sample is subsequently sent to a laboratory for more accurate verification. Inspection agencies of a few other countries – the Netherlands, the United Kingdom and the United States – have also began using the device (Bio Intelligence Service, 2011).
- The French and UK authorities conduct targeted inspections of products that have the largest impact on wastes and of producers with the largest production volumes (EUROPEN, 2006).

The requirement to allow public access to records can be a means of ensuring compliance. Some American states and the European Union grant the public access to standards compliance certificates and other non-confidential information relating to a packaging or packaging component. Public access to information can help deter non-compliance with standards and may help to check the provision of false or inaccurate information by companies. It allows the public to challenge a company's claim or make a complaint. The request for access to the information by members of the public is generally made to the enforcement agency, which also provides the information. An exception is the legislation in the US state of Iowa on Waste Volume Reduction and Recycling in the Iowa Code, which allows the company and a public citizen to communicate directly (chapter 455D.19, paragraph 6.a).

Legislators should consider what sanctions to impose for non-compliance with or breach of the law, including failure to retain the required records or supply compliance documentation, the generation or provision of false information or the sale or distribution of packaging products in violation of the law. Sanctions may consist of a fine or a fine and imprisonment, depending on the severity of the offence.

Audits and monitoring

Ecolabelling programmes must include certification that is maintained by the licence- or label-holder throughout the term of the contract or certification. Most eco-labelling programmes verify continuing compliance with label or logo requirements through periodic audits and the monitoring of label-holders. For example, the Green Mark eco-labelling programme, through its programme administrator, the Environment and Development Foundation, conducts random follow-up site tests, performs on-site investigations when notified of a possible label misuse and conducts market sampling through its own staff or in collaboration with non-governmental organizations. The Canadian EcoLogo programme, which certifies the bio-based product content of plastics and other materials and products, ensures compliance by requiring the submission of an annual statement from the manufacturer confirming continued conformity and through compliance monitoring that includes location visits, product testing and record verification (United States, 1998).

Implementation challenges and unintended impacts

Implementation of standards, criteria and labelling schemes for single-use plastic products pose a number of challenges, as does the a lack of standardization among certification and labelling around the globe. Misleading product labels and failure to adhere to the Essential Requirements appear to be particularly prevalent. Challenges include the following:

- **Misleading labels:** The labels "biodegradable" and "compostable" can be misleading. The term biodegradable can be applied to materials with widely differing rates of biodegradation; the label is therefore almost meaningless unless the rate of biodegradation and conditions under which it is measured are specified, preferably with reference to a widely recognized standard (Thomas and others, 2012). The labelling of oxo-degradable plastics as biodegradable can also confuse the consumer and lead to possible contamination of the composting waste stream with oxo-degradable plastics. Similarly, the use of the term "compostable" can lead to confusion because it can refer to either an industrial or a domestic setting, but the difference is critical (UNEP, 2018a). In most cases, the label refers to conditions generated in an industrial composting system, where temperatures can be maintained at around 60°C for many weeks. Normal domestic or garden compost bins or heaps operate at much lower temperatures (UNEP, 2018a). There is a danger that the labels biodegradable and compostable will be interpreted by consumers as a licence to litter items in the environment (UNEP and Consumers International, 2020). Some experts suggest that if the term "biodegradable" is used on packaging, the disposal environment, extent of biodegradation in a short time period or the time needed to complete biodegradation should be indicated. Ultimately, experts recommend that it would be better not to use the term 'biodegradable' at all for labelling packaging and instead the label should simply include instructions on the best means of disposal (Thomas and others, 2012).

- **Confusing or unclear imagery or information on labels:** Some labels contain visual imagery that can be confusing to consumers, such as the use of images similar to the chasing-arrows symbol in the plastic packaging resin identification codes or those used to indicate a financial contribution to recycling financing as in the Green Dot trademark. This can lead consumers to mistake the item as recyclable even if it is not and can contribute to the contamination of recycling streams. The label may also be printed too small to be readable contain limited relevant information (for example, requiring the consumer to check locally for recycling facilities) or too complicated (for example, containing too many symbols). Labels for bio-based plastic may be confused with biodegradability, while some logos may look like eco-labels. To minimize confusion, symbols and colours in the labels must be informative, facilitate understanding and reflect national and international standards as properly verified. The chasing arrow symbol, in particular, must be restricted to recyclability (UNEP and Consumers International, 2020).

- **Poor implementation of the Essential Requirements:** A study of compliance by European Union member States with the Essential Requirements set forth in Directive 94/62/EC of 1994 shows weak compliance overall (Lust, Laureysens and Acoleyen, 2009). Member States tend to entrust compliance to industry, citing other policy priorities, lack of staff and finances and a lack of understanding of how to assess compliance with the Essential Requirements. Only a few member States have established implementation measures and procedures for enforcement of all three Essential Requirements (Bulgaria, Czechia, France and the United Kingdom) and, even there, inspection efforts could be made more robust. The study made several recommendations to increase compliance in member States, including the development of indicators to monitor implementation, greater awareness-raising and support for implementation and enforcement of the Essential Requirements at the national level.

3.4 Post-consumer use and product end of life

Waste management legislation

Waste management legislation should ensure the environmentally sound management of products and materials at the end of their life. In many countries, however, waste management legislation does not specify procedures for single-use plastic waste, but is rather applicable only generally (Hyman and others, 2013). Good practice requires that waste management legislation cover the entire hierarchy of waste management, starting with waste prevention, then moving to reuse, recycling and safe disposal. EPR schemes also are a critical part of ensuring the recycling and proper disposal of waste. Legislators and policymakers should consider how waste management legislation can be amended to support opportunities for single-use plastic waste to be treated as a resource to be recovered, recycled or reused. Given the many possible regulatory approaches for improving the management of single-use plastic waste, this section briefly highlights some of the options.

Guidance on the environmentally sound management of waste has been developed under the Basel Convention and is available in a related toolkit, which can provide support for the development of waste management legislation focusing on plastics. The toolkit includes:

- Guidance to assist Parties in developing efficient strategies for the recycling and recovery of hazardous and other waste;

- Practical manuals on EPR and financing systems for environmentally sound management;

- Guidance on how to address environmentally sound management in the informal sector.

Prevention and minimization of single-use plastic waste

Regulatory interventions that seek to prevent or minimize plastic waste pollution can be put in place. These can include incentives and other elements that aim to improve manufacturing methods, to reduce the amount of waste generated before the recycling stage or to influence consumers to demand greener products or less packaging, thereby limiting consumption. For example, in France Law No. 2020-105 of 2020 on Combating Waste and on a Circular Economy includes regulatory measures that aim for all plastic to be recyclable by 2025 and for a 50 per cent reduction in the use of single-use plastic bottles in the next decade. Fast-food restaurants and takeaways have to stop using plastic containers by 2023. The law also includes obligations on e-commerce platforms to prevent and manage waste produced by their business activities (such as packaging waste from online sales) and requirements to provide certain information to consumers about products to disincentivize the purchase of those that are not recyclable or contain hazardous substances.

Collection, separation and recovery of single-use plastic waste

Interventions to support the recycling and reuse of single-use plastic waste start with source separation. Separate collection of plastic packaging is known to increase recycling because it allows valuable streams to be extracted and hazardous materials to be removed while diminishing cross-contamination. This ensures more efficient downstream processing and reduces risks to the environment and public health (UNEP and the United Nations Institute for Training and Research, 2013).

Waste management or recycling legislation can mandate separate collections from households and commercial entities**.** Mandates can be accompanied by requirements to purchase receptacles of different types, sizes and colours and rules for collection relating, for example, to the collection dates of specific products. Alternatively, legislation may support single-stream collection that is then separated manually or with technological sorters or a combination of the two. Recovery and sale of bulk products for processing can also be supported through legislative incentive schemes.

Payments and fees

Legislators and policymakers can impose disposal levies and fees that encourage source separation and incentivize the recovery of certain materials. Fee programmes may include landfill fees or pay-as-you-go programmes (United States, 1997). Pay-as-you-go programmes can be set up with variable rate pricing (different fees for different sizes of container), unit pricing (a fee per bag of waste) or user fees (a set price that is charged to residents or businesses based on the amount of waste they produce to incentivize the minimization of waste). In New Zealand, the Waste Minimization Act of 2008, for example, permits the setting of fees for the management of a product. The 1998 Municipal Waste Planning, Recycling and Waste Reduction Act of the US state of Pennsylvania imposes a fee on operators of municipal waste landfills and resource recovery facilities. The fees go to a recycling fund used to support grants to municipalities for recycling programmes, as well as studies, public education efforts and technical assistance programmes related to litter control, recycling and waste reduction.

Regulation of the informal sector

Waste pickers play a critical role in the recovery of single-use plastic items, especially where there is no source separation at the household or commercial level. Improvements in the operation of waste pickers has been linked to better waste collection, a higher rate of product collection and less of a need for investment in landfill facilities owing to waste diversion (UNEP and United Nations Institute for Training and Research, 2013). Investment in strengthening the organization of waste pickers could lead to improved employment conditions for women and greater opportunities to earn better livelihoods (Ocean Conservancy, 2018). Some countries have granted legal recognition to the informal sector's role in waste management in legislation (Marello and Helwege, 2017). One of the most advanced is Brazil:

- Sao Paulo offers payment for services rendered, per tonne of recyclable material collected, under Law No. 2336/04 on a System for the Sustainable Management of Solid waste (Schroder and Noble, 2017).

- Waste pickers' organizations are contracted by municipalities to perform selective waste collection without a bid for service provisions, such as per the Basic Sanitation Law Brazil.

- The rights of waste pickers to access, sort and recycle reclaimable materials and tender for contracts are acknowledged. Through the institutionalization of waste pickers' organizations, in Decree No. 7.405 of 2010, the country seeks to improve working conditions, economic livelihoods, and recycling (da Silva, Weins and Potinkara, 2018).

- Waste pickers receive payment for their services in collecting and transporting recyclable materials and support for their organization into collectives (da Silva, Weins and Potinkara, 2018).

Export and import of plastic waste

The 187 parties to the Basel Convention must ensure that their legal framework pertaining to the management of plastic wastes is in line with their treaty obligations. Recent developments include the plastic waste amendments adopted in 2019 by decision BC-14/12 of the Conference of the Parties to the Basel Convention at its fourteenth meeting, whereby Annexes II, VIII and IX were amended with the objective of enhancing control of the transboundary movements of plastic waste and clarifying the scope of the Convention as it applies to such waste. Hazardous plastic wastes and plastic wastes requiring special consideration are subject to the prior informed consent procedure under the Basel Convention. Other plastic wastes are presumed to not be hazardous and, as such, not subject to the procedure.

The plastic waste amendments are as follows:

- The amendment to Annex II is the insertion of a new entry Y48 in Annex II covering plastic waste, including mixtures of such wastes unless these are hazardous (in which case they would fall under A3210) or presumed to not be hazardous (in which cased they would fall under B3011).

- The amendment to Annex VIII is the insertion of a new entry A3210, which clarifies the scope of plastic wastes presumed to be hazardous and therefore subject to the prior informed consent procedure.

- The amendment to Annex IX, with a new entry B3011 replacing the existing entry B3010, clarifies the types of plastic waste that are presumed to not be hazardous and, as such, not subject to the prior informed consent procedure. The wastes listed in entry B3011 include: a group of cured resins, non-halogenated and fluorinated polymers, provided the waste is destined for recycling in an environmentally sound manner and almost free from contamination, and other types of wastes; mixtures of plastic wastes consisting of PE, PP or PET provided that they are destined for separate recycling of each material and in an environmentally sound manner, and almost free from contamination and other types of waste.

The new entries become effective on 1 January 2021. Plastic wastes with specific Annex I constituents exhibiting Annex III hazardous characteristics or plastic wastes falling under the scope of household wastes listed in Annex II, already fall within the scope of the Basel Convention under the current regime. These amendments have made the Basel Convention the only global legally binding instrument specifically to address plastic waste.

Legally binding waste management legislation can also be utilized to support legislation banning or phasing out the use of certain types of single-use plastic products. The phase-out period for single-use plastics can include their gradual removal from the market and limits on their disposal, including via the exportation of unused or unwanted products. Phase-out timelines could be included in waste management rules or regulations to support such bans and address trade in waste.

Extended producer responsibility

EPR has been defined as "a policy principle to promote total life-cycle environmental improvements of product systems by extending the responsibilities of the manufacturer of the product to various parts of the entire life cycle of the product, and especially to the take-back, recycling and disposal of the product" (Lindhqvist, 2000). EPR therefore includes an upstream (design and production) stage and a downstream (recovery and collection) stage (Kaffine and O'Reilly, 2013).

EPR has two principal environmental goals:

- To provide incentives for manufacturers to design resource-efficient and low-impact products (referred to in this report as "eco-design")

- To ensure effective end-of-life collection, the environmentally sound treatment of collected products and improved rates of reuse and recycling

EPR can be realized through broad legislation or through multiple regulations, rules and decrees under different statutes relating to taxes, subsidies, solid waste, environmental quality and pollution. Countries differ significantly in their preferred approaches, as do states, regions and cities (OECD, 2016). Comprehensive EPR systems are most prevalent in Europe (Leal Filho and others, 2019). Policymakers have to choose which policy instruments they want to include as part of their EPR system (Gupt and Sahay, 2015). Many systems around the world use take-back schemes, deposit-refund schemes and disposal fees as core elements of their EPR systems (OECD, 2016), which are described in more detail below. Some countries also use economic instruments and information requirements (OECD and Japan, 2014). These are mentioned in the subsections of the present report on eco-design, below, and standards, certification and labelling, above.

This section covers the design and implementation of EPR schemes, including upstream eco-design and EPR downstream. Recycling and deposit-refund schemes are included in separate sections as some countries have not adopted comprehensive EPR schemes and have adopted only elements of EPR, each with its own challenges.

EPR upstream: eco-design and material content

Eco-design plays an important role in determining the environmental impacts of single-use plastic products. Design decisions directly influence the end-of-life management of products, including their durability and level of recyclability, reusability, and reparability. Thoughtful design can also avoid or limit the use of virgin materials, toxic substances, and materials that are hard to recycle (Watkins and others, 2019). EPR can be used for all single-use plastic products and packaging.

Choice of producers and products to be targeted

Legislation should define who or what constitutes a producer and specify which products are to be included in an EPR system. This is an important part of setting the scope of the law and its application. For example, in the province of British Columbia, Canada, the 2004 Recycling Regulation, under the 2003 Environmental Management Act, defines a producer as "a person who manufactures the product and uses in a commercial enterprise, sells, offers for sale or distributes the product in British Columbia under the manufacturer's own brand". The law also outlines its application to producers of specific categories of beverage container product in the Schedule of the Act, exempting small producers.

Legislators will need to distinguish between domestic producers and importers. Legislation can also address the question of who is legally responsible for the different single-use plastic waste streams and the obligations of domestic producers in relation to plastic that they export.

Products to be exempted

Laws may need to provide exemptions for certain products to ensure industry acceptance of EPR. In addition, legislation may define producers and/or products that will be exempted from eco-design requirements. For example, in the US state of California, the Rigid Plastic Packaging Container Program of 1991, amended in 2013, includes exemptions for rigid plastic packaging containers that contain drugs, medical devices,

cosmetics, food, or infant formula as defined in the US Federal Food, Drug and Cosmetic Act. In this case, these products are exempted because a separate law defines the specific requirements for this type of packaging.

Eco-design standards

EPR legislation can include eco-design standards that place greater responsibility on producers in reducing single-use plastics or increasing the choice and availability of more sustainable alternatives. Legislation can be utilized to support the goal of product innovation, particularly sustainable product design, reduced resource use and enhanced recycling and pollution prevention. (McKerlie, Knight and Thorpe, 2006). Legislators should consider that industries may need to be given time to innovate or change their packaging design. New requirements might be phased in over time or a grace period allowed before compliance becomes mandatory. Options for eco-design standards include the following (McKerlie, Knight and Thorpe, 2006):

- **Reduced plastic packaging or "lightweighting":** Mandatory requirements can be set for the weight of plastic packaging. For example, the 1991 Rigid Plastic Packaging Container Program of the US state of California requires product manufacturers to use 25 per cent post-consumer recycled content in rigid plastic containers, unless the containers are reused or refilled at least five times, or they are "lightweighted" by10 per cent. Penalties for non-compliance may be up to US$50,000 per violation to a maximum of US$100,000 per product manufacturer. A consideration with lightweighting is that lighter (as opposed to fewer) packages might result in products that are less valuable, on a unitary basis, for recycling.

- **Percentage of recycled content:** Mandatory requirements can be set for the minimum amount of post-consumer recycled plastic content in a product. This requirement has been applied to plastic trash bags at the design stage. In the same 1991 Rigid Plastic Packaging Contained Program, all trash bags that are 0.75 mm or thicker are required to contain 10 per cent post-consumer recycled plastic. Alternatively, at least 30 per cent of the weight of all materials used in all plastic products placed on the California market by the manufacturer must be recycled material. In Italy, allowable plastic bags intended to carry food products are required to have at least 30 per cent recycled content and other plastic bags have to have 10 per cent recycled content.

- **Reusability of packaging or products:** Mandatory requirements can be set for the level of reusability of packaging or products. For example, the Article 5 (d) of the 2018 European Union Directive 2018/852 on Packaging and Packaging Waste requires the setting up of a minimum percentage of reusable packaging placed on the market each year for each packaging stream.

- **Recyclability of products:** Mandatory requirements can be designed to facilitate higher rates of recycling. Requirements may apply to the product design (e.g., for easier recycling with current technology), the type of plastic (e.g., PE, which is easy to recycle, versus polystyrene, which is difficult to recycle) or combinations of plastics (e.g., to reduce multiple types of plastic in a single product). European Union Directive 2019/904 of 2019 on the reduction of the impact of certain plastic products on the environment introduces new design requirements for beverage containers with a capacity of up to 3 litres, such as tethered caps and lids to reduce loss and increase their likelihood of being recycled. The imposition of other requirements can ensure that more valuable recyclable plastic is introduced to the market rather than low-value packaging that is difficult to recycle. In Japan, the EPR scheme for packaging waste has encouraged the replacement of coloured PET bottles with transparent PET bottles to improve their recyclability. This design innovation eliminated the need for a separate collection scheme to avoid colour degradation of the standard transparent PET, reducing collection costs and improving the quality of secondary resources (Watkins and others, 2017; OECD, 2016).

- **Composition of products:** Mandatory restrictions on chemical compounds or additives in plastics used for specific purposes can be set to reduce the toxicity of the product.

- **Use of bio-based material:** Mandatory requirements can be set for the use of bio-based materials as part of product content. Monaco has legislated a ban on the manufacture and distribution of plastic utensils that contain less than 40 per cent bio-based material. (UNEP, 2018c). European

Box 20: Key elements: EPR upstream

This subsection covers the following important questions that could be considered by policymakers and legislators who are considering enacting upstream EPR legislation (each element is described in more detail afterwards):

- **The choice of producers and products to be targeted**
- **Products to be exempted**
- **Eco-design standards**
- **The use of economic instruments**

Union Directive 2008/98/EC of 2008 on Waste encourages member States to support the use of bio-based materials in the production of packaging and to improve market conditions for such products.

Use of economic instruments

Taxes or fees on materials that are difficult to recycle can encourage producers to use alternative materials. Modulating EPR fees according to criteria like the ones mentioned above and charging less for the collection and management of waste from products that have been eco-designed is another way to influence eco-design. Legislators should consider whether hybrid approaches that combine standards and incentives with economic signals could improve upstream eco-design as part of a broad comprehensive EPR scheme. For example, French legislation includes fees and taxes as part of a focus on eco-design to reduce plastic packaging and encourage the design of lighter products. Producers are charged fees based on the weight of their packaging that enters the market (OECD, 2016). More detailed discussion of such issues can be found in subsection 3.2.

Box 21 outlines the background to the 1994 European Parliament and Council Directive on Packaging and Packaging Waste, which includes use of EPR and supports its delivery for single-use plastic waste.

Implementation challenges and unintended impacts

Challenges related to EPR upstream include the following:

- **Time for research and design**: Mandatory requirements for new eco-design of single-use plastic items will often require that industry be given time to innovate or change its packaging design. Consideration should be given in the legislation to offering opportunities for phasing in new requirements or to providing for a period for the application of new standards before they become mandatory.
- **Considerations relating to "light weighting":** The reduction of packaging on the basis only of weight (also known as lightweighting), as opposed to reduction of the number of articles, has its limitations, as a focus on lightweighting can lead to fewer valuable recyclable products.
- **Effectiveness of economic instruments in facilitating eco-design:** There have been few long-term, comprehensive evaluations of the effectiveness of EPR in influencing eco-design for different types of single-use plastic product. This could be related to the size and influence of the market in jurisdictions where eco-design elements in EPR are in place. There need to be sufficient incentives for eco-design for large international companies through their EPR systems to effect changes in products or packaging.
- **Importing countries versus countries that have local manufacturers of plastic packaging:** Legislators should consider how to address the legal question of who the producer is in relation to different product streams and the application of the law to products manufactured locally and to those imported. This includes consideration of whether EPR laws should provide for exemptions for certain products.
- **Industry support:** Ensuring industry support for changes in standards for packaging and design across multiple products is crucial when implementing upstream EPR requirements.

EPR downstream: recycling and end-of-life management

Downstream EPR holds producers, distributors and retailers responsible for the waste that they create. Policymakers must consider all of the organizations and individuals who produce, sell, buy and dispose of single-use plastics, including grocery stores, retailers of plastics and customers.

Box 21: EPR in the European Union

Almost all European Union member States have adopted EPR schemes for packaging waste under the 1994 Packaging and Packaging Waste Directive 94/62/EC. Its success is evident in, among other achievements, a single-use plastics recycling rate of 30 to 95 per cent, depending on the product type (Leal Filho and others, 2019). The European Union experience has shown that EPR laws must explicitly require oversight or monitoring of recycling requirements. The European Union has both Directive 94/62/EC, amended by directives 2004/12/EC of 2004 and 2005/20/EC of 2005, and the new 2019 Directive 2019/904 on the reduction of the impact of certain plastic products on the environment that regulates single-use plastics and adopts an EPR approach. The European Union also has the Directive 2008/98/EC of 2008 on Waste, a waste framework directive, which includes the requirements for adoption of EPR in the waste hierarchy: prevention; reuse; recycling; other recovery, including energy recovery; and final disposal (Williams, 2012). According to one source, the European Union uses EPR to underpin all "the most commonly used economic policy instruments affecting waste plastic management for specific waste streams such as packaging, deposit-refund systems for homogeneous products such as beverage bottles, charges and fees for waste disposal and treatment as well as landfill and incineration taxes and gate fees" (Hennlock and others, 2014).

Research has also found that the effectiveness of EPR schemes in meeting reuse and recycling targets also tends to increase when EPR is coupled with economic instruments such as landfill and incineration taxes, disposal bans for certain products or materials, packaging taxes and pay-as-you-throw schemes (Zero Waste Europe, 2015; European Commission, 2014). European Union rules on EPR were reformed in 2018 and should be transposed into national legislation in all member States by mid-2020. The rules were revised to strengthen the provisions on what costs should be covered and the proportion that should be covered by producers.

Definitions

Legislation should include a clear definition of who is considered a "producer" and will thus be subject to the scheme. Legislative definitions may vary depending on the type of product. In the EPR scheme in Ireland, regulated by the 2006 Waste Management Act the person whose activities produce waste th rather than the person who manufacturers the packaging is considered to be the producer. In the EPR scheme in Chile, regulated by Law No. 20920 of 2016, the producer is defined as whoever introduces a packaged product onto the Chilean market for the first time, not necessarily the producer of the packaging itself (González and Bastin, 2018). In the US state of Maine, an Act To Provide Leadership Regarding the Responsible Recycling of Consumer Products provides that a "producer" means "a person that: A) has legal ownership of the brand of a product sold in or into the state; B) imports a product branded by a person that meets the requirements of paragraph A and has no physical presence in the United States; or C) sells a product in the state at wholesale or retail, does not have legal ownership of the brand of the product, and elects to fulfil the responsibilities of the producer for that product".

Scope of the EPR system

At the national level, countries may adopt many EPR systems to cover a single product or product line, such as in British Columbia, Canada, where there are more than 20 EPR programmes, including one for beverage containers that lists the products included in it (McKerlie, Knight and Thorpe, 2006). Alternatively, a scheme might include all types of single-use plastic or packaging, or only commercial or industrial packaging. In Australia, under the Product Stewardship Act 2011 national authorities determine which materials are included in the EPR system by examining the following factors: the operating practices of those who are signatories to the EPR; assessment of the quantity of the materials collected for reuse, recycling or energy recovery; whether there is a curbside recycling collection system or another material recovery system; the status of technologies for reuse, recycling or energy recovery; and any competition issues that may arise from including or excluding particular materials. The Canadian Council of Ministers for the Environment has created the Extended Producer Responsibility Product Evaluation Tool for prioritizing candidate products for EPRs (see Annex 1 on Additional Resources). The US state of Maine, is considering an Extended Producer Responsibility Bill which builds on its Product Stewardship Act which includes the requirement to create a stewardship plan that considers whether the applicant has _strategies for improving recycling infrastructure in the State; funding for education_; requirements to reduce waste and toxicity in recycling products; opportunities to increase recycled content and recycling; and the cost of waste management to local governments.

Roles and responsibilities

In the design of a downstream EPR system, the specific responsibilities of producers, retailers, consumers and other relevant institutions should be clarified in the legislation (Lindhqvist, 2000). Producers, the primary subject of EPR, can be required to register with an EPR scheme or to set up an organization that takes responsibility for their products throughout their life cycle. Retailers can also be obliged to participate in the collection and recovery of products, and consumers may have a role insofar as the EPR scheme may provide an incentive for them to return a product to producers or retailers. In Germany, for example, EPR scheme in the German Waste Act (Waste Avoidance, Recycling and Disposal Act 1986, amended in September 1994 which obligates retailers who have a certain threshold of product to provide a return facility for beverage containers.

EPR systems can impose different forms of responsibility on producers (Lindhqvist, 2000):

- **Economic/financial responsibility:** producers, manufacturers and/or retailers can be required to cover all or part of the costs of collection, recycling or final disposal of products. For example, the German EPR system requires plastic packaging manufacturers to pay a fee to a national waste management company. The size of the fee depends on the number of packaging units and the weight of the materials.

Box 22: Key elements: EPR downstream

This section covers the following elements that should be considered by policymakers and legislators when designing downstream EPR legislation (each element is described in more detail afterwards):

- **Definitions:** clear definition of what EPR is
- **Scope of the EPR**: coverage of type of products or packaging
- **Determination of roles and responsibilities:** financial, physical or information-related responsibilities of the producer or manufacturer
- **Fee structures and competitiveness:** the financial scheme to be adopted
- **Monitoring:** record-keeping requirements
- **Enforcement and compliance:** mechanisms to ensure that the compliance scheme meets it targets

- **Physical responsibility and liability:** producers and/or manufacturers can be required to manage collection of their products and may be held responsible for environmental damage caused by those products. For example, in Finland, under the EPR scheme in the 2014 Government Decree on Packaging and Packaging Waste (518/2014), all packagers of products or importers of packaged products regarded as producers are legally responsible for organizing a collection and recycling system for the plastic packaging waste entering the markets.

- **Informative responsibility:** producers can be required to supply information on the environmental properties of the products that they are manufacturing and their progress in recycling the product. In France,, under the **Loi n° 2020-105 relative à la lutte contre le gaspillage et à l'économie circulaire** (Law No. 2020-105 Regarding a Circular Economy and the Fight Against Waste).on combating waste and on a circular economy, there is an EPR scheme for packaging waste that requires recycling. Each year, producers are charged fees, which vary according to environmental performance, for example, rewarding good sorting practices (Watkins and others, 2017; Youdon and Stano, 2019).

Other examples of this approach can be seen in Canada and India. In Canada, in the province of Ontario, the Resource Recovery and Circular Economy Act 2016 includes the specific responsibility of designated institutions to carry out the functions of industry registration, reduction of waste, collection, management, promotion and education, reporting, auditing and record-keeping.

In India, the Plastic Waste (Management and Handling) Rules 2016 include a provision that allows the Government to designate various responsibilities to local and national bodies, including (a) ensuring the segregation, collection, storage, transportation, processing and disposal of plastic waste; (b) ensuring that no damage is caused to the environment during this process; (c) ensuring the channelling of recyclable plastic waste to recyclers; (d) ensuring the processing and disposal of non-recyclable plastic waste; (e) creating awareness among all stakeholders about their responsibilities; (f) engaging with civil society or groups working with waste pickers; and (g) ensuring that open burning of plastic waste does not take place.

EPR schemes often include the creation of collective or individual producer responsibility organizations. Under individual responsibility schemes, producers take responsibility for their own products, both in terms of collection and recycling (OECD, 2016). Under collective responsibility schemes, producers who make the same product or group of products pay a fixed fee for participation in an organization that manages the recovery and recycling of its members' products. Legislation can accredit such organizations in relation to their operation, structure and performance (OECD, 2016). Responsibilities can be as specific as management of the board, expenditure, performance, education and membership. Box 23 gives an example of legislation allowing for the creation of such producer responsibility organizations.

Fee structures and competitiveness

EPR schemes rely on producers paying fees to cover the cost of the collection, processing and disposal of single-use plastic products and packaging. Legislators designing EPR schemes should ensure clear specification of the financial structure of schemes to manage the products' end of life. For example, in Japan, the 1995 Containers and Packaging Recycling Law provides for a payment by the relevant producer responsibility organization to municipalities that amounts to actual recycling costs.

EPR schemes can include a fee structure that allows the charging of different fees to different producers of plastic packaging material (often described as fee modulation) based on criteria such as weight, layers of plastic and types of plastic. In the European Union, member States vary the fees for different types of plastics depending on their characteristics (toxicity, durability, reusability, repairability, recyclability/compostability), with lower fees imposed on less harmful plastics. Schemes may also include differing fees for composite materials – plastics mixed with other types of materials (OECD, 2018). Fees can be set on the basis of market share (the quantities of plastic

Box 23: Roles and responsibilities under the Indian EPR system

India established the Plastic Waste (Management and Handling) Rules in 2016. They require manufacturers of raw plastic to sell to a registered plastic producer. Manufacturers must determine the modalities for waste collection systems, working with state urban development departments, either individually or collectively, through their own distribution channel or through local bodies. Producers must submit waste collection plans. The Rules allow the creation of producer responsibility organizations, to which manufacturers can outsource their obligations.

The rules further require a phase-out, within two years, of the manufacture and use of multilayered plastic that is non-recyclable or non-energy recoverable. The system relies on the labelling of goods to determine allowable use. It requires retailers and street vendors not to sell or provide commodities to consumers in carrier bags or plastic sheets or multilayered packaging unless those products have been manufactured and labelled in accordance with the rules. Fines are imposed for non-compliance. Annual reports of recycling or processing of plastic waste must be prepared by producers and shared with the government agency responsible for dealing with pollution and the inter-agency monitoring committee. Other key components of the rules include an explicit recognition of the role of waste pickers; the granting of jurisdiction to municipal authorities to enforce provisions; and the inclusion of standards to encourage the use of recycled plastic waste in the manufacture of new products.

India's EPR legal framework has been lauded for its comprehensiveness, but there have been reports of challenges in its implementation (Agarwal, 2018).

supplied to the market) and of the costs involved in recycling the company's products.

Fees can be put in a schedule in the law outlining the costs and the responsibility for payment. Producer responsibility organizations or government entities may be designated to collect the fees.

EPR systems should allow fair competition in the waste management sector and not give undue preference to specific companies. For example, the 2015 Packaging (Essential Requirements) Regulations in the United Kingdom involve a tradeable credit scheme whereby producers must demonstrate their recycling obligations through tradeable or recovery notes in an organized marketplace (Gardner and Hills, 2007).

Monitoring

EPR legislation should incorporate provisions for authorities to monitor the effectiveness of an EPR scheme, including whether it achieves its recycling targets. Regular monitoring of collection rates, appropriate return of products and recycling rates is critical because EPR schemes can be influenced by changing economic and social factors. The monitoring of responsibilities can be built into legislation in the form of performance plans. For example, the 2004 Recycling Regulation in the Canadian province of British Columbia requires the submission of an EPR plan by producers covering the products included in the scheme. The plan should outline, among other things, performance measures, proof of stakeholder consultation, provision for the producer to collect and pay the costs of collecting and managing products, consumer awareness efforts and information on the management of costs and the environmental impacts of the programme. Record-keeping responsibilities should be specified in the law, with the requirement that companies keep good records of the type and quantity of products that are included in the EPR system. For example, under the German Act on Reorganizing the Law on Closed Cycle Management and Waste of 2012, the Government may mandate that records be kept concerning the products put into circulation and their characteristics; the return of waste; participation in systems for accepting returned goods; and the type, quantity, recovery and disposal of the waste accepted for return.

Enforcement and compliance

Enforcement and compliance considerations in EPR systems can include penalties for non-compliance, on the part of producers, distributors and institutions responsible for the scheme's operation, with mandated targets such as recycling or collection rates. For example under the 2003 ***Environmental Management Act*** and 2004 ***Recycling Regulation*** in British Columbia, Canada, producers must recover 75 per cent of the packaging they produce or face fines, unless they join a producer responsibility organization, in which case that organization must collect 75 per cent of the aggregate amount of packaging placed on the market by its member producers (Youdon and Stano, 2019). Other enforcement mechanisms include the removal of the accreditation of a producer responsibility organization; the requirement that a contingency fund be established from which money is deducted if targets are not met; and civil costs or the naming and shaming of non-compliant members (OECD, 2016). Box 24 shows how one country has built a compliance mechanism into its EPR scheme.

Box 24: Illustrative provision from the Australian EPR system

In Australia, under the National Environment Protection (Used Packaging Materials) Measure of 2011, provincial governments and industry participants in the packaging chain enter into a covenant based on the principles of product stewardship and shared responsibility. Product stewardship imposes an obligation on all those who benefit from production to assume a share of the responsibility for a product over its life cycle. It requires all signatories to the covenant to commit themselves to:

- Working together to achieve the overarching targets established under the covenant;
- Producing and reporting on public action plans with measurable actions that will deliver improved environmental outcomes appropriate to signatories' production, usage, sale, recovery and/or reprocessing of consumer packaging;
- Working cooperatively to develop good-practice collection systems and markets and education and promotion programmes;
- Providing data to assess the performance of the covenant and progress towards the national environment protection goal.

The covenant includes a voluntary system of industry self-regulation.

The provisions in the law on enforcement and compliance allow action against brand owners only after they have first been notified of the need to comply with their obligations under the covenant and the options for exemption from their obligations. The law allows jurisdictions to establish offences of non-compliance that carry substantial financial penalties. Sanctions can be applied to brand owners who fail to:

- Comply with their obligations to ensure the systematic recovery of consumer packaging in which the brand owners' products are sold;
- Undertake or assure the reuse, recycling or energy recovery of consumer packaging in which the brand owners' products are sold;
- Demonstrate that all materials that have been recovered by them or on their behalf have been utilized;
- Demonstrate that reasonable steps have been taken to ensure that consumers are adequately advised as to how the packaging is to be recovered.

Implementation challenges and unintended impacts

EPR has been recognized as one of the most successful tools for implementing the transition to a circular economy. It reduces the burden on public budgets by shifting to the private sector the costs of solid waste management; enhanced separation and collection of waste; increasing recycling rates; and development of new markets for solid waste (OECD, 2016; Sanz and others, 2015). EPR has been described as putting "statutory obligations on a supply chain" (Gupta, 2011). The approach in the US state of California is outlined as an example of this in box 25.

When designing downstream EPR systems, legislators may wish to take account of the potential challenges relating to:

- **Transparency and accountability of institutions and standard setting:** EPR systems rely on the setting targets and the monitoring of companies' progress in meeting those targets. Agencies have to be able to verify company data. Robust reporting requirements and accountability mechanisms for the institutions involved in the scheme are therefore crucial. Where a producer responsibility organization, whether individual or collective, is created for an EPR scheme (profit or non-profit/industry-led or Government-run) there is a need to consider collective action because of the difficulties involved in creating different such organizations for different types of plastic products that may have different administrative or licensing requirements in relation to being a part of an EPR scheme.

- **Ensuring that the incentives for use of recycled products and the recycling industry are sufficiently strong:** Such incentives need to be established alongside EPR schemes. For single-use plastics, it is important that there is a market for the recycled plastic, for example by offering subsidies for businesses that use recycled plastic in their supply chain. Without a strong market, producers and manufacturers may seek environmentally unfriendly means of waste disposal, including incineration. The putting in place of criteria for ultimate disposal may also be warranted.

When considering the use of legislation to govern the downstream phase of EPR and the setting of regulatory standards, legislators may want to take account of the potential challenges relating to:

- **The informal sector**: Research has shown that EPR schemes that exclude the informal waste-disposal sector may perform less well (OECD, 2016). This is because workers in the informal sector can prevent producers from achieving their targets, by recovering materials that are then no longer available to be captured by the scheme, and prevent the traceability of plastic collection. Inappropriate consideration of the informal sector can also result in job losses and a lack of integration into the formalized industry (OECD, 2016). One option is to establish a provision in the scheme that gives incentives to informal recyclers to participate and sell to the formal recyclers or to formalize themselves.

- **Packaging that may be difficult to recycle**: Legislation on an EPR system requires clarity regarding the handling of single-use plastic packaging that may be difficult to recycle with current infrastructure. Regulations must clearly establish who is the producer of certain plastic items and thus who is responsible, such as the retailer or brand owner, for items that may be difficult to recycle and fall outside the current capacity of the EPR system. Legislation should specify the appropriate final treatment of such products, for example landfilling.

- **Free riders:** Free riders are companies that either deliberately avoid an EPR scheme or otherwise fail to comply with its

Box 25: California Circular Economy and Plastic Pollution Reduction Act

In 2019, the Senate of the US state of California passed 2018 Senate Bill 54, which seeks to reduce the amount of single-use plastic product waste produced, increase recycling rates and encourage the use of compostable materials.

The legislation requires manufacturers and retailers to establish targets for reducing single-use plastic packaging, product recycling and the manufacture of reusable packaging. Manufacturers and retailers of single-use plastic packaging and products have to commit themselves to:

- Using or producing less single-use plastic packaging and fewer such products and to transitioning from single-use plastic packaging and products to reusable packaging and products to the maximum extent feasible;
- Ensuring that all single-use plastic packaging and products that are offered for sale or sold in California are recyclable or compostable, as determined by the state;
- Reducing single-use plastic waste generation by 75 per cent by 2030 through a combination of source reduction and recycling.

"Priority single-use plastic products" are defined as the 10 single-use plastic products that are the most littered in California, as determined on the basis of litter surveys conducted in the state between 2017 and 2020.

The legislation also encourages public participation by including a requirement that extensive outreach to stakeholders be conducted and different interest groups be involved, such as local governments, the solid waste and recycling industries, product and packaging manufacturers, retailers, trade associations and environmental organizations. The law has extensive reporting requirements, including annual reporting on the packaging and products sold and the amount of waste reduced.

The law emphasizes the responsibility of manufacturers and retailers to reduce packaging waste, including through the creation of effective and convenient take-back opportunities, deposit systems, reusable and refillable delivery systems or similar mechanisms. The law uses a market-based mechanism to promote compliance and requires manufacturers and retailers to contribute to the costs associated with the processing of the single-use packaging and products that they produce. It also establishes standards for minimum post-consumer recycled content in single-use packaging and products.

requirements and thus pay no fees or taxes for recovery or disposal of the packaging of their products. Freeriding is a problem within many EPR schemes and has been attributed to a number of causes, including jurisdictional authority limitations (such as in e-commerce where the regulatory scope crosses international or intranational borders); lack of enforcement; lack of an identified owner of a brand; lack of availability of data; and programme design (Marbek Resource Consultants Ltd, 2007). EPRs work best when the producers of the majority of goods in a particular category participate. EPR schemes have to ensure that there are controls to ensure that some producers do not shirk their responsibilities. This might entail the requirement to register with an EPR scheme, clear, harmonized rules for specific types of packaging, enforcement programming and appropriate administrative controls.

- **Funding and collective roles and responsibilities**: EPR systems have to ensure that there is adequate funding in the scheme for the fulfilment of the various responsibilities, including funding provided by manufacturers to retailers, consumers, local government and recyclers. It is therefore critical to ensure that fees and revenues are set at a level that permits the recovery of costs.

- **Resistance by businesses**: Businesses in a number of jurisdictions have resisted EPR schemes because they increase producers' responsibility for the packaging of their own products. The environmental case for their effectiveness has been established, however, and should be considered in policy justification and design (Williams, 2012).

Reuse and recycling of plastics

Policymakers and legislators have a number of options for promoting reuse and recycling using environmentally sound management practices (Plastic Recyclers Europe, 2016). These approaches are considered in many countries to be part of their EPR approach. Some of the options are described below.

Recycling industry operations

Increased recycling of single-use plastic products is a fundamental part of achieving a circular economy. The following factors increase the recyclability of plastic products (Messenger, 2018):

- The product is made with a plastic that is collected for recycling, has market value and/or is supported by a legislatively mandated programme

- The product is sorted and aggregated into defined streams for recycling processes

- The product can be processed and reclaimed/recycled using commercial recycling processes

- The recycled plastic can be used as a raw material in the production of new products

Regulation of single-use plastics must take into account the need to ensure the continuing viability of the recycling industry. Support may include:

- Government research and development funding for the private sector

- Funding for the acquisition of equipment appropriate for recycling at scale or for the conversion of single-use plastics into other, reusable forms

- Subsidies to ensure a market for the use of the recycled products, and regulation of that market

- Design requirements to ensure product recyclability

- The setting targets for the use of recycled materials in new products;

- Waste export restrictions

New forms of legislation that support the recycling industry can be found in a number of countries. In the United States, a new bill for a Save Our Seas 2.0 act was proposed in Congress in 2019. The act would create a state fund to strengthen domestic recycling infrastructure, develop guidance on harmonizing recycling protocols for municipal recycling programmes and improve the quality and sorting of post-consumer recyclable materials through opportunities such as education and awareness programmes, improved recycling infrastructure, enhanced markets for recycled material and standardized measurements.

Recycling targets

Recycling targets provide concrete measurement of progress towards broader waste management goals. They can be set at the national, waste management facility, commercial operation or household level. Mandatory recycling targets take different forms in legislation, including the following:

- The percentage of a product on the market, such as plastic bottles or bags, to be collected and recycled by a set date

- The percentage of recycled content to be included in new plastic products

- The percentage reduction in the use of bags per person per year or the percentage increase in the use of reusable or eco-friendly bags

- Recycled quality standards (e.g., percentage of recycled product in new packaging)

- The setting of standards in relation to the recycled feedstock that is recycled again (e.g., into PET bottles or PET fleece jackets)

The 1994 European Union Packaging and Packaging Waste Directive sets binding targets to be achieved by 2020, including the reuse and recycling of 50 per cent of certain household

waste materials, and the reuse, recycling and other recovery of 70 per cent of construction and demolition waste. It also requires member States to set up separate waste collection systems where appropriate and to draw up waste management plans and waste prevention programmes.

Mandatory and enforceable recycling targets in legislation are one way to ensure a market for recycled products. Targets are important, because supporting the market for recycled plastics means ensuring that recycled material can compete with virgin plastic which is often cheaper to source. Targets can therefore level the playing field.

Incentives

Laws can include incentives to support the achievement of recycling targets. Economic instruments are one option, such as taxes on the use of virgin plastics, differentiated value added taxes for recycled plastics or plastic products and landfill or incineration taxes (OECD, 2018). Other options include incentives to establish and run sorting and recycling facilities, such as sales tax exemptions, low-interest loans or coupon schemes for customers who separate their recyclable waste. A number of European Union member States (Bulgaria, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania and Slovakia) are currently using taxes (payable on the difference between the recycling target set for plastics and the recycling rate accomplished) to penalize actors that do not achieve recycling targets.

Enforcement and compliance

Legislation that governs the recycling industry can support the approval of new recycling facilities and their operations and outline how facilities need to comply with recycling targets. Legislation can also set penalties for the loss of recyclable material in the solid waste stream for disposal. Certification and compliance documents often need to be included in recycling legislation where plastic waste is transported, traded or exported for recycling. Record-keeping assists in ensuring compliance with domestic or international controls on trade in plastic waste. Lastly, penalties for submitting inaccurate or false reports or for failure to allow entry and inspection of a recycling facility may support proper the regulation of the recycling industry.

Implementation challenges and unintended impacts

There are a number of important considerations when designing legislation to support recycling:

- **The monitoring and review of targets over time:** If mandatory recycling targets are set, they need to be achievable. Unrealistic targets risk alienating stakeholders in the recycling industry and can led to the failure of the recycling system. Progress in collection and recycling rates should be monitored over time and flexibility must be built into the targets so that they can be adjusted if necessary.

- **The setting of different targets for specific types of plastic:** Differential targets for specific plastic materials and products adds to the complexity of regulatory control. Different targets imply the definition of different policy goals and different institutional responsibilities based on different product requirements.

- **Regulation of household waste collection versus commercial waste collection for recycling:** Legislators and policymakers need to consider the differences in the infrastructure needed for the collection and recycling of household and commercial waste. This issue becomes important when considering adoption of EPR systems for specific products alongside, for example, a municipal system for collecting and recycling household waste. Different legislative schemes that include targets for the recovery and recycling of household and/or commercial waste should be complementary, reinforce recovery of single-use plastic products and not create competitive conflicts.

- **Toxicity of the plastic:** The chemical composition of some recycled plastics makes them unsuitable for their intended uses, which represents a barrier to recycling. This has pushed some Governments to consider which chemical substances should be allowed in the recycled content and to seek standardization and monitoring to ensure that there is not a higher threshold for the presence of certain harmful chemicals in recycled plastics than in virgin plastics.

- **Import and export controls:** Where a country does not have a big enough local market to support domestic recycling, legislators will need to consider the inclusion of import and export controls to monitor and regulate trade. Most countries are bound by the Basel Convention and its control measures for the importation and exportation of wastes, including in relation to the new plastic waste entries effective as of 1 January 2020. These rules should include guidance on traceability and transparency as to what happens to waste exported or imported for recycling, where it goes and whether the plastic waste is actually recycled, in line with international obligations.

Box 26 shows a number of different ways in which collection and recycling targets can be set at the national and local level.

Take-back and deposit-refund schemes

Take-back and deposit-refund schemes have been described as "market-based instruments that combine a tax or disposal fee (deposit) when purchasing a product with a recycling subsidy (refund) when the product is collected and/or recycled" (Walls, 2013). Deposit-refund systems aim to increase the proportion of empty packaging returned by consumers to take-back/collection points (Balcers and others, 2019). They provide for a small deposit to be refunded to consumers or collectors who return prescribed beverage containers for recycling. They are a form of downstream EPR. Deposit-refund schemes help to increase the reuse of packaging products and the recycling of packaging material by giving consumers an incentive to return empty packaging.

Scope of products covered

Deposit-refund systems support high-quality recycling as they can be used to collect materials of a particular colour or thickness

and facilitate separation. Legislators and policymakers need to consider the specific duties of both retailers and producers when regulating the collection of packaging in the market. In Germany, for example, the 2012 Act on Reorganizing the Law on Closed Cycle Management and Waste allows for the creation of a statutory ordinance requiring certain products to be marked in a specified manner to promote acceptance of the returned goods. It also mandates certain products to be returned; requires the manufacturers/distributers to make clear at the point of sale that there is the possibility to return the goods; and restricts entry onto the market of certain products unless the manufacturers or distributors agree to provide a means of returning the product and provide data and records to measure accountability. Legislation can accredit a collection system run by the industry concerned or establish a Government mandate to run such a system. The German deposit-refund scheme, for example, which has a recovery rate of 97 per cent, has a number of these features, as outlined in table 4.

Box 26: Examples of mandatory collection and recycling targets

European Union: Directive (EU) 2019/904 of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment.

- This directive requires that member States achieve a target for the collection of plastic bottles of 90 per cent by 2029; plastic bottles must contain at least 25 per cent of recycled content by 2025 and 30 per cent by 2030. According to Article 4, "Member States shall take the necessary measures to achieve an ambitious and sustained reduction in the consumption of the single-use plastic products listed in Part A of the Annex, in line with the overall objectives of the Union's waste policy, in particular waste prevention, leading to a substantial reversal of increasing consumption trends. Those measures shall achieve a measurable quantitative reduction in the consumption of the single-use plastic products listed in Part A of the Annex on the territory of the Member State by 2026 compared to 2022."
- Article 9 requires that "Member States shall take the necessary measures to ensure the separate collection for recycling: (a) by 2025, of an amount of waste single-use plastic products listed in Part F of the Annex equal to 77% of such single-use plastic products placed on the market in a given year by weight; (b) by 2029, of an amount of waste single-use plastic products listed in Part F of the Annex equal to 90% of such single-use plastic products placed on the market in a given year by weight. Single-use plastic products listed in Part F of the Annex placed on the market in a Member State may be deemed to be equal to the amount of waste generated from such products, including as litter, in the same year in that Member State". In order to achieve that objective, Article 13 requires that Member States report to the Commission data about the products subject to a consumption reduction objective, to enable the monitoring of the implementation of such consumption reduction objective in the directive.

Netherlands: Percentage of packaging to be recycled, by weight, according to the 2014 Packaging Management Decree

- The producer or importer is required to take care of the separate intake or collection and subsequent separation of packaging that they place on the market in the Netherlands and of the packaging that they have imported that has been disposed of in the given calendar year. The costs of separate collection or the collection and subsequent separation of packaging are to be borne by the producer or importer. The producer or importer shall ensure that, per calendar year, of the total of the packaging placed on the market in the Netherlands and of the packaging imported, at least the following percentage, by weight, is recycled: in 2015, 45 per cent, and, in 2021, 51 per cent.

Estonia: Packaging recovery targets

The 2004 Estonian Packaging Act imposes excise duty for failure to meet a target for the recovery of packaging material. Section 36 of the Act sets the following recovery targets:

"1) at least 50 per cent annually of the total mass of packaging waste;

2) by way of recycling at least 25 per cent annually of the total mass of packaging waste and at least 15 per cent annually of the total mass of each type of packaging.

…

As of 1 January 2009, packaging waste shall be recovered as follows:

1) at least 60 per cent of the total mass of packaging waste per calendar year;

2) by way of recycling at least 55 per cent and not more than 80 per cent of the total mass of packaging waste per calendar year.

…

3) To ensure compliance with the recovery targets established in subsection (2) of this section, a packaging undertaking shall recover packaging material types as of 1 January 2009 at least to the following extent per calendar year:

…

4) 55 per cent of the total mass of plastic waste, whereas 45 per cent of the total mass of plastic waste by way of recycling and 22.5 per cent of the total mass of plastic waste by way of reprocessing into plastic;"

Table 4: Features of the German deposit-refund scheme

Features of the German deposit-refund scheme	
Stakeholder	**Features relevant to the stakeholder**
Government	• No participation in operational requirements of scheme • Scheme regulated by a packaging ordinance • Creates links between manufacturers, retailers and recyclers
Distributors of products (producers, importers and private-label beverage manufacturers are defined as distributors)	• Obligation to charge deposit to retailer • Marketing • Encouragement of the participation of other distributors • Charged registration fee and annual fee
Retailers	• Charge consumers a deposit • Refund the deposit when packaging is returned • Buy reverse vending machines • Accept packaging at point of sale and retain revenue from plastic material (sale of packaging)
Producer responsibility organization	• Requires the setting of a security mark • Organizes industry administration and framework • Signs contracts with companies that take part in system

Source: Act on Reorganizing the Law on Closed Cycle Management and Waste, 2012, *Germany.*

Box 27: Key elements: deposit-refund schemes

The following elements of deposit refund schemes can be considered by policymakers and legislators in relation to deposit-refund schemes (each element is described in more detail afterwards):

- The scope of products covered: legislative requirements for defining the type of products covered by the scheme
- Centralized versus decentralized systems: one centralized company or multiple decentralized systems may be registered to manage the scheme
- Fees (deposits) and refunds: provisions setting the level of the fee and how it will be collected
- Labelling: provisions for the appropriate designation of labelling requirements to ensure consumer information and education
- Enforcement and compliance: compliance and enforcement of the requirements of the system

Legislation may create a deposit-refund scheme that covers only bottles or containers manufactured in the country or it can include imports. Legislators and policymakers should consider whether the scheme should require or encourage the use of recycled plastic. It is important to make clear which beverage containers carry refunds, a decision that can be based on container size, the materials used or the product content (UNEP, 2018d). It is also possible to include a mandatory licensing scheme for imported or domestically produced bottled beverages to support the regulation of single-use plastics that includes as many products as possible in schemes.

Box 28 outlines various examples of deposit-refund legislation.

Centralized versus decentralized systems

Deposit-refund schemes can be created as centralized or decentralized systems. A centralized model requires a deposit company to set and collect the deposit fee, handle the "take-back" compensation payment to the retailers and deal with all the packaging. In Sweden, for instance, PET bottles are collected and treated in a separate system, under Ordinance (2005:220) on return systems for plastic bottles and metal cans, which states that all bottles containing ready-to-drink beverages, excluding products containing a certain amount of dairy or fruit juice, must be included in a deposit system. A central company is responsible for the operation of the deposit systems. The customers are retailers of which the premises house vending machines that the retailers purchase. The retailers are given financial compensation for the deposits and handling fees. This system has a recycling rate of 85 per cent (Milios, Yu and Davani, 2018). A decentralized system is also possible for specific products itemized in legislation.

In creation of a legislative framework for deposit-refund systems, there must be a clear definition of who is responsible for the enforcement, compliance and information-sharing that is required to meet compliance needs, whether the system be centralized or decentralized. Legislation could cover information requirements that allow tracking, record-keeping and auditing. Key indicators of success could include return rates, payments (of fees and refunds) and placement of containers at access points.

Fees and refunds

A deposit-refund scheme must set the amount of the fee and determine how it will be collected and by whom. Some schemes have the consumer pay an upfront fee when they purchase the beverage. The deposit is returned to the customer when the bottle is returned. The fee can also be subject to separate rules whereby the private operator processes the containers and administer refunds according to set regulations. Legislation can also outline what happens to bottles that are sold but not returned and how uncollected deposits are used. Deposits can be added to specific beverages and fee collection can be handled by the Government or private industry. Legislation may also assign shares of each fee/deposit to different recipients, such as the consumer and recycler, administration and funds related to clean-up (UNEP, 2018d).

There are different legislative frameworks for handling the administration of refunds and coverage of administrative cost of the schemes. A number of European Union countries have different mandated fees to support their deposit refund system (UNEP, 2018c). Finland, for example, charges a registration and annual fee based on the turnover of goods in the company; Norway charges a recovery fee per kilogram of product recovered; Sweden charges an annual fee for those participating in the scheme and fees based on the type of packaging (consumer or business).

Taxes may support beverage packaging deposit-refund systems. In Denmark there is a lower level of tax on plastic beverage packaging that is part of the deposit system (Hennlock and others, 2014). In Kiribati, a container deposit fee is initially collected from importers and the money is deposited into a Special Fund set up under the Environment Management (Waste Disposal and Recycling) Regulations 2007, which is available for refunds on containers for which a deposit has been paid. The private company can then claim back money from the Special Fund for every item refunded. Elsewhere, quotas have been set up to support deposit-refund schemes for reusable beverage packages. Some European Union member States have set certain target values (quotas) for the reuse of drinking containers for certain beverages. The use of quotas will depend on the maturity of the recycling industry, but the following should also be taken into account: the need for transition; labelling; system transparency; how the money will be used; any exemption requirements for smaller businesses; and import/export implications (Albrecht and others, 2011).

Labelling

In legislation for a deposit-refund system, it can be important to prescribe labelling, such as a standardized dot or a logo, as this generates customer willingness to participate for specific beverages (Hogg and others, 2010). In many European Union member States, for example, deposit systems for non-reusable beverage packaging also include a requirement to inform consumers whether beverage packaging is covered by a deposit and return system, for example through the use of a common logo.

Enforcement and compliance

Deposit-refund systems must have internal compliance mechanisms that ensure that there is no opportunity for fraud by companies operating inside or outside the system. This requires robust reporting requirements, as the system often mandates the collection of fees on every bottle that is sold in the system and may also include fees charged on distributors or producers for inclusion of their product in the recycling system. It is crucial to track the amounts redeemed and the deposit reimbursements to ensure that there are no violations of the system. It is also important to ensure that are no unauthorized beverages included in the system (Dayton, 2019). Some deposit-refund schemes therefore include criminal or civil penalties for failure to report on the funds and their use. Customs and excise agencies will also need to play a pivotal role in monitoring and evaluation to ensure that the schemes are not abused.

Box 28: Examples of legislation of deposit-refund schemes

Barbados

Section 3 of the Returnable Containers Act 1986

" (1) Subject to subsection (2), no distributor or dealer shall sell or offer for sale, at wholesale or retail in Barbados, any beverage that is contained in a beverage container unless he is permitted to do so by the Minister under subsection (2).

(2) The Minister may, by order published in the ***Official Gazette***, exempt a distributor or dealer from the provisions of this Act if he is satisfied

(a) that any such distributor or dealer has in place an adequate system for the recycling of beverage containers; or

(b) that a person who is not a distributor or dealer has in place an adequate system for the recycling of beverage containers which may be utilized by a distributor or dealer."

Marshall Islands
Styrofoam Cups and Plates and Plastic Products Prohibition and Container Deposit (Amendment) Act 2018

"A beverage distributor shall pay to the Authority, through the Ministry of Finance and Banking and Postal Services, a deposit beverage container fee on each deposit beverage container manufactured in or imported into the Republic, which shall be imposed only once on the same beverage container.

…

The deposit fee levied under Section 10 of this Division shall be assigned at the point of import."

Palau
Recycling Act 2006

"Section 6.**Deposit fee.** A beverage distributor shall pay to the Ministry a deposit beverage container fee on each deposit beverage container manufactured in or imported to the Republic. The fee shall.be imposed only once on the same beverage container. The fee shall be $0.10 per beverage container. The Ministry shall evaluate the amount of deposit beverage containers recovered during the first six months of the fully implemented deposit beverage container deposit program and recommend to the OEK any modification in the fee structure necessary to meet the deposit beverage container deposit program funding requirements.

…

"Section 7. **Deposit beverage refund.** Using the monies in the Recycling Fund, the Minister shall purchase beverage containers for $0.05 per container. Beverage containers may only be purchased through redemption centers established pursuant to section 8 of this Act. The Minister shall sell beverage containers for recycling at market prices.

…

[Section 8. **Redemption centers.]** Such terms and conditions may differ among redemption centers and may be altered or amended from time to time as the situation warrants. Using the money in the Recycling Fund, the Minister may provide compensation not to exceed $0.025 per container to the redemption centers for their services."

Fiji
Environment Management (Waste Disposal and Recycling) Regulations 2007

"PLASTIC BOTTLES RETURN (Reg. 31): *Note: A facility that imports or manufactures plastic bottles must send returns to the Department of Environment of all import, manufacture, distribution, return and disposal of bottles. Returns must be in writing and sent every 6 months from the issue of the permit. Returns must relate to each site or premises occupied by the facility. Failure to send a return by the due date is an offence under section 44 of the Act and can lead to suspension of the permit."*

"Conditions of plastic bottle permits

31.

(1) It is a condition of every plastic bottle permit that –

(a) the permit holder will adequately train staff in the environmentally sound handling of plastic bottles;

(b) the name and distinguishing marks on bottles set out in the application for the permit will not be changed without the written consent of the WPC Administrator;

© the premises to be used will be kept safe and clear of debris;

(d) the permit holder will, separately or jointly with other holders of plastic bottle permits, maintain one or more plastic bottle collection centres for collection of used plastic bottles from consumers or retailers. Such centres may be part of general waste collection centres, but must be designated under regulation 40.

(2) Conditions must be attached to a plastic bottle permit as to –

…

(c) the disposal of waste products from the manufacture of bottles;

(d) the collection and recycling of used bottles, including the percentage of bottles that must be recycled.

…

(4) Holders of plastic bottle permits should, in conjunction with the WPC Administrator, endeavour to establish a system of cash payments for the return of bottles for recycling.

Implementation challenges and unintended impacts

Deposit-refund schemes are one of the most popular and well-established methods of a creating recovery/take-back system. Such systems are successful in reducing littering and achieving high collection and recycling rates for single-use plastic beverage packaging (European Commission, 2018). Nevertheless, there are some potential challenges to anticipate, including the following:

- **Complementary measures:** These laws may be more likely to succeed in conjunction with other legislative and non-legislative measures to reduce and manage waste, such as the expansion of infrastructure for solid waste management, consumer education, local business development, environmental levies, sustainable management of materials and product design. This, however, may create complexity for countries with limited resources.

- **Fees and refunds:** Administration of the fees, refunds, unredeemed refunds and charges can create complexity in the systems, especially when they apply to a number of different types of product and have to be applied to producers and retailers through rules or need to be automated across a country.

- **Cross-border considerations:** Where plastic products are traded across borders, concerns have been raised that mandatory deposit-refund systems create barriers to trade, given that they make it impossible to sell the same product in the same packaging in more than one country without changes to labelling and take-back systems (Schneider and others, 2011).

- **Roll-out of systems:** Container deposit laws may require detailed consultation to ensure understanding by the public, to optimize scheme design, including infrastructure such as collection points, and to minimize industry resistance.

Box 29 highlights how multiple laws can work together to support the success of a deposit-refund system.

Box 29: Deposit-refund system for beverage packaging in Finland

Finland has adopted a Government Decree on a Return System for Beverage Containers (526/2013) of 2013 that lays out a deposit-refund system for PET bottles and provide incentives for compliance, collection and reuse. The system relies on consumers returning the containers to retailers and collecting a refund. The deposit-refund system works in support of a mandated target of 90 per cent for the recycling and reuse of packaging materials (Ettlinger S, 201). Finland also has a beverage packaging tax (€0.51/litre). The deposit system is voluntary, but by joining a deposit system beverage manufacturers and importers are exempted from the beverage packaging tax and from some of the obligations of EPR on packaging. This provides the necessary incentive for producers to participate. There are different recycling targets for the deposit systems and the EPR systems.

Thus, in principle, producers of beverage packaging have to join either a deposit system or a producer responsible organization to fulfil their obligations. The deposit system covers a wide spectrum of different beverage containers, such as bottles and cans for water, lemonades, beer, wine and liquor. The return rates of beverage packaging are high: 96 per cent for aluminium containers, 92 per cent for plastic bottles, 88 per cent for reusable glass bottles and 97 per cent for other glass bottles. The return system for beverage containers has been in use in Finland since 1950. In the first phase, only glass bottles were recycled through the system. The bottles were washed and refilled. In the 1980s, refillable plastic bottles were added to the return system. Beverage cans were added in the 1990s and recycled plastic bottles in 2008.

The decrees of relevance include:

- The Act on Excise Duty on Certain Beverage Containers (1037/2004) of 2004, which includes the exemption for duties
- The Waste Act 2011, which outlines the responsibility of the producer for waste management and associated costs. The producer's responsibility applies to discarded products delivered to a reception point or for transportation
- Government Decree on Landfills (331/2013) of 2013, which outlines the types of waste that may not be accepted at landfills
- Government Decree on a Return System for Beverage Containers (526/2013) of 2013, which sets the minimum recycling target of 90 per cent for returnable packaging
- Government Decree on Packaging and Packaging Waste (518/2014) of 2014, which organizes the reception of the product and the creation of a network of a minimum number of reception points for the separate collection of packaging waste per urban settlement and includes recycling targets for EPR of packaging

Fees paid by producers are used to fund the deposit-refund system, including the cost of the collection containers, administration, transport and sorting. A non-profit organization has been set up to run the system. Some factors accounting for its success are as follows:

- The system was adopted after wide consultation with civil society and industry, which accepted the scheme
- Researchers (Ettlinger, 2016) believe that the synergy between the beverage packaging tax and deposit refund system in Finland has been a particular driver in encouraging high rates of use of the deposit system
- The deposit has been set at a high enough price to encourage returns by the consumers
- The waste management legislation and EPR for packaging covers both household and industrial plastic waste (Hennlock and others, 2014)

3.5 Other important measures

The final part of this section on regulatory approaches considers the diversity of other important measures that Governments have used to address single-use plastic products. Specifically, it highlights consumer education programmes, the promotion of alternative products through measures such as funds and prizes, public procurement requirements, reuse incentives and public-private partnerships. These, however, are merely a sampling of some of the innovative approaches that Governments have taken to reducing and managing single-use plastics.

Consumer education

Research indicates that consumer education programmes can be particularly important for the success of policy and legislation targeting consumer use of single-use plastics (Xanthos and Walker, 2017). In Portugal, for example, the success of a plastic bag tax in reducing plastic bag consumption has been attributed to the efforts of consumer associations in raising awareness of plastic bag alternatives and to the widespread sale of reusable bags by supermarkets (Martinho, Balaia and Pires, 2017).

In general, consumer education is an area to which policymakers could devote significantly more attention. While laws and regulations are not always the most appropriate instruments for

mandating consumer education programmes, they can ensure that they receive dedicated resources. A minimal legislative approach is simply to authorize relevant authorities to engage in such activities, including producers or retailers. To ensure that these provisions have an impact, they will likely need to impose specific obligations or provide an avenue for resource allocation, as in the provincial EPR programme in British Columbia, Canada (sub-paragraph 5(1)(c)(iv) of the 2004 Recycling Regulation). A more rigorous approach to promoting consumer education programmes would be to establish clear funding pathways, mandate certain authorities to engage in such activities and require reporting on such programmes.

Alternative products/materials

Similarly, the availability or lack of alternatives to single-use plastic products can be key to the success of an intervention seeking to limit such products (UNEP, 2018b). Governments may therefore wish to consider introducing programmes that encourage the private sector, research institutions, industry groups or social enterprises to invest in research and development in relation to such alternatives.

More simply, Governments can task relevant authorities with promoting alternatives to single-use plastic products. Box 30 provides some examples. Again, however, such general mandates may not translate into concrete actions.

Public procurement

Single-use plastic products can be restricted, and alternatives encouraged, through reform of public procurement guidelines. Costa Rica, for example, has banned single-use plastic products in the food service areas of all Government institutions, while the Federal Government of Canada has committed itself to diverting at least 75 per cent of the plastic waste from its operations by 2030 (Canada, 2019; OECD, 2018). A number of cities have also introduced new public procurement rules. Turin, Italy, has introduced public procurement requirements in school catering contracts to emphasize reusable packaging, while San Francisco, California, has passed an ordinance that restricts the sale of packaged water on city property or at large city events (Watkins and others, 2019). The city of Berkeley, California, has promulgated Ordinance No. 7,639-N.S of 2019 on Single-Use Foodware and Litter Reduction, which will phase in requirements

Box 30: Provisions relating to developing awareness campaigns or promoting alternatives to single-use plastics

Tanzania

The Environmental Management (Prohibition of Plastic Carrier Bags) Regulations 2019 state that:

"11. (2) The Minister shall promote the production and use of alternative carrier bags and wrappings.

…13. (2) … the Minister may:

(a) in consultation with the Minister responsible for Finance, prescribe financial and economic incentives to encourage the production and importation of alternative carrier bags and the setting up of plastic recycling and waste management facilities.

…15. Local Government Authorities…shall:

b) conduct public education and awareness programs on the importance of the prohibition of plastic carrier bags use as well as their effects on human health and the environment."

Panama

Law No. 1 of 2018 provides that the Minister of the Environment has responsibilities for developing awareness campaigns on biodegradable and non-degradable materials and the environmental benefits of using reusable bags and other environmentally friendly materials.

European Union

Directive 2019/904 of 2019 on the reduction of the impact of certain plastic products on the environment will obligate Members States to take awareness-raising measures:

Article 10. Awareness-raising measures

"Member States shall take measures to inform consumers and to incentivize responsible consumer behaviour, in order to reduce litter from products covered by this Directive, and shall take measures to inform consumers of the single-use plastic products listed in Part G of the Annex and users of fishing gear containing plastic about the following:

(a) the availability of re-usable alternatives, re-use systems and waste management options for those single-use plastic products and for fishing gear containing plastic as well as best practices in sound waste management carried out in accordance with Article 13 of Directive 2008/98/EC;

(b) the impact of littering and other inappropriate waste disposal of those single-use plastic products and of fishing gear containing plastic on the environment, in particular on the marine environment; and

(c) the impact of inappropriate means of waste disposal of those single-use plastic products on the sewer network."

to provide reusable dining ware by 2020. More information can be found in box 31.

Finally, in addition to regulatory frameworks, partnerships between the Government and the private sector can assist in the development of strategies for dealing with single-use plastic products. While these are somewhat outside the scope of this guide, legislative frameworks can provide enabling environments for such partnerships and/or empower Government officials to enter into such agreements. These partnerships can also serve as forums for consultation and exchange and incentivize innovation.

Box 31: 2019 Ordinance No. 7,639-N.S. on Single-Use Foodware and Litter Reduction Ordinance in the city of Berkeley, California, United States

The ordinance is designed to reduce single-use foodware, while shifting behaviour towards the use of reusable foodware. The ordinance applies to all establishments that sell prepared food to be consumed on or off the premises and to foodware purchased by the city government. The ordinance is implemented in phases to give businesses time to adjust, and businesses will be offered technical assistance and opportunities to request a waiver.

Phase 1 – Upon passage of the ordinance:

- Accessory disposable foodware (forks, straws, lids, condiment packages and other small disposable items) will be provided only on request or at self-serve stations
- Food vendors may refuse to fill unsuitable or unsanitary cups provided by customers
- The city of Berkeley must purchase and use only reusable or composable foodware
- Vendors must provide colour-coded bins labelled for recyclables, compostables and other waste

Phase 2 – Starting January 2020:

- Disposable foodware must be certified compostable by the Biodegradable Products Institute
- Food vendors can seek waivers for the use of recyclable alternatives to foodware items that are not available, or reasonably priced, in compliant compostable formats
- Food vendors will charge $0.25 for all disposable beverage cups
- The charge must be visible to customers on media such as menus, displays and receipts

Phase 3 – Starting July 2020:

- Vendors offering dining on the premises (eat-in) may use only reusable foodware
- Vendors may either provide cleaning and sanitation facilities on-site or contract with a service for off-site cleaning
- Technical assistance and mini-grants will be available to support food vendors in establishing new facilities and practices to meet reusable eat-in food-ware requirements
- Hardship waivers will be available

Sources: United States (2019); Plastic Pollution Coalition (2019).

4. Conclusion

This guide provides a variety of options for approaching the regulation of single-use plastic products, such as bans and restrictions, economic instruments, information standards and labelling, extended producer responsibility, reuse, recycling, deposit-refund schemes and other important measures. It highlights the main features of each approach and offers examples of existing legislation under each approach. The guide also provides some preliminary comments, based on existing literature, on the policy consequences of the various regulatory approaches and the possible implementation challenges that may arise.

While this guide identifies some of the challenges, comprehensive assessment of the advantages and weaknesses of the various regulatory interventions is still lacking. For this reason, before enacting single-use plastic legislation, it is especially important for Governments to conduct baseline assessments, other life-cycle assessments and rigorous consultations with international and local stakeholders.

Legislation aims to shift the behaviour patterns of producers, consumers and the wider public. They should, therefore, be actively engaged in giving direction as to how such change can be delivered. Similarly, policymakers should consider whether hybrid approaches have been successful. Combining multiple regulatory approaches, tailored to the specific country context, may be necessary to target single-use plastic products effectively.

This is a continuously and quickly evolving field, and new models and best practices will continue to emerge. In the meantime, by mapping the main ingredients of various regulations, offering examples of legislation and outlining potential policy considerations, this guide can provide a useful starting point for policymakers seeking to introduce single-use plastic legislation. It will also help guide legislative drafters through the key elements that they should consider for inclusion in the legislation and what questions should influence the shape of the legislation.

Annexes

1. Additional resources

The sources listed below provide additional information on many of the issues covered in this guide.

Waste management

Guidelines for National Waste Management Strategies: Moving from Challenges to Opportunities. United Nations Environment Programme and United Nations Institute for Training and Research, 2013. Available at http://cwm.unitar.org/national-profiles/publications/cw/wm/UNEP_UNITAR_NWMS_English.pdf.

Guidelines for Framework Legislation for Integrated Waste Management. United Nations Environment Programme, 2016. Available at https://www.unenvironment.org/resources/report/guidelines-framework-legislation-integrated-waste-management.

Basel Convention practical manuals on promoting the environmentally sound management of wastes. Available at http://www.basel.int/Implementation/CountryLedInitiative/EnvironmentallySoundManagement/ESMToolkit/Practicalmanuals/tabid/5847/Default.aspx.

(on the impact of exportation of plastic waste)

Discarded. Communities on the Frontlines of the Global Plastic Crisis. Global Alliance for Incinerator Alternatives, 2019. Available at https://www.no-burn.org/wp-content/uploads/Report-April-22.pdf.

Plastic pollution legislative guides

Marine Litter Legislation: A Toolkit for Policymakers. United Nations Environment Programme, 2016. Available at https://www.eli.org/sites/default/files/eli-pubs/marine-litter-legislation-toolkit-policymakers.pdf.

Global Plastic Reduction Legislation Toolkit. Plastic Pollution Coalition, 2020. Available at https://plasticpollutioncoalitionresources.org/.

Regulating Plastics in Pacific Island Countries: A Guide for Policymakers and Legislative Drafters. Fourth session of the Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, 2018. UNEP/GPA/IGR.4/INF/28. Available at https://papersmart.unon.org/igr-meeting/sites/default/files/gpa_igr4_inf28_regulating_plastics_in_pacific_island_countries-a_guide_for_policymakers_and_legislative_drafters.pdf.

Sustainable plastic design

Policy Approaches to Incentivise Sustainable Plastic Design. Background Paper 3. Organization for Economic Cooperation and Development, 2018. Available at https://www.oecd.org/environment/waste/background-paper-policy-approaches-to-incentivise-sustainable-plastic-design.pdf.

Extended producer responsibility

Extended Producer Responsibility: Product Evaluation Tool. Canadian Council of Ministers for the Environment, 2008. Available at https://www.ccme.ca/files/Resources/waste/extended/pn_1397_epr_guidance_manual_e.pdf.

Recycling and deposit-refund schemes

Smart Plastics Guide. National Geographic's Strange Days on Planet Earth. Available at https://www-tc.pbs.org/strangedays/pdf/StrangeDaysSmartPlasticsGuide.pdf.

Recycling incentives. Solid Waste Management Plan for Lincoln and Lancaster County.

Available at https://lincoln.ne.gov/city/ltu/waste/sldwaste/solidwasteplan2040/pdf/ac-20121009-handout1.pdf.

Keeping It Clean: How to Protect the Circular Economy from Hazardous Substances. European Environmental Bureau, 2017. Available at https://www.documents.clientearth.org/wp-content/uploads/library/2017-02-22-keeping-it-clean-how-to-protect-the-circular-economy-from-hazardous-substances-web-coll-en.pdf.

Consultation on introducing a deposit-return scheme in England, Wales and Northern Ireland. United Kingdom Department for Environment, Food and Rural Affairs, 2019. Available at https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/supporting_documents/depositreturnconsultdoc.pdf.

Sample recycling ordinance. Institute for Local Government. Available at https://www.ca-ilg.org/post/sample-commercial-recycling-ordinance.

2. List of laws and bills

Antigua and Barbuda. 2017. External Trade (Shopping Plastic Bags Prohibition) Order, 2017, No. 83. Available at http://legalaffairs.gov.ag/pdf/bills/External_Trade_Prohibition_of_Plastic_Bags_Order_2017.pdf.

Antigua and Barbuda 2016 External Trade (Import Prohibition) Order, 2016, S.I. No 16 of 2016 (repealed)

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Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

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