

Delivering a More Sustainable Takeaway Packaging System

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Uber Eats

 eunomia



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Executive Summary

Packaging plays a pivotal role in modern society and serves as a crucial element in the supply chain from production to consumption. It protects products during transportation and storage, and decreases the financial costs of damage, loss, and spoilage. It also facilitates the safe handling of items and informs consumer choices by offering essential information about products, including ingredients, usage instructions, and safety warnings. However, single-use packaging creates waste which contributes to costly environmental and public health issues. This issue is not isolated to one industry— a range of sectors contribute to the packaging waste challenge, making it difficult to address.

While highly visible, takeaway packaging is a relatively small component of the overall global packaging market— estimated to be anywhere from \$40 billion to \$90 billion, accounting for approximately 4% to 9% of the overall global packaging market.^{2,3,4,5} Takeaway packaging is only a relatively small contributor to the global packaging waste challenge, but there are numerous environmental, public health, and economic benefits associated with reducing packaging waste.

Improving the sustainability of the takeaway and delivery packaging system provides key benefits to the environment and to restaurants. Reducing the generation of packaging, and scaling waste management systems to process compostable and recyclable materials will help minimize this sector's environmental impact and keep valuable materials in use for longer. In order to help restaurants make this transition, there is a critical opportunity to increase the accessibility and affordability of more sustainable packaging, particularly because more sustainable options can be up to three times as expensive as their single-use counterparts.⁶ Enacting systems-level solutions to address these prohibitive cost barriers will enable increased adoption, reduce costs to restaurants, and minimize the environmental impact of takeaway packaging.

The transition to more sustainable materials is a challenging feat that requires buy-in from a range of key stakeholders including packaging producers and distributors; local, state, and federal governments and policymakers; waste

collectors and sorters; recyclers and composters; third party delivery platforms; NGOs; restaurants; and consumers. Recognizing that no packaging can be inherently sustainable, this white paper analyzes the barriers facing these stakeholders in facilitating the switch to more sustainable packaging. Based on this analysis, the white paper provides recommended actions for each stakeholder group to build a more sustainable packaging system with lower environmental impacts. Finally, market-specific roadmaps are provided for seven countries to demonstrate how the recommended actions can be localized.

This white paper, commissioned by Uber Technologies, Inc. (Uber Eats) and produced by Eunomia Research & Consulting, Inc. (Eunomia), articulates the recommended actions that public, private, and NGO sector stakeholders can take to support the transition to more sustainable packaging. It provides proposed policy recommendations, infrastructure, and financial solutions that governments, third party delivery platforms, restaurants, NGOs, and other corporations can implement or support in order to facilitate this transition. While there is no one-size-fits-all approach, this report provides key policy recommendations and actions that should be adopted by stakeholders across the packaging value chain to achieve a more sustainable packaging system. The recommendations, which are detailed below and throughout this paper, center around five priorities:

1. Reduce the generation of packaging;
2. Produce more sustainable packaging;
3. Make more sustainable packaging options feasible for restaurants;
4. Ensure consumer knowledge, engagement, and proper disposal of packaging; and
5. Create viable end-of-life pathways for reprocessing of packaging.

Readers should note that while reusable packaging systems are an important component of a more circular and sustainable economy for takeaway packaging, this white paper largely focuses on sustainable and efficient single-use packaging systems, given that reuse systems have yet to scale.

Summary of requirements and recommendations for an optimized system

System Area	Recommendations
Reduce the generation of packaging	Eliminate the use of materials that are more problematic for environmental and human health.
	Minimize single-use takeaway items by prompting consumers to opt-in for non-essential service ware.
Produce more sustainable packaging	Increase production of packaging that uses existing sustainability standards and certifications.
	Increase the ambition of existing standards and certifications as improvements become feasible for producers.
	Encourage resource efficiency in the production process through targeted research, as these areas of improvement will vary and cannot be standardized.
Make more sustainable packaging options feasible for restaurants	Make more sustainable packaging options an accessible and reliable choice for restaurants.
	Improve cost-competitiveness of more sustainable packaging options for restaurants.
	Ensure more sustainable options are suitable for a variety of cuisines and use-cases.
Ensure consumer knowledge, engagement, and proper disposal of packaging	Standardize labeling requirements for all packaging materials.
	Improve consumer awareness around proper end-of-life care for single-use packaging.
Create viable end-of-life pathways for reprocessing of packaging	Ensure that the takeaway packaging materials that are in use can be properly managed with available waste management infrastructure.
	Improve the end-of-life infrastructure for reprocessing takeaway packaging (i.e., collection, sorting, recycling, and composting).

Operationalizing these recommendations requires a range of actions. Governments are uniquely positioned to drive change across the packaging system. They can implement bans on harmful materials, require consumer opt-in for service ware, and provide incentives for the use of sustainable alternatives, improving economies of scale and lowering costs for restaurants. Governments can also implement funding policies via grant programs, green loans, taxes, levies, and extended producer responsibility (EPR) laws to support the production of more sustainable packaging through further research and development, as well as the expansion of

recycling and composting infrastructure. To ensure success, these regulatory actions must be paired with consumer education campaigns that can be driven by NGOs and third party delivery platforms, as well as cross-industry partnerships which all stakeholders can take part in.

Glossary

Term	Definition
Circular economy	An economic model designed to minimize waste and the degradation of natural resources. Unlike the traditional linear economy, which follows a 'take-make-waste' approach, a circular economy aims to keep products, materials, and resources in use for as long as possible.
Compostable packaging	Packaging that requires an industrial facility to break down as well as packaging that can be composted at home. Packaging that meets home compostability standards is preferred as it is likely to break down effectively in both industrial facilities and home composting systems. The various standards for compostability are discussed in greater detail within the report.
Environmental impacts	In this report, environmental impact most commonly refers to waste generation, greenhouse gas emissions, depletion of natural resources, and biodiversity loss.
Extended producer responsibility (EPR)	Environmental policies that hold manufacturers and producers responsible for the management of their products throughout their lifecycle, with the goal of reducing environmental impacts. This report refers to EPR laws for packaging. A key component of these laws is eco-modulated fees, which means the fees are adjusted based on the environmental impact of the packaging. For example, packaging that is recyclable may incur a lower fee.
Feedstock	Refers to the raw materials used to produce packaging. Virgin feedstock refers to the material is being used for the first time, directly extracted from natural resources. Recycled feedstock comes from previously used materials that have been recycled. Sustainably sourced feedstock in this report refers to either recycled feedstock or virgin feedstock that has been certified to ensure the materials are harvested in an environmentally conscious way.
Fiber-based packaging	Packaging made from natural fibers, which are often derived from plants. The two main categories of fiber-based packaging referred to throughout this report are made from cardboard or bagasse. Cardboard is made from wood pulp, and bagasse is a byproduct of sugarcane processing.
Home composting	The process of converting compostable waste into compost through an aerobic process which relies on oxygen and microorganisms to break down the materials. Packaging that is home compostable can also break down in an industrial composting facility.
Industrial composting	Large-scale processing of organic waste into compost in a controlled environment. Packaging that is industrially compostable is not likely to break down in home composting or natural environment conditions.
Plastic packaging	Single-use packaging made from plastic materials, including conventional and compostable plastics. Feedstock for both conventional and compostable plastic packaging can come from bio-based or fossil-based sources. Bio-based feedstock means the plastic is made from biological sources, such as corn. Fossil-based feedstock refers to the plastic is made from non-renewable fossil fuels.

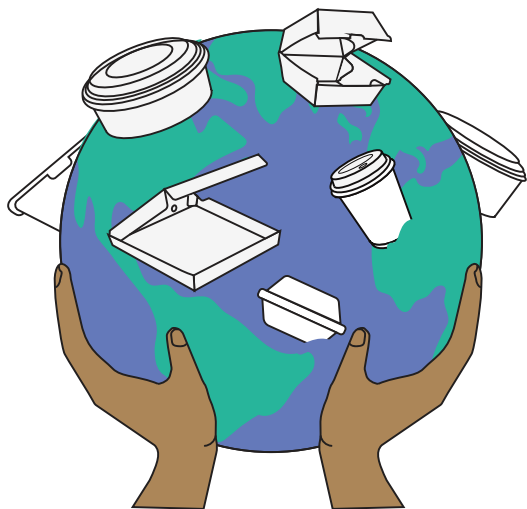
Term	Definition
Pooled system	A pooled system for reusable containers is a shared resource model where containers are used, collected, cleaned, and redistributed among multiple users or businesses. In a pooled system, containers are typically standardized and managed by a central organization that oversees their distribution and maintenance.
Post-consumer recycled (PCR) content	Materials that have been used by consumers, disposed of, and then collected through recycling programs to be processed into new products. When used in new products, these products are said to be made from feedstock with PCR content.
Processing infrastructure	Facilities and systems designed to recycle or compost packaging.
Recyclable packaging	As defined by the Ellen MacArthur Foundation, recyclable packaging can be successfully collected, sorted, and recycled in practice and at scale within existing recycling systems and infrastructure. 'At scale' is considered a 30% recycling rate. ¹
Renewable sources	Feedstock for packaging that is made from raw materials that can be replenished and typically derived from biological processes (e.g., corn, sugarcane, wood).
Reusable packaging	Packaging that is intended for multi-use through washing and reuse.
Service ware	In this report, single-use service ware refers to a range of products including cutlery, sauce sachets, napkins, and straws.
Single-use packaging	Packaging that is intended for single use, then disposal through garbage, recycling, or composting.
Sustainable takeaway packaging	There is no universally accepted definition of sustainable packaging. The sustainability of packaging depends on production methods and available waste processing infrastructure in the area that packaging is used. This report seeks to address sustainability improvements for takeaway packaging without prescribing a single definition; therefore, in most instances, packaging is referred to as 'more sustainable' rather than simply 'sustainable'.
Takeaway packaging	This term refers to the materials and containers used by restaurants to package food and beverages for customers to consume off-premises. This report focuses on takeaway packaging used for delivery, but the term encompasses pick-up, takeout, and carryout packaging.
Triman labeling	French labeling system designed to inform consumers about the recyclability of products and packaging.

Introduction

Key Points:

- There are environmental, public health, and economic impacts of single-use packaging associated with takeaway food delivery.
- Restaurant takeaway and delivery are on the rise. As the volume of packaging associated with these impacts increases, there is a growing need to design, develop, and implement a more sustainable system for takeaway packaging.

Takeaway packaging is a relatively small but highly visible component of the overall packaging market. The global foodservice disposables market is estimated to be anywhere from \$40 billion to \$90 billion, depending on the source and products included, accounting for approximately 4% to 9% of the overall global packaging market.^{7, 8, 9, 10} Restaurants form a significant segment of this market. For example, the Freedonia Group estimates that the U.S. quick service industry spent \$16.3 billion on single-use packaging and service ware in 2022, representing nearly 60% of the overall U.S. spend on food service disposables.^{12, 13}



85% of single-use plastic products for food and beverage containers end up in landfills or as unregulated waste.¹¹

Increased use of takeaway packaging has resulted in impacts on the environment, public health, and economy.

Consumer behaviors are trending towards services that provide convenience and speed, which also applies to eating habits. The COVID-19 pandemic further accelerated this shift. In the U.S., the food delivery market nearly doubled as a result of lockdowns and social distancing measures.¹⁴ As of 2022, 39% of adults worldwide reported buying takeaway food from a restaurant at least once a week.

According to research by the Thailand Environment Institute, one delivery order in Thailand uses an average of four pieces of plastic packaging. The exact makeup of packaging varies with local preferences and cuisine. However, the sheer volume of packaging from takeaway and delivery is widely reported:

- The advocacy group Upstream found that nearly 800 billion disposable food service products are used yearly in the U.S. for takeaway and delivery, equating to more than 7.2 million tons of disposable materials.¹⁵
- A 2023 article from ENDS Europe reported that France produces 180,000 tons of packaging from fast food restaurants annually.¹⁶
- A 2019 study of the EU28 found that more than 17 billion units of single-use packaging were used for takeaway warm drinks and 16 billion units for takeaway food.¹⁷

The production of packaging and management of packaging waste both have an **impact on the environment**. This impact includes greenhouse gas emissions which contribute to climate change, and litter - both of which negatively affect ecosystem health. Most plastic today is derived from natural gas and petroleum, which supports the fossil fuel industry. One in every seven barrels of oil is used to produce plastic, and plastics account for 3.4% of global greenhouse gas emissions, more than either the aviation (1.9%) or shipping industries (1.7%).¹⁸ When packaging waste is mismanaged and becomes litter, it pollutes both terrestrial and aquatic ecosystems. This pollution damages local habitats and has detrimental effects on local wildlife. In aquatic environments, plastic bags, food containers, cutlery, and other takeaway items are prevalent forms of litter,¹⁹ negatively affecting over 700 marine species.²⁰ Plastics in the marine environment do not break down easily, and when they do, they degrade into microplastics which pose additional threats to marine ecosystems.²¹ In the United States alone, disposable food service packaging contributes to approximately

20 billion pieces of litter annually.²² Packaging made from organic inputs, such as bioplastics, can also pose environmental challenges. When these materials are disposed of in landfills, the breakdown process emits methane, a greenhouse gas that is around 80 times more powerful than CO₂ at trapping heat in the Earth's atmosphere.²³

Certain chemicals in food-grade packaging can also leach into food and pose **public health concerns**. For example, endocrine disrupting chemicals have been associated with chronic diseases such as diabetes, obesity, cancer, and neurological disorders like ADHD.²⁴ Per- and polyfluoroalkyl substances (PFAS), a class of chemicals that are used to make grease resistant packaging among other products, can accumulate in the human body and have been linked to cancer, thyroid disease, birth defects, and other human health concerns.²⁵

The **economic impact** of takeaway packaging, accounting for the cost to restaurants, municipalities, and the lost value of materials sent to landfill, is noteworthy. In the US, \$24 billion is spent by restaurants and food-service businesses on single-use takeaway packaging annually, which translates to \$6 billion spent by businesses and municipalities on collecting and managing this waste.²⁶ Low recycling and composting rates signal a lost economic opportunity; a large volume of material with a significant monetary value that could be captured through reprocessing is being lost to landfill. As the volume of packaging associated with these impacts increases, there is a growing need to design, develop, and implement a more sustainable system to reduce packaging and ensure it is appropriately managed at the end-of-life.

Readers should note that while reusable packaging systems are an important component of a more circular and sustainable economy for takeaway packaging, this white paper largely focuses on sustainable and efficient single-use packaging systems. Reuse systems have yet to scale and continue to pose logistical challenges for restaurants and third party delivery platforms.



Packaging Materials

Key Points:

- The environmental performance of each type of packaging and the system in which it is managed depend on material and the country in which it is produced.
- Environmental impacts can be mitigated through the use of recycled content or sustainably sourced feedstock.
- Policies that require proper labeling and financial investment in recycling and composting infrastructure are needed in every region to give consumers the ability to responsibly recycle or compost their packaging at the end-of-life.
- Certification and compliance with standards can ensure that materials meet environmental standards, are able to be successfully composted or recycled, and are appropriately labeled as such.
- There is no one-size-fits-all approach. Various types of packaging may be more or less sustainable depending on the type of processing infrastructure that is available in each market.

Sustainable takeaway packaging should maintain functionality (e.g., product protection, food safety standards, etc.) while minimizing adverse effects on human and environmental health. The current widespread industry standard for food delivery applications is to use single-use packaging, as opposed to reusable. The most common materials used in packaging are: 1) plastics, 2) fiber-based, and 3) metal. Different materials are made from different feedstock; feedstock is a term that refers to the raw materials used to produce the packaging. The material used has a significant influence over the environmental performance of a packaging solution. Factors contributing to overall impact on the environment include the origin and amount of material used, the production process and energy source, the presence of harmful or hazardous substances, the recyclability and compostability of the packaging, and the extent to which it is successfully recycled or composted in practice.

This section explores

- The environmental advantages of different materials in packaging; and
- The barriers they face to improving their environmental performance.

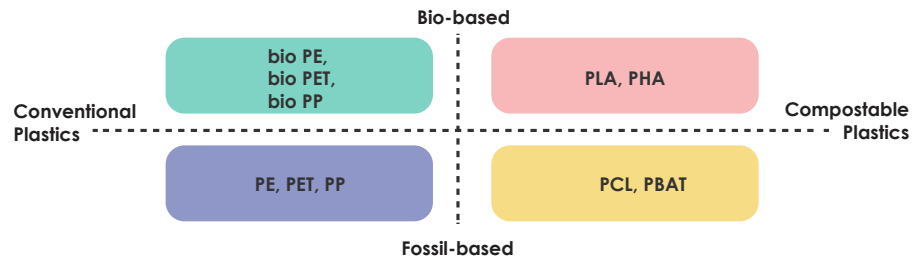
BPA, PFAS, and other potentially hazardous substances must be avoided in all materials. Bisphenol A (BPA) is an endocrine disrupting chemical used in the manufacturing of certain plastics and resins, such as food storage containers and reusable beverage bottles.²⁷ Endocrine disruptors can interfere with the hormonal systems of humans (and animals) and can cause adverse health impacts. PFAS are a group of thousands of man-made chemicals used in many products to provide grease and moisture resistance in plastic and fiber-based packaging. These chemicals do not biodegrade, persist in the environment, and have potential adverse effects. They are colloquially known as ‘forever chemicals’. In some markets these are banned. Ideally, any ‘substances of very high concern’ (SVHC) under the EU REACH regulations should be excluded, along with those specified under current EU (EFSA) and US (FDA) food safety legislation, which are generally the most rigorous standards available.²⁸

Compostability Standards. Not all industrial composting standards have been rigorously tested to ensure that materials break down properly in industrial composting settings, leading to concern about their legitimacy. Home compostability standards and certifications are typically adapted from industrial composting standards but designed for much lower temperatures. Packaging that meets home compostability standards is preferred because it typically breaks down effectively in both industrial facilities and home composting systems. These standards and certifications include TUV Compost Home (based on the European EN13432 certification for industrial composting),^{29,30} the French NF T51-800 standard,³¹ and the Australian standard AS 5810-2010 and AS 4736.³² The BPI in the US is developing a home compostability certification, intended to launch in 2024.³³



Plastic Packaging

The world produces around 141 million tonnes of plastic packaging each year across all sectors.³⁴ In the US, food packaging specifically makes up almost half of all mixed solid waste.³⁵ In the UK, food and drink packaging accounts for 83% of plastic packaging waste.³⁶ In China, the total amount of takeaway plastic packaging waste produced each year is between 460,000 tons and 1,680,000 tons.³⁷ Plastic packaging can be made from a variety of materials and resin types including polyethylene terephthalate (PET), polypropylene (PP), polyethylene (PE) and for some takeaway packaging, polystyrene (PS). However, many markets have banned – or are banning – polystyrene. Material types include bio-based (e.g., derived from corn) or fossil-based (e.g., derived from petrochemicals). Requirements for more sustainable packaging have caused industry to more recently explore alternatives that are bio-based, biodegradable, or both.



In this report plastics have been divided into two groups:

1. Conventional plastics: bio-based and fossil-based plastics that cannot be composted (i.e., the left-hand side of the figure). The bio-based conventional plastics are referred to as ‘drop-in’ bioplastics; they are chemically identical to their petrochemical counterparts but are made from biomass.
2. Compostable plastics: plastics from bio-based or fossil-based feedstock that can be composted (i.e., the right-hand side of the figure).

Conventional Plastics

Conventional plastics (both fossil-based and bio-based) are widely used within the takeaway and delivery food sector because they are lightweight, versatile, and have good barrier properties. They are also cost-effective, easily manufactured, and available in various formats, which can be either flexible or rigid.

Environmental benefits of conventional plastics

Conventional plastics are durable, lightweight, easily stored, as well as heat and water resistant. These properties make them suitable for takeaway and delivery, ensuring the food is protected. Many rigid containers are widely accepted in recycling systems and can incorporate a high percentage of recycled content, both of which have environmental benefits. Bio-based plastics derived from renewable sources also offer the potential to reduce overall CO₂ emissions.

Barriers to greater environmental performance

Most conventional plastics are still predominantly made of virgin fossil-based feedstock, a non-renewable and carbon intensive source. This is due to low plastic recycling rates, which limit the supply of recycling content, as well as low adoption rates of bio-based feedstocks. Low recycling rates are attributable to inadequate infrastructure to collect, sort, and recycle the material, and packaging producers’ unwillingness to pay increased costs for recycled content versus virgin materials. For some packaging producers, the reticence to use recycled content is also linked to the degradation of quality during reprocessing, which limits the number of recycling cycles and potentially impacts material efficacy.³⁸

When conventional plastic packaging is littered, it releases microplastics that can cause environmental harm and impact human health.^{39, a} For bio-based plastic, there is also a risk that the land used to grow the crop will displace resources or land needed for other uses, potentially contributing to food scarcity and biodiversity loss.

^a Humans are exposed to microplastics through many different aspects of life. Measuring the impact of such a ubiquitous substance’s toxicity is challenging as toxic effects vary depending on the type, size, shape, and concentration of microplastics, as well as any given human’s unique level of exposure. Further research is needed to better understand the impact on human health.

Compostable Plastics

Compostable plastics can be derived from bio-based or fossil-based sources and are seen as a “greener” alternative to conventional plastics because they can, under specific conditions, degrade without producing microplastics. The market for compostable plastics is growing, with global sales expected to reach \$28.8 billion by 2029, approximately 1.5 times the 2023 estimated value.⁴⁰ However, most rigid compostable plastics require industrial composting facilities, which are not available in most countries.

Compostable plastics look and feel like conventional plastic. They are often lightweight, versatile, and can have good barrier properties over shorter timeframes. However, the market is less mature, and costs can be higher. Compostable plastics are only suitable for single-use formats.

Environmental benefits of compostable plastic packaging

Consumers in areas with suitable collection systems can easily dispose of both the packaging and leftover food in their organics collection, maximizing the capture of food waste and reducing waste to landfill.

Barriers to greater environmental performance of compostable plastic packaging

A lack of access to organic waste collection services. For example, only 24% of local councils in Australia provide separate collection for household food and garden organics.⁴¹ Some composting facilities view compostable plastics as contaminants because they cannot differentiate them from conventional plastics, leading to their exclusion. Further, while compostable plastics can degrade under the right conditions, their presence does not improve the quality or nutrient density of the compost it becomes a part of making it less attractive to composters. Finally, consumers’ inability to easily distinguish compostable plastics from conventional ones leads to contamination of both recycling and composting streams.



Fiber-based Packaging

Fiber-based packaging is made from natural fibers, typically derived from wood or other plant-based sources. Common formats include paper, cardboard, and molded pulp. Alternatives like sugarcane bagasse are also being explored due to their faster growth rates.

Cardboard Packaging

Cardboard packaging is made from cellulose fiber. It is commonly used within the takeaway and delivery sector because it is readily available, versatile, and cost effective. Cardboard has poor moisture and grease resistance, often requiring plastic layers and chemicals for necessary barrier properties.

Environmental benefits of cardboard packaging

Fiber-based packaging is made from renewable materials (e.g., trees). Trees absorb CO₂ and, if managed sustainably, can reduce overall carbon emissions. Cardboard has a lower carbon footprint per unit weight compared to other materials and can contain high amounts of recycled content.⁴² Most cardboard packaging (subject to the thickness and composition of the coating or liner used for moisture and grease resistance) is widely accepted in recycling systems and has high recycling rates.

Barriers to greater environmental performance of cardboard packaging

The thin plastic layers and chemicals used to provide necessary barrier properties can negatively impact recyclability and compostability if they are not carefully managed. Liners are an additional layer of material placed inside containers and can be removable, while coatings are applied directly to the material’s surface. Chemicals such as PFAS can be found in coatings and liners, and have environmental and health impacts.

It is essential that fiber materials are sourced from sustainably managed forests. Without this, the use of cardboard packaging could contribute to deforestation and the destruction of wildlife habitats.

Bagasse and Other Natural Fiber-based Packaging

Bagasse is a byproduct of sugarcane processing and is used in food service applications due to its formability, strength, and water or grease resistance. Other materials with similar potential include wheat straw, rice husk, bamboo pulp, and coconut core. These materials are often sourced as byproducts or waste of other industries. They are processed into pulp and pressed into packaging shapes using pressure and high temperature.

Environmental benefits of bagasse and other natural fiber-based packaging

Since bagasse is a waste product from other processes, this type of packaging is unlikely to cause land use change or crop displacement. The processing of bagasse or other similar feedstock into fibers produces less waste compared to fiber-based products derived from trees. Many of these fibers are home compostable and naturally water or grease repellent, eliminating the need for liners or barrier coatings that may inhibit effective composting. Packaging produced from these materials is noticeably different in look and feel compared to any other packaging formats, making it easily identifiable by consumers and other stakeholders, and ensuring proper disposal, sorting, and (re)processing. Its compostability means that consumers may be able to dispose of both the packaging and any food waste into their organics collection system, maximizing the capture of food waste and minimizing the associated negative impacts.

Barriers to greater environmental performance of bagasse and other natural fiber-based packaging

The manufacture of some bagasse packaging may require additives to enhance natural properties. These additives could include PFAS and other harmful substances. As with other compostable packaging, not all households have access to organic collection services, so this material may end up being disposed. In most countries, national guidance suggests that bagasse

packaging is either not collected for recycling or has not yet been sufficiently tested to determine if it is recyclable.



Aluminum is the primary takeaway metal packaging and is the most widely used packaging material in the food and beverage sector due to its functionality. It is typically used as a wrapper or in tray format, accompanied by a fiber-based lid or similar covering.

Environmental benefits of aluminum packaging

Aluminum is durable and lightweight, which reduces the environmental impact from the shipping and transport stages of the aluminum packaging value chain. It can be recycled repeatedly without losing its functional performance. Additionally, some forms of aluminum packaging (e.g., beverage cans) have high recycling rates due to the value of the material.

Barriers to greater environmental performance of aluminum packaging

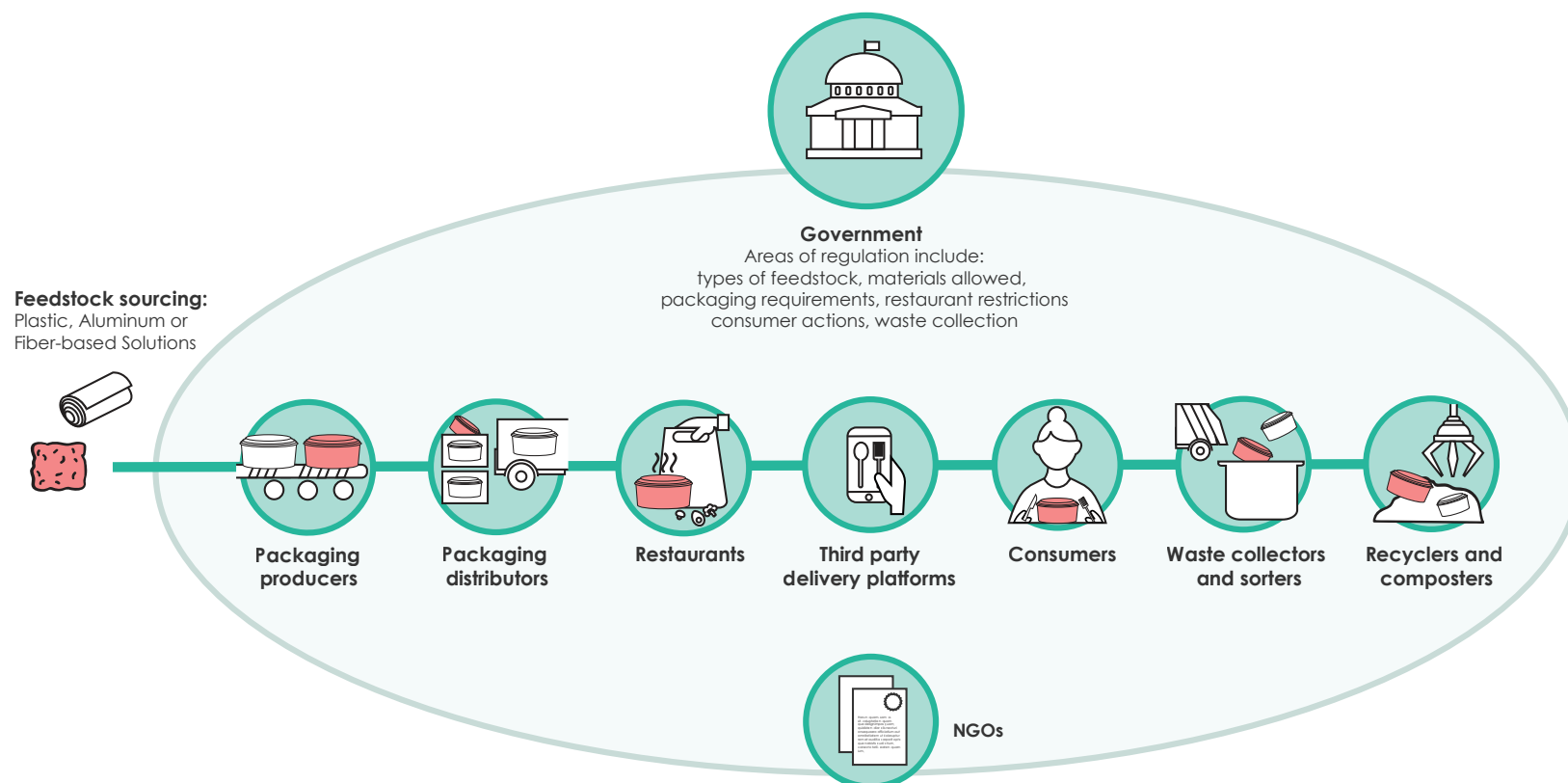
The primary source of aluminum, bauxite ore, is typically extracted through strip mining, which can cause significant ecological damage. The production of aluminum packaging includes refining and smelting processes which are energy-intensive, and the environmental impact depends heavily on the electricity grid mix (e.g., fossil-based vs. renewable energy). The smelting process is water-intensive, potentially leading to local water scarcity and contamination. The production process also emits perfluorocarbons, which are more potent greenhouse gases than CO₂ and contribute significantly to climate change. The use of recycled content can help overcome these barriers, but collection and recycling rates need to be high. Takeaway aluminum has a low recycling rate partly because it is often not clearly accepted in recycling systems due to being heavily soiled with food waste.

The Single-Use System

Key Points:

A truly sustainable system requires all stakeholders to take action and be held accountable. For example, packaging producers should offer certified sustainable options to consumers, governments should implement more widely available recycling and composting systems, third party delivery platforms should incentivize restaurants to prioritize using more sustainable materials, and consumers should be encouraged to responsibly dispose of their packaging. However, each stakeholder group faces their own limitations. Therefore, policies are needed to foster collaboration across stakeholders and drive funding and investments necessary to scale systems-level solutions and make them accessible to all.

In a single-use system, restaurants rely on single-use packaging to enable the quick and accurate fulfillment of orders, and consumers need the packaging to facilitate the safe transportation of their food from the restaurant to their dining location. However, there are additional considerations for the packaging system to be sustainable.



Actions to Optimize the System

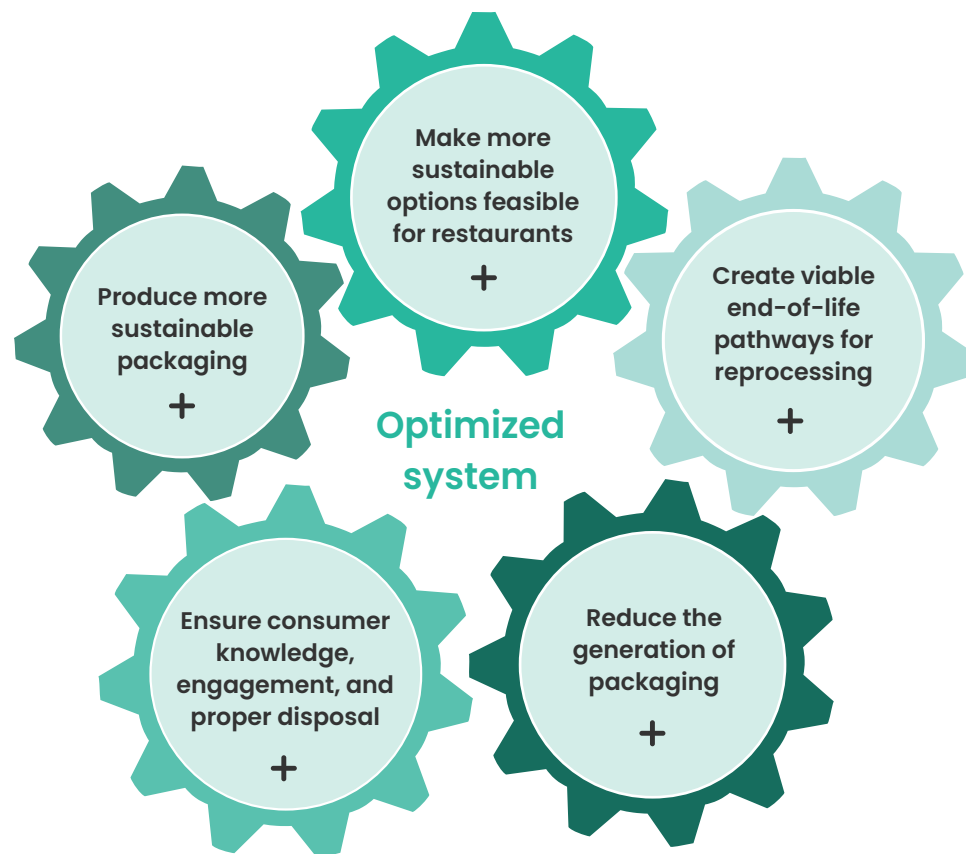
Key Points:

- A more sustainable single-use takeaway and delivery system includes reducing the use of unnecessary packaging, ensuring that what is used is made of material that is sustainably sourced, and supporting widespread access to collection and processing infrastructure. This will ensure that packaging is actually recycled or composted at the end-of-life. Consumer education is crucial to ensure that those with access know how to properly dispose of their packaging.
- Policies and regulations can help reduce the amount of packaging and ensure that there is government investment in infrastructure and education.
- Certifications, standards, and guidance can ensure that packaging meets sustainability criteria by verifying the use of recycled content or more sustainable materials and confirming that packaging can be recycled and composted.
- Programs and partnerships can complement effective policymaking by increasing access to and reducing the cost of more sustainable packaging for restaurants.
- Each stakeholder group has a critical role to play in driving this change.

An optimized single-use takeaway and delivery packaging system requires five key components. These systems-level solutions cannot be achieved by one stakeholder alone. Each stakeholder plays a critical role in creating a truly sustainable system.

This section of the report details the recommended actions to operationalize each of the five systems-level solutions. Please note that all systems-level solutions are equally important. The order is based on the value chain process and is not intended to signify level of importance nor chronology for implementation.

Click on a gear to jump to that section and read more



Reduce the Generation of Packaging

Like all consumer goods, the production and use of packaging comes with an environmental impact, regardless of what packaging material is used. The reduction of packaging, where possible, is the first step to improving the sustainability of this system.^b

Challenges

While takeaway packaging and service ware serves a key purpose, some single-use service ware, such as cutlery, is often not used by consumers.^c Eliminating this excess waste is a feasible way to improve the sustainability of the takeaway and delivery packaging system. However, implementing these changes can be challenging due to lack of awareness and therefore empowerment to make more sustainable choices among both restaurants and consumers. Additionally, voluntary efforts to reduce this packaging are not consistently implemented. It is also important to limit the use of packaging materials that pose threats to environmental and human health; however, some of these materials are still on the market and in use.

Recommended Actions

Action 1: Eliminate the use of materials that are more problematic for environmental and human health.

- **Local, State, and National Governments** can implement policy bans on materials that are problematic for environmental and human health. This is most relevant for disruptive plastics such as EPS (Styrofoam) and PVC; these materials have been identified as contributors to environmental destruction and have low recycling rates, globally.
- **NGOs**, including industry associations, **Producers**, and **Governments** can form cross-industry partnerships to collaborate on identifying the most problematic packaging materials to be phased out.

Example: The EU's Single-Use Plastics Directive aims to reduce the environmental impact of certain plastic products. A list of single-use plastics products that can no longer be placed on the EU market includes cutlery, plates, straws and stirrers. Some material types are also banned through the directive, including food and beverage containers made of expanded polystyrene, and all products made of oxo-degradable plastic.⁴⁴

Action 2: Minimize single-use takeaway service ware items by prompting consumers to opt-in for non-essential service ware.

- Legislation passed by **Local, State, or National Governments** can require that restaurants only provide non-essential single-use service ware items when customers request them.
- **Third Party Delivery Platforms** and **Restaurants** can partner to implement features that enable customers to request single-use service ware items only when needed. This is becoming more of a standard practice and can help minimize unwanted and wasted packaging.
- **Local or State Governments, NGOs**, and **Third Party Delivery Platforms** are well-positioned to offer education and insight to restaurants on the financial benefits of single-use service ware items opt-in programs to help reduce restaurants' costs. Subsequent training provided by restaurant management or ownership to their restaurant employees can then help ensure customer opt-out requests are followed.

^b Reuse systems can be a key way to minimize packaging, but this is only true when the system reaches high return rates which have been proven to be difficult to achieve.

^c Service ware in this report refers to cutlery, straws, napkins, and sauce sachets.

- **Local or State Governments, NGOs, Third Party Delivery Platforms, and Restaurants** can educate consumers on the environmental impact of waste generated by single-use items and encourage them to opt-out of non-essential single-use items. For example, they can encourage consumers ordering a meal for consumption at their home to opt-out of cutlery and use their own reusable cutlery.

Example: The Legislature in the state of Washington passed a single-use service ware law that requires customers to request, confirm their choice when asked, or select the item they want from a self-service station.⁴⁵ This applies to utensils, straws, condiment packaging, and beverage cup lids. Notably, beverage cup lids may be provided without customer affirmation for hot beverages and delivery to ensure safe consumption of hot beverages and successful delivery. To enforce this policy, Washington has introduced an online 'Observation Form' for consumers to document any violations of this law.



Produce More Sustainable Packaging

For several commonly used packaging materials (e.g., plastic, metal) much of the impact comes from the mining and initial processing of the virgin feedstock. Therefore, it is crucial to promote packaging that not only preserves the quality of the food but also uses sustainably sourced material or recycled content whenever possible, has low associated greenhouse gas impacts, does not use added substances that can be harmful to environmental and human health, and is designed to be recycled, composted, or reused.

Challenges

Producing more sustainable packaging depends on several factors, including the availability and cost of materials, energy source for production, certification requirements, and the existing packaging processing infrastructure, among other factors (e.g., recycled content for paper may be more readily available in one market than another). The absence of a universal best practice for the production process requires additional effort from producers to understand how to operationalize sustainability in their unique production process. Additionally, the lack of consistent information and standardized criteria to define the sustainability of packaging makes it extremely challenging for restaurants to make more sustainable choices.

Recommended Actions

Action 1: Increase production of packaging that uses existing sustainability standards and certifications.

- **Producers** need to comply with existing standards for sustainably sourced feedstock, recyclability and compostability. Existing standards include, but are not limited to, industrial compostability standards such as EN13432 in Europe,⁴⁶ and ASTM6400 and ASTM 5511 in the United States.⁴⁷ For wood, bio-based, and recycled materials, standards such as FSC (with a preference for 100% and Recycled certifications over Mix),⁴⁸ RSB (for bio-based materials),⁴⁹ and ISCC+ (applicable to both recycled and bio-based materials) exist.⁵⁰ For Aluminum, ensure that the Aluminum Stewardship Initiative (ASI) Performance and Chain of Custody Standards are in place.⁵¹
- **NGOs** and packaging industry associations can support the harmonization of existing certifications with international standards (e.g., ISO, EN) to provide producers with clear guidance and reduce confusion over different standards.

Action 2: Increase the ambition of existing standards and certifications as improvements become feasible for producers.

- **NGOs** and packaging industry associations are well-positioned to push existing standards to become more stringent as market conditions allow. For example, as recycling infrastructure is improved and more recycled materials are available to displace virgin feedstock, standards for the percentage of post-consumer recycled content in packaging should increase. Further attention is needed to exclude chemicals that may be harmful to human and environmental health, as current certifications are not yet comprehensive. The EU ChemTrust has created a Sin List of 1500 chemicals that are considered a Substance of Very High Concern (SVHC).⁵²

Example: The Canada Plastics Pact (CPP) is a multi-stakeholder collaboration focused on creating a circular economy for plastics in Canada, which includes takeaway packaging.⁵³ The CPP aims to redesign packaging to be reusable, recyclable, or compostable, benefiting the foodservice industry. The Pact also targets improved end-of-life management by enhancing recycling processes and developing new technologies for plastic recovery. By engaging various stakeholders, the CPP facilitates the sharing of best practices and innovations in sustainable takeaway packaging for plastics.



- **State or National Governments** could establish single-use packaging policies that support producers' sustainability purchasing strategies. This could take the form of EPR programs that charge lower fees for more sustainable packaging, or incentivize design for recycling (e.g., designing mono-material packaging, reducing the number of packaging components, eliminating non-recyclable or hazardous materials). This type of EPR policy is known as eco-modulated fees, and can be paired with policies that can also include minimum post-consumer recycled content targets that gradually increase the use of recycled material in packaging.

Example: Colorado's EPR policy requires producers to set minimum collection, recycling, and post-consumer recycled content targets.⁵⁴ Fees will likely be eco-modulated to incentivize the use of recycled content and design packaging for recycling.

Action 3: Encourage resource efficiency in the production process through targeted research, as these areas of improvement will vary and cannot be standardized.

- Not all aspects of the production process can be standardized for sustainability. For example, opportunities for energy efficiency improvements for packaging manufacturing plants will be specific to different geographic regions and companies. **Producers** need to conduct internal research, such as Life Cycle Assessments, to inform how R&D could focus efforts to improve the sustainability of the production process that may be specific to their company.

Make More Sustainable Options Feasible for Restaurants

It is not enough for more sustainable packaging options to merely exist; they must also be viable options for restaurants. For more sustainable packaging to achieve widespread adoption, it must be cost competitive with the existing, less sustainable packaging options, suitable for a variety of cuisines and use-cases, and be readily available in sufficient supply. If the more sustainable options are not feasible for restaurants, the system will not work.

Challenges

Currently, there is a price premium for packaging material alternatives to single-use plastics, forcing restaurants to pay more for sustainable options. The cost difference, combined with the lack of regulatory requirements – such as bans on problematic materials and mandates for sustainability standards or certifications – limits the demand for more sustainable materials. This, combined with the availability of cheaper, more problematic materials, makes it nearly impossible for more sustainable alternatives to become cost competitive. Additionally, more sustainable alternatives do not always meet restaurants' needs – for example, soups and curries can only be transported in containers that can accommodate liquids, and packaging must be able to accommodate restaurant branding.

Furthermore, there are a range of restaurant sizes that exist, with many small and medium-sized restaurants alongside major chains (large enterprise restaurants). These small and medium-sized businesses (SMBs) have limited capital, space, and time to invest in more sustainable packaging. They also possess minimal market power individually, both over packaging producers and in terms of educating consumers on a large scale.

Recommended Actions

Action 1: Make more sustainable packaging options an accessible and reliable choice for restaurants.

- **Local Governments, NGOs, Producers, and Third Party Delivery Platforms** can provide guidance to restaurant management staff on more sustainable packaging that is suitable for the specific type of food they offer. This is particularly relevant for **Large Enterprise Restaurants** who have the systems in place for institutional learning and may have their own sustainability targets.
- Partnerships between **Producers** and **Third Party Delivery Platforms** can help inform and support restaurants in choosing more sustainable packaging options.

Example: In the UK, a partnership between Uber Eats and Enviropack aims to support restaurants' use of more sustainable packaging, by providing an online shop that allows restaurants to purchase packaging at discounted rate.⁵⁵ Similar partnerships between Uber and producers exist in the US, Latin America, Asia-Pacific, and the EU.

- Partnerships between **Producers, Distributors, and Large Enterprise Restaurants** can help scale the readily available supply of more sustainable packaging. This will help restaurants of all sizes make the transition to more sustainable options with confidence.

Action 2: Improve cost-competitiveness of more sustainable packaging options for restaurants.

- Legislative bans on cheap, problematic materials that are still in use can drive the adoption of more sustainable alternatives, thereby improving economies of scale and lowering cost to the restaurant. This type of policy would be most effective at lowering costs if implemented by **National Governments**; however, **State and Local Governments** can drive change as well.
- Improved consumer awareness around more sustainable packaging, though not a key driver of change, could increase consumer willingness to pay a cost premium for more sustainable packaging formats, and/or better understand any trade-offs with branding. While restaurants are positioned closely to consumers, the impact of this education has the potential to be more widespread and consistent coming from **NGOs and Local Governments**.

Action 3: Ensure more sustainable options are suitable for a variety of cuisines and use-cases.

- **Producers** need to continue R&D to make more sustainable packaging options better for a variety of use cases. This could be driven by producers' internal sustainability targets or by EPR policy that includes eco-modulated fees. **NGOs** could also support the funding and research for these innovation projects.

Ensure Consumer Knowledge, Engagement, and Proper Disposal

Consumers need to be informed about how to properly dispose of their packaging once it has served its purpose. This should include any steps required to prepare the packaging for recycling such as washing off food residue or separating different materials. Regardless of whether the materials are intended for composting or recycling, consumers should have access to the appropriate collection systems. These systems should be user-friendly and align with other waste management systems to increase the likelihood of effective uptake.

Challenges

Consumers often lack knowledge and instruction for proper end-of-life care of packaging. Additionally, inconsistencies in access to curbside recycling and composting services across regions lead to consumer confusion and results in many packaging types not being recycled or composted in practice.

Recommended Actions

Action 1: Standardize labeling requirements for all packaging materials.

- **National, State, and Local Governments** can pass laws standardizing labeling requirements for packaging with a focus on labeling for plastic alternatives and composite materials. These requirements would help restaurants understand what type of materials their packaging is made from and would inform consumers about how to properly dispose packaging. Information should cover the pre-disposal stages, such as rinsing or removal of disposable layers, and the waste stream, such as recycling, composting, or general waste. These requirements would be most impactful at the national level.

Action 2: Improve consumer awareness around proper end-of-life care for single-use packaging.

- **Local Governments, Waste Service Providers, and Third Party Delivery Platforms** can provide programs to educate consumers on the appropriate practices for end-of-life disposal. For third party delivery platforms, this could involve providing educational reminders to customers through their platform to appropriately dispose of packaging after a delivery has been completed.
- Guidance to consumers may also be provided through regulatory standards. **Local, State, and National Governments** with **Waste Service Providers** should set clear standards and provide corresponding guidance to consumers on what packaging is recyclable and compostable in their jurisdiction.



Create Viable End-of-life Pathways for Reprocessing

Viable pathways for reprocessing materials (i.e. recycling, composting, reusing) are essential for a sustainable takeaway and delivery system. For recycling, effective end-of-life management supports the development of a more circular and sustainable system by encouraging the use of recycled content. For instance, plastics that are properly recycled can be used as recycled content in new packaging, displacing some of the virgin material needed to create new packaging, thereby reducing the impact of production.

Challenges

Packaging is often produced and purchased without consideration of the end-of-life systems available within a market area. Limited and fragmented infrastructure hinders proper disposal or recycling of certain packaging types in certain markets. There is little incentive to put in place mechanisms to manage a packaging stream that is a relatively small percentage of the packaging stream, due to potential high costs and technical challenges associated with processing alternative more sustainable materials.

Recommended Actions

Action 1: Ensure that the takeaway packaging materials that are in use can be managed with available waste management infrastructure.

- Legislative requirements for types of packaging (e.g., recyclable or compostable) should align with the types of waste collection (e.g., to recycling or compost) readily available in a particular locale. This ensures that more sustainable options placed on the market are processed at end-of-life how they're intended to be, reaping the sustainability benefits. This type of regulation is most effective when passed at the highest levels of government at which the waste infrastructure is cohesive; this could be **Local, State, or National Government** depending on the jurisdiction. This type of policy can also signal to the market that there is need for infrastructure and support the business case for investing in the development of these waste services.

Example: The state of California passed Senate Bill 1383 (SB 1383) in 2016.⁵⁶ This law aims to reduce organic waste in landfills by 75% by 2025 compared to 2014 levels and requires that jurisdictions offer organic waste collection services and educate residents and businesses on proper sorting, as of 2022. While the law only includes paper products as organic waste, this state-level infrastructure will improve the end-of-life pathways for organics, developing the infrastructure for future collection of compostable packaging. Some cities in the state are already doing this. San Francisco passed the Food Service Waste Reduction Ordinance in 2007 which requires that all disposable food packaging and service ware be compostable or recyclable.⁵⁷ The legislation defines 'compostable' and 'recyclable' based on the City's collection program and set standard specifications for compostables based on BPI and ASTM. In 2009, San Francisco passed the Mandatory Recycling and Composting Ordinance.⁵⁸ The state-level policy, municipal policies, and the City's partnership with waste hauler Recology together ensure residents are able to comply with the Ordinance and that the infrastructure exists to recycle and compost what is collected. San Francisco has demonstrated leadership with this policy and infrastructure by reaching 80% landfill diversion through a combination of source reduction, reuse, recycling, and composting.⁵⁹



- **Distributors or Third Party Delivery Platforms** can provide region-specific guidance to support restaurant management staff in selecting packaging materials that have existing end-of-life routes in their geography, whilst also considering the functional needs of a restaurant's food offering. For example, distributors or third party delivery platforms can provide suggestions to help restaurants select packaging that is suitable for the type of food they produce, and also has an existing waste pathway in the market.

Action 2: Improve the end-of-life infrastructure for reprocessing takeaway packaging (i.e., collection, sorting, recycling, and composting).

- **State or National Governments** can pass EPR legislation that requires takeaway packaging to be recyclable, compostable, or reusable, and requires Producers or Producer Responsibility Organizations to invest in infrastructure. This type of policy can operate as a funding mechanism to improve recycling and composting infrastructure.
- **Local, State, or National Governments** can pass legislation that mandates recycling and composting collection. This will increase the amount of material collected for reprocessing, creating more economic opportunities for waste management services to develop their infrastructure. This policy would be particularly impactful for composting collection as this service is limited relative to recycling. Composting collection that allows for food waste and compostable packaging to be included, as well as advancement of sorting technologies to distinguish compostable vs non-compostable plastics, would create viable pathways for compostable packaging and also maximize the capture of food waste.
- Progressive targets that ban recyclable and compostable waste from being sent to landfills are most effective when passed by **State or National Governments**, and can incentivize investment in more sustainable waste management options. The success of bans is contingent upon the government's willingness to allocate sufficient funding to enforce and support alternative options.

Example: For EU member states, it is mandatory that bio-waste (which includes food waste) is either separated and recycled at source or is collected separately and not mixed with other types of waste.⁶⁰ Additionally, the EU's Waste Framework Directive (2018), sets out progressive targets to reduce the amount of biodegradable municipal waste going to landfill.⁶¹

The Reuse System

Key Points:

- While widespread reuse is still a distant goal due to the logistical and financial challenges it poses, it remains a crucial objective for improving the sustainability of the takeaway and delivery packaging system. There are no at-scale takeaway packaging reuse programs, and the transition to reusables in fast food restaurants is still in its infancy, globally.
- Implementing a pooled system for takeaway containers presents the most effective path for restaurants and consumers. However, this can be logistically and financially challenging to implement.
- Policy intervention is essential to initiate a significant shift towards reuse beyond pilot programs, as the market needs all players to invest and mobilise.

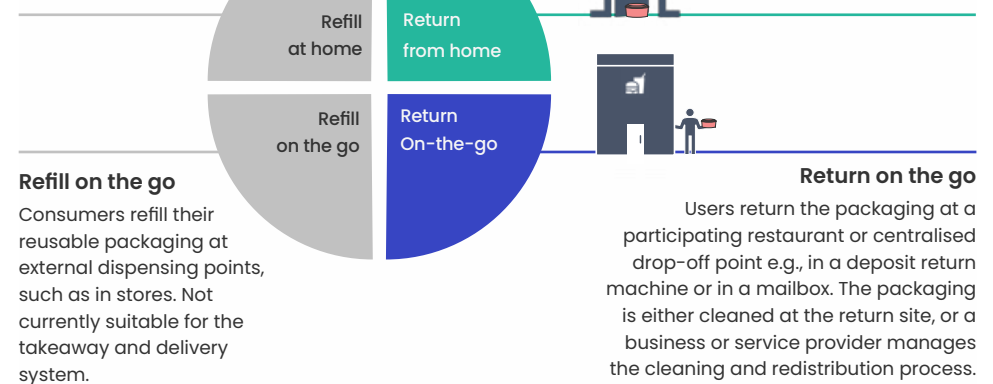
There are many barriers which prevent the development of reuse for packaging in general. These barriers are particularly relevant for takeaway packaging, making the transition from small trials to large-scale systems challenging. However, reuse systems are more applicable in high-density urban environments, where takeaway is common and third party delivery platforms typically operate. A scaled reuse system can have significant sustainability benefits making it an important component of the shift to a more sustainable takeaway and delivery system.

Government funding mechanisms, alongside private investment, are vital to the success of scaling restaurant reuse programs. As noted throughout this report, reuse can only feasibly be adopted at scale if cities implement collection and processing infrastructure (e.g. public drop-off points, washing facilities, packaging return programs) that make reusable packaging easy for restaurants and consumers to return. Implementing reuse requirements without this critical support can result in greater environmental harm than benefit, as consumers would be receiving reusable packaging with no intention of, or ability to return it.

These are the four main types of systems for reuse (see graphic).⁶² Refill systems are not currently suitable for the takeaway and delivery system so the types of reuse systems addressed in this report are return systems: Return from home and Return on the go.

Refill from home

Consumers refill a reusable container at home. Not currently suitable for the takeaway and delivery system



Refill on the go

Consumers refill their reusable packaging at external dispensing points, such as in stores. Not currently suitable for the takeaway and delivery system.

Return from home

Packaging is picked up from home by pick-up service e.g., by a logistics company. A service provider is responsible for the cleaning and redistribution of the packaging.

Return on the go

Users return the packaging at a participating restaurant or centralised drop-off point e.g., in a deposit return machine or in a mailbox. The packaging is either cleaned at the return site, or a business or service provider manages the cleaning and redistribution process.

Return systems can be established by a single restaurant, or by a reuse service provider with many different participating restaurants through a pooled system. There are significant challenges to individual restaurant return systems, including the upfront costs, less convenient container collection network, and compliance with health and safety requirements. A pooled system across restaurants with a standardized container that is 'loaned' to users is both efficient and attractive for consumers,⁶³ making it the preferred option to scale for success. Pooled systems require the following components:

- **Standardized reusable packaging:** Standardized containers allow the system to operate most efficiently. Design of the containers should account for restaurant functionality needs, as well as sustainability and interoperability. The size and shape of the container must be amenable to restaurant needs, as well as nestable for storage efficiency. These

containers should be made from materials that are lightweight yet durable, using certified recycled and/or bio-based materials as much as possible, and accounting for potential toxicity concerns.

Example: PR3 is a global alliance that aims to advance reuse.⁶⁴ They are in the process of developing standards for reuse, including incentives, labeling, reverse logistics, washing, collection points, containers, and digital standards. These standards are to be finalized and published by the Canadian Standards Association (CSA) as well as the American National Standards Institute (ANSI). Standards could help align numerous disconnected reusable packaging systems into reusable packaging systems into an interoperable network enabling efficiencies, convenience, and affordability.

- **Incentivized participation:** Consumer and restaurant participation must be incentivized for the system to achieve environmental and economic sustainability. The number of uses required for reusable packaging to breakeven with single-use on cumulative CO₂ emissions depends on the materials; however research shows 20 reuse cycles can outperform any alternative with decarbonized reverse logistics and cleaning.^d To achieve the high return rates necessary for this, return systems need to be pooled and incredibly convenient for the consumer to use. Return systems also need a high level of participation from restaurants in order for systems to operate efficiently at scale. However, reuse will never be as convenient as single-use therefore requiring additional incentives to drive consumer adoption and restaurant participation.

Example: Reuse Seattle is an initiative led by the City of Seattle and implemented with support from Cascadia Consulting Group, Blue Daisi, and PR3, as well as vendors, service providers, and facilities. The initiative has spread to more than 20 businesses in the city, offering reusable cups to consumers at no cost, as long as they are returned within 14 days. A key outcome of this public-private partnership is that businesses can apply for funding to offset the upfront cost of investing in reusables, lowering the barrier to entry for local food businesses and restaurants.⁶⁵

- **Reverse logistics supported by effective software:** Returning and washing containers must be convenient for users while remaining environmentally sustainable at the system-level. In an effective pooled system, the return infrastructure is widespread making it convenient for the customers. Convenience maximises participation which drives efficiencies (e.g. optimized collection routes). Software that tracks containers through unique codes can support high return rates, allowing reuse service providers to nudge consumers. This software can also advise consumers on return points and facilitate consumer reimbursement for deposits they may have paid. Use of electric vehicles that are powered on green energy, as well as water-efficient commercial washing are critical to environmental performance.

Example: DeliverZero is a US-based reuse service provider operating in NYC, Denver, and LA.⁶⁶ Leveraging technology, DeliverZero's system integrates directly with third party delivery platforms (e.g., Uber Eats, Caviar, DoorDash) to provide a seamless experience for the customer. DeliverZero has also created a return system that provides ease and holds customers accountable. By tracking each container, DeliverZero reminds customers to return their packaging until it's been scanned back into their system. To build out the return infrastructure they have partnered with restaurants for in-person returns; DeliverZero also offers a pick up service from customers for an additional fee.

Government action is a crucial driver for creating a pathway for reuse systems to scale to success. Feasibility of reuse implementation has been demonstrated through pilots, but there are still barriers to achieving the optimized pooled return system described above. A key barrier is that reuse will never be as convenient as single-use, which is why government intervention is necessary to catalyze the transition to scaled and permanent reuse systems for the food takeaway and delivery sector. This government action on reuse can take the form of:

- **Reuse targets specific to restaurants:** These targets can exist through stand-alone reuse policy that could be set at the local, state, or national level, or as a component of EPR policy, which would be at the state or national level.

^d The analysis compared PP reusable containers with single-use containers made of PP, coated paper, molded fiber, PLA, and bioPET.

Similar to the European Packaging and Packaging Waste Regulation (PPWR) and German Packaging Act, policies should require that restaurants provide customers with the option to use reusable packaging for in-store dining as an alternative to single-use packaging. This requirement will help expedite the shift to reusable containers and provide restaurants, consumers, and cities time to implement reuse systems that are affordable and logistically manageable. These targets can also phase-in requirements with fixed target years for increasing percentages of the restaurant takeaway sector's sales to be delivered in reusables. Requirements, rather than optional targets, are likely to see quicker adoptions that can help to improve costs as the system is scaled.

- **Multi-stakeholder collaboration:** At the local government level, partnerships that involve stakeholders from across the reuse system can help scale reuse by carrying out large scale pilots or initiatives to test and demonstrate viable market solutions. These partnerships can also subsidize the upfront cost of reuse, encourage innovative design and manufacturing of reusable products, and raise funds for the ongoing refinement of reuse programs as they scale.
- **Funding:** Given the high upfront cost of establishing reuse systems, governments can provide grant funding alongside policy that allows for this direct government funding of reuse programs, as well as technical assistance to help businesses transition to reuse.

Example: The UK government is providing funding to advance reuse through the UK Research and Innovation (UKRI) fund. Recent programs include funding for infrastructure supporting refillable products, in partnership with WRAP, and grants for research on “smart sustainable packaging”. This UK policy has allowed for funding to be funneled to advance reuse systems and foster innovation in sustainability and circularity.⁶⁷



Call to Action

Evidently, a sustainable packaging system requires all stakeholders to implement a number of changes. This section summarizes at a high-level what actions each stakeholder group can take.

Governments

Local and State Governments

- Provide funding and education programs to inform restaurants and consumers about the existing local waste infrastructure to ensure proper sorting of packaging waste.
- Align packaging and waste collection requirements to ensure packaging allowed on the market has an existing end-of-life processing route.
- Ban problematic materials and support more sustainable packaging strategies through EPR programs, recycled content targets, and reuse requirements.

State and National Governments

- Ban problematic materials, and pass opt-in mandates, as well as advanced EPR policy with eco-modulated fees, recycled content targets, and reuse requirements.
- Implement funding policies via grant programs, green loans, taxes, levies, and EPR laws to support the expansion of recycling and composting sorting and processing facilities.
- Pass laws that require separate collections for organic waste and recyclable packaging to enable widespread access to recycling and composting infrastructure.

Third Party delivery platforms

- Educate both restaurants and consumers about the environmental and financial impact of service ware and suggest ways to avoid it (e.g., leveraging in-app features for opting in).
- Offer guidance to help educate restaurant management in selecting more sustainable packaging suitable for their food types and their market's existing waste infrastructure.
- Support advanced EPR and reuse policies to drive these changes.

Restaurants

All Restaurants (SMBs, Mid-Market, and Large Enterprise)

- Educate staff and customers about the environmental and financial impact of non-essential takeaway packaging and encourage them to only include service ware upon request by the customer.

Large Enterprise Restaurants

- Join coalitions, likely through industry associations, to drive system-wide collaboration that will help ensure more sustainable packaging options are available and feasible for restaurants.
- Partner with distributors to secure a steady supply of more sustainable packaging for the market, demonstrating leadership in sustainability.

Consumers

- Learn how to properly dispose of packaging and seek out local recycling and composting options.
- Advocate for clearer guidelines and better access to these services in the community.

NGOs and Industry Associations

- Provide essential guidance and education to all stakeholders on more sustainable practices.
- Support and lobby for key policies to drive change.

Producers

- Produce packaging that complies with existing standards, pursue progressive certifications, and designing for end-of-life reprocessing.
- Form coalitions to drive industry-wide collaboration that will help to ensure the development of targeted end-of-life infrastructure.
- Invest in continued R&D to enhance the functionality of more sustainable options for restaurants.
- Partner with distributors to ensure a reliable supply of more sustainable packaging options and provide guidance to restaurants on more sustainable packaging options suitable for their needs with end-of-life routes in their market.
- Ensure sustainability certifications and labels are credible and verified, and provide the necessary information to enable restaurants and consumers to make informed decisions.

Distributors

- Partner with Producers and Large Enterprise Restaurants to ensure a steady supply of more sustainable packaging options for all restaurants.

Waste Providers

- Provide clear and concise guidance to consumers on how to properly sort recycling, composting, and garbage to reduce contamination, improving the efficiency and sustainability of waste processing.
- Lobby and collaborate with Local, State, and National Governments to fill gaps in existing waste infrastructure.

Country Road Maps

The above Call to Action presents high-level recommendations that can be implemented in markets across the globe. For market-specific recommendations, click on a country name below to learn more.

[France](#)
[Australia](#)
[UK](#)
[Japan](#)

[Taiwan](#)
[US](#)
[Canada](#)



Current State

The online food delivery market in France has grown significantly following the pandemic, with revenues increasing from €4 billion in 2017 to nearly €13 billion in 2023.⁶⁸ Increases in takeaway food consumption also mean higher volumes of packaging.

Existing key packaging policies in France include the Anti-Waste Law for a Circular Economy (AGEC),⁶⁹ EPR policy for packaging, and Triman labeling.⁷⁰ The forthcoming Packaging and Packaging Waste Regulation (PPWR) will impact packaging rules in France, including new requirements for reusable packaging.⁷¹ Third party delivery platforms have also agreed to a sectoral charter with the French government with the goal of working together to reduce packaging waste.

Despite ambitious policy targets, advanced EPR and labeling requirements, the municipal recycling rate was 41.7% in 2022.⁷² France is working to enhance recycling efforts through initiatives like France 2030, which invests in accelerating the recycling of materials, including plastic, metal, and cardboard.⁷³

Key Challenges & Recommendations

Recommendations include educating consumers to improve how they dispose of recyclable packaging to increase recyclability rates, further developing the use of and infrastructure for processing recyclable and compostable materials.

Action 1: Educate consumers consistently to improve how they dispose recyclable packaging to increase recyclability rates.

Challenge: Consumers are not adopting proper end-of-life care, negatively impacting the effectiveness of the recycling process. Specifically, takeaway packaging is often contaminated with food waste.

- The **French Government** should enhance the Triman System by implementing more detailed labeling requirements for all packaging materials and formats. Additional instructions for end-of-life care, such as rinsing or removing liners to remove food waste will improve the efficiency of processing recyclable packaging from takeaway and delivery.
- **Third Party Delivery Platforms, Waste Service Providers** and **NGOs** should initiate educational campaigns for consumers to emphasize the importance of rinsing recyclables before recycling. Financial support for these campaigns could be provided by the **Third Party Delivery Platforms** and the **Packaging PRO in France, CITEO**.

Action 2: Enhance the uptake of recyclable packaging and improve the end-of-life infrastructure for collecting, sorting, and processing of more sustainable materials.

Challenge: Many alternative packaging types available to restaurants have low recycling rates.

- The **Packaging PRO in France, CITEO** should utilize eco-modulation funds to invest in development of recycling infrastructure. The **French Government** should also support and invest in the development of waste management infrastructure for materials or populations that currently lack adequate recycling routes or access.
- Continuous review and further development of eco-modulation criteria by the **Packaging PRO in France, CITEO**, will ensure alignment of advancements in waste management infrastructure with packaging being placed on the market.

Action 3: Implement more composting facilities to address the growing use of compostable packaging.

Challenge: Compostable packaging is not being correctly managed at end-of-life.

- The **French Government** should enact policy that expands food waste collections and infrastructure to allow for heavily food contaminated compostable packaging, that complies with the EN 13432 standard, to be collected in the organics waste stream.
- Until the proper infrastructure is in place for processing compostable waste, the **French Government** should provide guidance to discourage **Restaurants'** use of compostable takeaway packaging. **Third Party Delivery Platforms** should support this goal by encouraging recyclable packaging, rather than compostables until the proper infrastructure is in place.



The United Kingdom (UK)

Current State

In the UK, nearly half (49%) of respondents surveyed eat takeaway food at least once a week.⁷⁴ The UK saw a rise in food delivery orders during the COVID-19 pandemic, and the trend has continued. The market value of foodservice delivery in the UK is projected to rise from £13.4 billion in 2022 to £17 billion by 2026,⁷⁵ and the number of takeaway and fast food restaurants increased from 37,000 in 2013, to over 47,000 in 2023.⁷⁶ This growth reflects the sustained demand for food delivery services post-pandemic. Existing key packaging policies in the UK include the Plastic Packaging Tax and a number of Single-use plastics (SUP) bans.^{77,78} The new Simpler Recycling policy mandates standardized recycling collection across local authorities, with an additional requirement to include flexible films starting in 2027.⁷⁹ These changes aim to boost the recycling rate, which was 44.6% for household waste in the UK in 2021.⁸⁰ In addition to these, the UK government is reforming the UK packaging producer responsibility system, with EPR regulations for packaging suppliers and producers, and a DRS for certain drinks containers coming into force.

Key Challenges & Recommendations

Recommendations include educating consumers on end-of-life management for takeaway packaging, expanding composting processing facilities, and supporting the scaling of reuse systems.

Action 1: Educate consumers consistently to improve how they manage takeaway packaging to increase recycling rates and maximize composting.

Challenge: Consumers often incorrectly dispose of takeaway packaging at end-of-life.

- With the introduction of mandatory on-pack recycling labeling, the **UK Government** should require that labels include end-of-life steps, such as removing food residue and separating liners.
- **OPRL** should ensure that messaging for consumers works for takeaway packaging as well as retail packaging, to improve the efficiency of recycling.
- **Third Party Delivery Platforms** should offer guidance to consumers on the proper disposal methods, by sending reminders after a delivery is completed.

Action 2: Expand composting processing facilities to allow greater capture of food waste in home compostable packaging.^e

Challenge: Most local authorities do not collect compostable materials for industrial composting and few households have the ideal conditions for home compostable plastics.

- The **UK Government** should implement policy that expands food waste collections and treatment infrastructure, as well as allows for compostable fiber packaging with food contaminants to be collected in the food waste stream and treated in commercial food composting timescales.
- Until the proper infrastructure is in place for processing compostable waste, the **UK Government** should provide guidance to discourage restaurants' use of certain types of compostable takeaway packaging that would contaminate the organics waste stream. **Third Party Delivery Platforms** should support this goal by only providing discounts on, and incentives for recyclable packaging, rather than on compostables.

Action 3: Support the scaling and interoperability of reusable takeaway packaging pilots.

Challenge: While many reuse pilots and start-ups have emerged in recent years, few have managed to sustain or scale their operations.

- The **UK Government** should provide national funding schemes for businesses/partnerships that support the operationalization of reuse schemes in urban areas, including reverse logistics and industrial cleaning in order to support the feasible expansion of reuse. Once the UK government enacts funding, infrastructure, and educational programs that realistically enable the effective use of reusable packaging, they may consider setting a reuse target and adopt global standards once available (e.g. PR3 standards). The implementation of a target should only occur once reuse has been proven to be feasible for restaurants, should incorporate their feedback, and should have earlier timelines for in-person dining than for takeaway packaging given the added complexities.

^e Home compostable packaging can be composted at home or in industrial facilities and breaks down quicker than industrial compostable packaging. Please refer to the Packaging Materials section of this report for further information.



The United States of America (US)

Current State

The US market varies greatly by city and state. On average, American respondents in a survey of 1,000 consumers ordered delivery more than four times monthly.⁸¹ With online ordering increasing 300% faster than dine-in restaurant services, a significant amount of packaging waste is being generated.⁸² Current national policies and programs exist to support the improvement of recycling infrastructure (e.g., RECYCLE Act of 2021,⁸³ Recycling Infrastructure and Accessibility Act of 2023,⁸⁴ Solid Waste Infrastructure for Recycling Grant Program⁸⁵); however, there is not comprehensive legislation at the national level that directly relates to takeaway packaging. Only half of Americans have automatic access to curbside recycling,⁸⁶ and there is minimal infrastructure for composting.⁸⁷

Key Challenges & Recommendations

Recommendations include educating consumers on proper end-of-life management, improving access to curbside recycling and composting facilities, and expanding bans on problematic materials.

Action 1: Engage with consumers to increase recycling rates from households with existing infrastructure.

Challenge: The Recycling Partnership found that the greatest loss of recyclable material occurs at the households.⁸⁸ Data shows that households are more proficient at recycling certain materials than others, with 81% of cardboard, 60% of mixed paper, and 30% of PP being captured.⁸⁹

- **Third Party Delivery Platforms, Waste Service Providers** and **NGOs** should initiate educational campaigns targeted at encouraging consumers to engage with the correct practices for EOL disposal, focusing on packaging materials with low recycling rates.
- **NGOs** should establish programs similar to TRP's Polypropylene Recycling Coalition, which offers grants aimed at enhancing PP capture and separation, as well as community education.⁹⁰

Action 2: Improve household access to curbside recycling.

Challenge: The national average access to curbside recycling is less than 75%, and there are 13 states in which 40% or more of all households have no access to recycling.⁹¹

- The **US State Governments** should continue to pass EPR legislation which will fund improvements to recycling (and composting) systems. These policies should include measures to improve household access to curbside recycling.
- **Third Party Delivery Platforms** should support state-level and national EPR policies where feasible to generate funding for improvements to recycling and composting systems.

Action 3: Ban problematic packaging materials and minimize the use of non-essential single-use items.

Challenge: In many states the use of problematic packaging materials (e.g. polystyrene packaging) and non-essential packaging (e.g. plastic bags, straws and cutlery) is not restricted.

- **Local, State, and National Government**, with support from **NGOs** such as the US Plastics Pact, should continue to review problematic packaging materials and implement bans at the highest level of government possible.
- **Local and State Governments** should follow the lead of other cities such as New York, California and Colorado, and pass laws requiring that restaurants only issue single use items upon consumer request in order to minimize the generation of excess packaging waste.
- **NGOs** and **Third Party Delivery Platforms** should initiate educational campaigns for consumers to highlight the environmental impact of more problematic and non-essential packaging to drive consumer action.



Current State

In Canada, online food orders surged by 36% between March 2019 and March 2020 due to the COVID-19 pandemic.⁹² The foodservice market is projected to exceed \$98 billion by 2027.⁹³ Additionally, a survey found that one-third of consumers order from the same restaurant at least once a week.⁹⁴

The National Single-use Plastics Prohibition Regulations (June 2022) banned the manufacture and import of checkout bags and food service ware containing EPS, PVC, carbon black, and oxo-degradable plastic.⁹⁵ The Canadian government established a national target of 100% reusable, recyclable, or recoverable plastics by 2030 and 100% recovery of all plastics by 2040.⁹⁶

^f Home compostable packaging can be composted at home or in industrial facilities and breaks down quicker than industrial compostable packaging. Please refer to the Packaging Materials section of this report for further information.

Key Challenges & Recommendations

Recommendations include expanding the curbside collection of recyclable and compostable packaging, encouraging consumers' proper management of packaging at end-of-life, and leveraging the culture of return established by DRS to expand reuse.

Action 1: Encourage consumer engagement with proper end-of-life handling of takeaway packaging.

Challenge: The recycling rate of packaging materials is very low in Canada, with an estimated 20% of plastic packaging being recycled in 2022.⁹⁷

- Whilst mandatory recyclability and compostability labeling is proposed in Canada, additional actions should be taken to ensure consumer understanding and adherence to the changes. **NGOs** should conduct campaigns to educate consumers on the environmental challenges associated with takeaway packaging, and the importance of recycling and composting.
- **Restaurants** and **Third Party Delivery Platforms** should provide additional end-of-life guidance to consumers for packaging items that may be difficult to label, such as smaller items with a display surface of less than 15cm².⁹⁸

Action 2: Expand the curbside collection of recyclable and compostable packaging.

Challenge: The collection and processing of recyclable and compostable materials varies widely across the country. Access to curbside collection of plastics is low, currently around 67%,⁹⁹ and infrastructure to process compostable plastics is extremely limited.¹⁰⁰

- **Packaging PROs** should utilize funding from EPR regulations to invest in development of recycling infrastructure. The **Canadian Provincial Governments** can also support and invest in the development of waste management infrastructure for materials or populations that currently lack adequate recycling routes and access.
- The **Canadian Provincial Governments** should enact policy that expands food waste collections and treatment infrastructure. These systems should allow for food-contaminated compostable fiber packaging (that complies with home composting standards) to be collected in the food waste stream and treated in commercial food composting timescales.^f

Action 3: Expand reuse systems by leveraging the culture of return established by Provincial DRS in Canada.

Challenge: Reuse systems have been limited to pilots; however, there is a missed opportunity to leverage the existing return culture in Canada.

- The **National, Provincial, and Local Canadian Governments** should provide funding for businesses and partnerships that support the operationalization of reuse schemes in urban areas, including reverse logistics and industrial cleaning providers.
- **NGOs, DRS Providers and Third Party Delivery Platforms** should establish programs that explore how this return culture could be expanded to reuse schemes, following the implementation of more effective infrastructure to support reuse. For example, a partnership between Earthware and the Alberta Bottle Depot Association (ABDA) has enabled the setup of reusable return locations at existing DRS return sites.¹⁰¹



Australia

Current State

Australians eat 4.5 million takeaway meals every day.¹⁰² Legislation of relevance includes the Australian Packaging Covenant and Single Use Plastic Products (SUPP) bans and restrictions at the state/territory level.^{103,104} The Australasian Recycling Label (ARL) and Plastics Pact, while voluntary, are also influential in working toward building a circular economy.¹⁰⁵ Polypropylene (PP) containers are widely used and recycled; however, recycled or bioplastic content is not required, and there is no virgin plastics tax. There are reasonably extensive curbside recycling collections for packaging in most states and territories; however, the plastics recycling rate is only 18%.¹⁰⁶ Composting of food waste is very limited, only 20% of the population has access to food waste collections while only some states accept compostable packaging in organics collection, with South Australia being the most advanced.¹⁰⁷

Key Challenges & Recommendations

Recommendations include educating consumers on appropriate end-of-life management for takeaway packaging, developing harmonized guidance on more sustainable packaging at the national level, and facilitating the development of composting infrastructure.

Action 1: Consistently educate consumers to improve how they manage takeaway packaging to increase recycling rates and maximize food waste composting.

Challenge: Australia has an array of SUPP bans and approaches to recycling and composting that vary across states and territories. As a result, there is a lack of national guidance regarding how to manage food waste contaminated takeaway packaging.

- The **Australian National Government** should mandate the use of ARL labeling on takeaway packaging to ensure that all packaging is labelled consistently.
- **ARL** should ensure that consumers can easily understand their takeaway packaging labels (e.g. ensuring that packaging has clear instructions regarding the rinsing and/or removal of liners to improve the efficiency of recycling).
- **National and State Governments**, along with **APCO** should fund these educational initiatives, while **Third Party Delivery Platforms** and **NGOs** can support and manage them.

Action 2: Develop harmonized guidance on more sustainable packaging at the national level that recommends standards and certifications for each material group.

Challenge: While there are state and territory SUPP bans in place that affect takeaway packaging, there is a lack of clear guidance on the most environmentally sustainable packaging types to use, as well as conflicting views and guidance on the use and disposal of compostable packaging.

- The **Australian National Government** should develop guidance at the national level to recommend the most appropriate packaging for each food type, and enhanced standards and certifications for each material group, including:
 - » Mandating that plastic packaging is 100% recyclable and contains certified recycled content (where food grade is available) and/or certified bio-based content (e.g. ISCC+), with progressive % targets, beginning at 25% content by weight.¹⁰⁸
 - » Discouraging the use of compostable rigid plastic-like packaging such as PLA and PHA. Fiber-based packaging (ideally FSC certified),¹⁰⁹ with home compostable or nature biodegradable liners and/or coatings that meet AS 5810-2010,¹¹⁰ should be encouraged, but only once food waste collections are widely provided across Australia.
- **Third Party Delivery Platforms** should support this goal by only providing incentives for recyclable packaging in the short term, rather than for compostables, in states where composting infrastructure is not at-scale. Incentives for fully compostable fiber-based packaging should be introduced only once the organics collection infrastructure has been developed.

Action 3: Encourage and facilitate the development of composting infrastructure nationally to allow greater capture of food waste in home compostable packaging.

Challenge: Takeaway food waste in packaging is not being captured effectively at end-of-life.

- The **Australian National and State Governments** should urgently enact policy that expands food waste collections and treatment infrastructure. These collections should be required to allow for food contaminated compostable fiber packaging that complies with AS 5810-2010 (for home composting) to be collected in the food waste stream and treated in commercial food composting timescales.



Japan

Current State

Takeaway services have grown in Japan, with the COVID-19 pandemic significantly boosting the demand for food delivery. This surge has also led to an increase in plastic packaging, which is the most widely used and wasted material. The municipal waste recycling rate was 19.6% in 2022, with a waste incineration rate of 79.5%.¹¹¹ In terms of regulation and related initiatives, The Plastic Resource Circulation Strategy aims to address plastic waste issues through an approach known as “3R + Renewable”, aiming to reduce single-use plastics by 25% by 2030.¹¹² The Bioplastic Introduction Roadmap, formulated in January 2021, is a key part of the country’s efforts to transition from fossil-based plastics to more sustainable bioplastics.¹¹³ Under the Act on Promotion of Resource Circulation for Plastics, service providers who provide specified plastic products (e.g. cutlery) are required to implement initiatives to reduce their waste. Packaging certifications are also extremely variable: the Biomass mark certifies use of plant-derived resources,¹¹⁴ while the GreenPLA standard relates to compostability but is not fully equivalent to international standards (e.g. EN 13432 or ASTM 6400).¹¹⁵

Key Challenges & Recommendations

Recommendations include facilitating the development of recycling and composting infrastructure, developing national guidance on more sustainable packaging for restaurants that prioritizes using post-consumer recycled content and fiber-based packaging, and educating consumers to improve how they select and manage takeaway packaging at end-of-life.

Action 1: Encourage and facilitate the development of recycling and composting infrastructure nationally.

Challenge: There is a lack of recycling and composting infrastructure throughout the country, meaning that recyclable and compostable packaging is primarily being incinerated rather than repurposed.

- The **National Government** should implement policies to fund the installation of recycling and composting sorting facilities and processing infrastructure to support the re-uptake of plastic and cardboard. Policies that tend to be most successful achieving this goal include funding mechanisms through government subsidies, tax incentives, and EPR fees charged to packaging producers that directly fund the installation of this infrastructure. This policy should also expand food waste collections and treatment infrastructure that allows for food contaminated compostable fiber packaging (that complies with recognized home composting standards).⁹ A legislative ban on sending compostable waste to incineration would also incentivize this infrastructure development.

Action 2: Develop guidance at the national level on more sustainable packaging that prioritizes upstream sustainability, develop standards and certification for each material group, and implement bans on problematic materials.

Challenge: There is no clear guidance on the most environmentally sustainable packaging types for restaurants to use. Due to a lack of existing infrastructure to compost and recycle packaging, guidance should focus on reducing the upstream impact of packaging materials.

- **The Japan Government** should develop guidance at the national level to recommend the most appropriate packaging for each food type, and advance standards and certifications for each material group, including:
 - » Prioritizing packaging materials that have a lower upstream impact by encouraging the use of post-consumer recycled (PCR) content (for plastic, ideally polypropylene PCR material), and packaging materials made from fiber that are FSC and/or BPI certified, contain recycled content and do not contain added PFAS.

⁹ Home compostable packaging can be composted at home or in industrial facilities and breaks down quicker than industrial compostable packaging. Please refer to the Packaging Materials section of this report for further information.

- » Mandating that plastic packaging is 100% recyclable and contains certified recycled content (where food grade is available) and/or certified bio-based content (e.g., ISCC+ for both), with progressive % targets, beginning at 25% content by weight.
- » Discourage the use of compostable rigid plastic-like packaging such as PLA and PHA. Fiber-based packaging (ideally FSC certified), with certified home compostable or nature biodegradable liners or coatings should be encouraged, given that the government has first worked to implement more composting facilities.
- **Third Party Delivery Platforms** should support this goal by providing incentives for restaurants to use packaging made out of post-consumer recycled content and BPI and/or FSC certified compostable fiber.

Action 3: Consistently educate consumers to improve how they select and manage takeaway packaging to increase recycling rates and maximize food waste composting.

Challenge: Japan has relatively poor recycling rates, and incineration is a common method to dispose of packaging.¹¹⁶

- The **Government** should require the use of OPRL (UK) or ARL (Australasian) style labeling on takeaway packaging to ensure that it is labelled consistently to encourage consumers to recycle (e.g., around rinsing or removal of liners to improve the efficiency of recycling). Labeling should also be clear on the appropriate disposal of compostable packaging, where it can or cannot help to capture food waste without causing issues for organics processors, as described in Actions 1 and 2.
- The **Government** should fund consumer-facing educational initiatives, which **Third Party Delivery Platforms** and **NGOs** should support.

Taiwan



Current State

In Taiwan, 10% of adult respondents purchase takeaway food more than once daily, with 33% ordering food several times a week.¹¹⁷ During the Covid-19 pandemic, there was a significant rise in food deliveries, which led to a substantial increase in the number of discarded takeaway containers.¹¹⁸

Taiwan is implementing packaging bans, with material-specific bans on PVC food packaging from July 2023 and PLA tableware from August 2023.¹¹⁹ By 2025, restaurants will charge a fee for plastic bags, utensils, cups and containers.¹²⁰ Fast-food restaurants are required to have 5% of their outlets offer reusable cups and provide a discount for customers who bring their own cups.¹²¹

Key Challenges & Recommendations

Recommendations include extending single-use packaging restrictions to all restaurants, informing smaller restaurants of more sustainable packaging options available to them, and advancing the current EPR scheme to drive more efficient recycling and encourage design for recyclability.

Action 1: Extend SUP restrictions to all restaurants and continue the review of packaging bans.

Challenge: At present, regulations on single-use packaging are only targeting a small portion of restaurants in schools and government-affiliated venues. This means that a significant portion of single-use plastics continues to be used, contributing to environmental pollution.

- The **Taiwanese Government** should enact policy that expands the scope of the single-use plastic ban to all restaurants.
- Until additional bans are in place, **NGOs** and **Third Party Delivery Platforms** can launch educational campaigns highlighting the environmental impact of more problematic single-use packaging.

Action 2: Educate and inform restaurants, particularly SMBs, on the most appropriate packaging types.

Challenge: Managers of smaller restaurants tend to lack the necessary information about more sustainable packaging to make informed procurement choices.

- The **Taiwanese Government** should provide national guidance to support the education of restaurant management staff on more sustainable takeaway packaging.
- **Third Party Delivery Platforms** should support in the implementation of this education, working with restaurant partners to identify packaging that is suitable for the specific type of food they offer. This initiative should prioritize reaching SMBs.

Action 3: Advancement of EPR to drive more efficient recycling and encourage design for recyclability

Challenge: Current eco-modulation criteria does not include progressive targets for recycling content that would drive a more circular system.

- The **Taiwanese Government**, as part of Taiwan's EPR program (Resource Recycling Act) should set progressive material-specific targets for recycled content, and other environmental design criteria. These targets along with more progressive eco-modulated EPR fees to encourage use of recyclable packaging will provide financial support to aid the transition to a more circular system. Targets and measures should be based on the current waste management capabilities in Taiwan and increase over a reasonable time frame.

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