Supported by:

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

based on a decision of
the German Bundestag

IKI INTERNATIONAL CLIMATE INITIATIVE

SINGLE-USE PACKAGING AND TABLEWARE REDUCTION GUIDELINES FOR THE FOOD SECTOR

SINGLE-USE PACKAGING AND TABLEWARE REDUCTION GUIDELINES FOR THE FOOD SECTOR

@2025 | Bangkok, Thailand

Author & Editor:

Dr. Sirasa Kantaratanakul
Managing Director at Rao United

Peer Reviewers:

Ms. Sarunphak Kittivorapoom
Project Manager of IKI Sustainable Consumption and Production Project at World Wide Fund for Nature

Mr. Abhinand Aryapratheep
Project Coordinator of IKI Sustainable Consumption and Production Project at World Wide Fund for Nature

Mr. Ply Pirom
Head of Environmental Program at Central Tham

Ms. Chonlathan Naratree
Sustainability Consultant

Address:

WWF Thailand
Level 3, 9 Soi Pradipat 10, Pradipat Road,
Phaya Thai Bangkok 10400
Tel: (66) 2-618-4303-05

Contacts:

sirasa@raounited.com
sarunphakk@wwf.or.th

Front and Back Cover Photo:

@FREEPIK / EyeEm (www.freepik.com)

Layout and Graphics:

DataHatch

Special Thanks:

BJC Big C | Central Group | Central Retail Corporation | Dusit International | Food Passion
HLM Corporate | Icon Siam | InterContinental Phuket Resort | Lotus's
Scholars of Sustenance Foundation | Yindii

ACKNOWLEDGMENTS

The global trend towards convenience and the use of single-use, disposable items has resulted in the growing challenges of plastic pollution, waste management, and resource depletion. As one of the largest contributors to global waste creation due to the food sector's reliance on single-use items, especially single-use packaging and tableware, there is the opportunity to leverage this sector in moving towards a more sustainable future. Transitioning to more sustainable alternatives in regards to packaging and tableware is not only crucial for reducing pollution and environmental degradation, but also represents an opportunity to be more responsible in our collective use of natural resources. By shifting away from disposables to more sustainable practices, the food industry can play a leading role in mitigating the impacts of single-use packaging and tableware on the environment while setting a powerful example and precedent for other sectors.

The Single-Use Packaging and Tableware Reduction Guidelines for the Food Sector is a part of the Series of Tools for Integrating Sustainable Consumption and Production (SCP) into the Food Sector in Thailand, which consists of three guidelines:

1. Food Loss and Food Waste Reduction Guidelines for the Food Sector,
2. Single-Use Packaging and Tableware Reduction Guidelines for the Food Sector, and
3. Low Carbon Transportation Guidelines for the Food Sector.

This series of SCP Tools was developed under the IKI SCP Phase II Project on Establishing SCP—initiated by WWF Thailand, with support from the International Climate Initiative (IKI) and the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV). The project is dedicated to fostering SCP practices within the Thai food industry, focusing on chain restaurants, food retailers, and food delivery services.

TABLE OF CONTENTS

01 Executive Summary

Thailand's food sector; including restaurants, food retailers, and food delivery services; generates significant amounts of waste from single-use packaging and tableware. These disposable items, largely made of plastic, contribute to pollution, landfill overflow, and environmental degradation. Marine environments are particularly vulnerable to the impacts of single-use items from the food sector with

44 percent of plastic litter in the ocean being comprised of takeout food and drink containers.[1]

Reducing this waste is crucial for sustainability, and businesses are encouraged to adopt greener practices to meet consumer demands and regulatory requirements.

In light of the magnitude of the problem of disposables, this guideline is designed as a practical tool for businesses in the food sector in Thailand, to address the problem of single-use packaging and tableware. It makes the problem and the solutions clear, actionable, and approachable. By providing clear, practical, and easy-to-implement solutions, we aim to empower businesses to take meaningful action, resulting in economic, environmental, and social benefits. Through the implementation of the strategies offered, we can take collective action to reduce the use of single-use packaging and tableware and thereby reduce the dependence of Thailand's food sector on disposables.

[1] Morales- Caselles, C., Viejo, J., Martí, E., González-Fernández, D., Pragnell-Raasch,H., González-Gordillo, J.I., ... & Cózar, A. (2021). *An inshore-offshore sorting system revealed from global classification of ocean litter.* Nature Sustainability. 4(6), 484-493.

02 Understanding the Impact of Single-Use Packaging and Tableware in the Food Sector

Reducing single-use packaging and tableware is not just an environmental priority; it has significant economic and social dimensions as well. The overreliance on disposable items in the food sector leads to consequences that affect ecosystems, business costs, and societal well-being.

Definitions of Single-Use Packaging and Tableware

Single-use products are everywhere and have become an integral part of our daily lives, with the use of plastics becoming increasingly popular due to their various characteristics, including being cheap and durable. Within the context of single use items, or disposables, this guide will specifically focus on single-use packaging and tableware.

Single-use products include food and beverage containers, cutlery, straws and bags that are designed for or intended to be used once and then discarded. ***Single-use packaging*** *are disposable materials used to hold or transport food and/or food products for one-time use before being discarded, contributing to waste and pollution* whereas ***single-use tableware*** *are cutlery, plates, cups, straws, and napkins used once and discarded afterward.* Additionally, ***food packaging*** *must protect the food or food product, preserve flavor and taste, and ensure shelf life.* The vast majority of these products are made from plastics due to its characteristics of being suitable for these kinds of disposable items. Within the context of the food sector, we have a variety of single-use packaging and tableware items. **Table 1** provides a list of some of the single-use packaging and tableware items prevalent in the food sector.

Table 1: Common Single-Use Packaging and Tableware Items in the Food Sector

Cups	Cutlery (spoons, forks and knives)	Trays
Cup Lids	Straws	Flexible Packaging
Bottles	Bags	Boxes
Plates	Cartons	Wrappers
Bowls	Cans	Takeaway Containers

With the move towards more eco-friendly packaging and tableware, there are some alternatives to plastic packaging and tableware, such as those that are biodegradable, compostable, and degradable. The term ***biodegradable*** *means that the item can be broken down by microorganisms.* However, when applied to plastics, this means that the plastic can be broken down more quickly than conventional plastics under certain conditions. This process leads to the formation of ***microplastics,*** *plastic particles smaller than 5mm,* which pose significant threats to land and aquatic ecosystems.

On the other hand, *the term* ***compostable*** *refers to materials that decompose into organic matter under the specified conditions without leaving any toxic residue.* Unlike biodegradable or compostable products, degradable materials do not necessarily break down into non-toxic or environmentally safe components. ***Degradable*** *single-use products may break down into smaller fragments,* often under specific conditions (such as exposure to sunlight or oxygen), but these fragments can persist in the environment.

Aside from conventional plastics, a form of plastics often available in the food sector and marketed to consumers as being eco-friendly are bioplastics. ***Bioplastics*** *are plastics derived from renewable resources, typically plant-based components like corn or sugarcane.*

However, bioplastics are not always biodegradable or compostable without specific conditions, often high-heat industrial composting. Additionally, bioplastics are often a source of contamination when recycled with conventional plastics.

In line with moving towards the ***Circular Economy***, *an economic model emphasizing the minimization of waste through the 3Rs (reduce, reuse, recycle)*, many alternatives to single-use items involve the use of reusable packaging and tableware instead of single-use ones. ***Reusable packaging and tableware*** *is designed to be cleaned and reused multiple times thereby reducing the need for disposable as well as waste generation.*

For some reusable items, a ***deposit-return scheme*** *may be utilized in which consumers pay a deposit for reusable containers and receive a refund when returning them.* This encourages the use of reusable containers, especially for products that can be refilled into the reusable containers by the manufacturer and sold to the consumer in the reusable containers. Transitioning away from the prevailing linear economy cannot be achieved without significant effort and shifts in business practices as well as increased awareness and action to reduce the use of single-use packaging and tableware.

Environmental, Economic and Societal Implications of Single-Use Packaging and Tableware

The issue of disposables is a global problem that is always exacerbated by our demands for hygiene and convenience.

Vast quantities of single-use packaging and tableware are generated in the food sector throughout the supply chain, not only in the interface with the customers. A shift in consumer behavior is necessary as well as a strong push from the food sector to reduce the use of disposables in order to lessen their environmental, economic and societal impacts.

The United Nations has recognized the urgent need to address this issue through the Sustainable Development Goals (SDGs), a set of 17 global goals adopted in 2015 to guide urgent development efforts through 2030. Specifically, SDG 11 (sustainable cities & communities), SDG 12 (sustainable consumption & production), SDG 14 (life below water) and SDG 15 (life on land) are addressed by the reduction of single-use items. Therefore, reducing our dependence on disposables has multiple benefits in making progress on the SDGs in order to make our world more sustainable and equitable.

Additionally, within the context of Thailand, there is the Roadmap on Plastic Waste Management 2018-2030 developed by the Ministry of Natural Resources and Environment (MNRE). This roadmap serves as a strategic framework on plastic waste that is in line with the concept of circular economy as well as sustainable consumption and production. Some of the targets set by the Roadmap include the elimination of cap seals, oxo-degradable plastics and microbead plastics by 2019; the elimination of plastic bags (thicker than 36 microns), foam food containers, single-use plastics cups (less than 100 microns) and plastic straws by 2022; and to achieve one hundred percent recycling rate of plastic waste. To support achieving these targets, Thailand outlawed the sale of single-use plastic bags at supermarkets and department stores in 2020. However, single-use plastic bags are still regularly handed out by smaller retailers, cafes and vendors.

Environmental Implications

The majority of single-use packaging and tableware is made from non-biodegradable materials, such as plastic, which take hundreds of years to decompose. Globally, 8.3 billion metric tons of plastic has been produced since plastic was introduced in the 1950s with around 380 million metric tons of plastic being produced annually.[2,3]

Of the total amount of plastic waste generated globally so far, less than 10 percent has been recycled.[4]

Due to the longevity of these materials and low amounts actually being recycled, vast amounts of plastic accumulate in landfills, waterways, and oceans, creating severe environmental consequences.

The use of single-use plastics is a huge contributor to plastic pollution and microplastics in the environment. In coastal regions like Thailand, marine ecosystems are particularly vulnerable to plastic pollution due to improper waste management. Additionally, **as these materials break down into smaller particles known as microplastics, these particles can be ingested by marine wildlife, posing significant health risks to species** such as fish, seabirds, and marine mammals. Once ingested, microplastics can cause internal damage, disrupt feeding patterns, and lead to malnutrition or even death in marine species. Microplastics can also absorb harmful chemicals from the surrounding environment, effectively becoming carriers of toxins that accumulate in the bodies of marine organisms. As these organisms are consumed by larger predators, including those in the human food chain, **microplastics and the toxins they carry bioaccumulate, raising serious concerns about food safety and human health.** The persistence of plastics and microplastics in the environment makes this issue a growing ecological threat, with long-term implications for biodiversity, ecosystem health, and the safety of seafood consumed by humans.

[2] Geyer, R., Jambeck, J. R., and Law, K. L. (2017). *Production, use, and fate of all plastics ever made.* Science Advances. 3 (7). e1700782.

[3] Statista. (2023). *Annual production of plastics worldwide from 1950 to 2022.* https://www.statista.com/statistics/282732/global-production-of-plastics-since-1950/

[4] United Nations Environment Programme. (2021). *From Pollution to Solution: A global assessment of marine litter and plastic pollution.* Nairobi.

Furthermore, the production of single-use packaging and tableware requires significant resources, such as petroleum, water, and energy. These resources are extracted, processed, and disposed of, contributing to greenhouse gas emissions and other forms of pollution. The level of greenhouse gas emissions associated with the production, use and disposal of fossil fuel-based plastics is predicted to grow to 19 percent of the global carbon budget by 2040.[5] The excessive use of these non-renewable resources exacerbates climate change and environmental degradation.

Reducing the use of disposable packaging and tableware conserves non-renewable resources, such as petroleum, which is used for plastic production.

It also cuts down on the energy and water consumption needed to manufacture these items. For non-plastic packaging and tableware that utilizes biodegradable resources that need to be grown, the land and water resources needed to grow as well as the energy and water resources needed to manufacture these items is conserved. Considering the vast amounts of disposables currently being used in the food sector, this could result in a significant reduction in natural resource use.

Even in single-use packaging and tableware that are primarily made from non-plastic materials, plastic is often an unexpected component. For instance, single-use paper coffee cups are typically coated with polyethylene, a type of plastic. Producing these cups requires significant resources, including energy and raw materials, despite the fact that they are discarded after just one use. Additionally, the combination of materials, such as plastic and paper, makes recycling these cups challenging. With an estimated 118 billion single-use coffee cups used globally each year, the environmental impact and waste management challenges posed by these disposables are undeniable.[6]

[5] United Nations Environment Programme. (2021). *From Pollution to Solution: A global assessment of marine litter and plastic pollution.* Nairobi.

[6] iMarc (2020). *Paper cups market: Global industry trends, share, size, growth, opportunity and forecast 2020-2025.* https://www.imarcgroup.com/paper-cups-manufacturing-plant

With the heavy use and subsequent disposal of single-use packaging and tableware, Thailand's waste management systems are struggling to cope with the increasing amount of disposables. Improper disposal and limited recycling infrastructure mean that much of the waste either ends up in landfills or is incinerated, releasing toxic chemicals into the air and soil. Both options, landfill and incineration, have negative impacts with the best solution being to reduce the production and consumption of these disposables in the first place so that their eventual disposal and associated costs are not necessary.

By minimizing the use of single-use packaging and tableware, especially plastics, there is a corresponding decrease in the amount of plastic waste that ends up in landfills, oceans, and waterways, protecting ecosystems and wildlife from harmful effects such as ingestion or entanglement by marine animals and the toxic effects of microplastics in our environment. Even non-plastic disposables can create waste, litter and pollution, which if reduced or eliminated greatly benefits wildlife and the ecosystems that they live in. Reducing our use of disposables will help reduce the pressures of large amounts of waste disposal on our environment.

Beyond the direct impact of plastics and disposables to the environment,

producing single-use packaging and tableware involves energy-intensive processes which also produce carbon emissions which contribute to global climate change.

This is particularly true of petroleum-based plastics but all disposables require resources and energy for production. By reducing the demand for these materials, the overall carbon emissions associated with production, transportation, and disposal of these materials are lowered.

Economic Considerations

While single-use packaging may seem convenient and inexpensive at first, the long-term economic costs are considerable, both for businesses and society at large. These costs manifest in various ways including direct costs to businesses and waste disposal costs. A reduction of disposables could result in significant economic savings if these costs were reduced or eliminated.

The purchase of single-use packaging and tableware regularly increases operating expenses for food businesses. These costs are then incorporated into the price of the food products and services provided to the customer.

As the demand for sustainability grows, these items will likely become more expensive due to increasing regulations and market pressure for eco-friendly alternatives. In the long run, businesses may find reusable and sustainable alternatives to be more cost-effective and environmentally friendly.

One of the main economic benefits for businesses in the food sector for reducing the use of single-use packaging and tableware are the cost savings that can be realized. Transitioning to reusable or more efficient packaging can result in considerable cost savings. For example, restaurants and retailers can lower expenses by reusing containers rather than continually purchasing disposable items. While there is an initial upfront investment to transition to reusable containers, the elimination of regular expenditures related to purchasing consumables that are used once and then thrown away could be notable in the long-term.

Since managing waste from disposables requires resources, including labor, infrastructure, and transportation need to be considered as part of the costs associated with the use of disposables. As the volume of waste from disposables increases, so do the costs associated with waste collection, landfill management, as well as the environmental remediation efforts. Local governments may impose higher waste management fees or taxes on businesses that contribute heavily to single-use waste. A reduction in single-use items will help to reduce the use of these resources and their associated costs.

With the reduction of disposables, there is also the opportunity to increase operational efficiency. Reducing waste can streamline operations in restaurants and food delivery services, as less time and money are needed for waste management, disposal, and purchasing new packaging materials. This increase in efficiency can help to make the business more profitable.

As consumers become more and more aware about environmental issues surrounding single-use items, particularly those made from plastics, consumers are increasingly prioritizing environmentally conscious brands. Businesses that adopt sustainable packaging and tableware solutions can attract and retain eco-conscious customers, enhancing brand reputation and loyalty as well as to differentiate their business from others. This will become more crucial as customers become more environmentally aware and concerned as these preferences will influence their consumption patterns. Businesses that get ahead of these trends can realize a multitude of benefits.

Increasingly, there are issues regarding compliance to government regulations. As governments introduce stricter regulations on single-use items, especially plastics, businesses that adopt sustainable alternatives early avoid potential penalties and comply with future regulatory frameworks. Again, getting ahead of these trends could prove beneficial to businesses.

Social Implications

The use of single-use packaging and tableware also has wide-reaching social consequences that affect health, communities, and public behavior. Specifically, there are considerable health risks associated with plastics.

Many single-use plastics contain harmful chemicals, such as Bisphenol A (BPA) and phthalates, that can leach into food and beverages. Long-term exposure to these chemicals poses health risks to consumers, potentially leading to hormone disruption, cancer, and other medical issues.

In addition, the incineration of plastic waste releases toxins into the air, leading to respiratory problems in surrounding communities. Reducing our dependence on plastics, especially disposables, can result in numerous positive impacts on creating healthier communities.

When considering bioplastics, there is an additional social consideration in terms of food security depending on the source of the plant-based components which the bioplastic is made from. **Bioplastics that are made from corn or sugarcane can compete with food production in terms of land use, which threatens food security.** Reducing the use of bioplastics as an alternative to conventional plastics, or at least using food waste as the plant-based components would help to lessen this threat to food security.

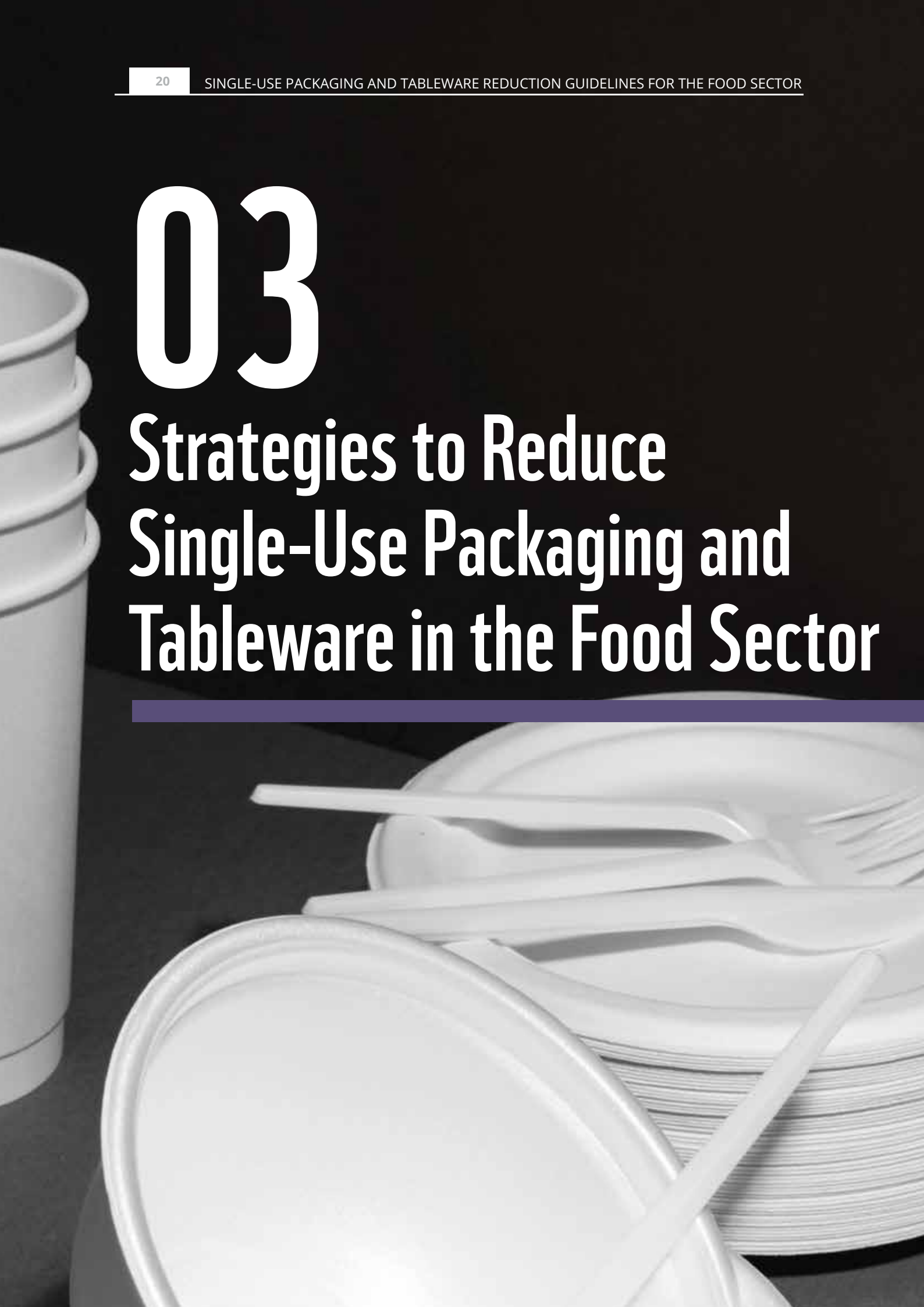
From a social equity standpoint, **waste from single-use items disproportionately affects marginalized communities.** Landfills and waste management facilities are often located near low-income areas, exposing residents to harmful pollutants and degrading their quality of life. By reducing waste from disposable packaging, businesses can help alleviate some of these social inequities and contribute to a healthier, cleaner environment for all.

The use of disposables has increased in recent decades and the prevalence of single-use items reinforces a "throwaway culture," where convenience is prioritized over sustainability.

This culture shapes consumer habits, making it harder to shift toward more responsible consumption patterns. By offering sustainable alternatives and reducing reliance on disposables, businesses can help foster a cultural shift toward a mindset of environmental stewardship and sustainability. Overall, reducing the production and consumption of single-use items helps leave a cleaner and more sustainable environment for future generations as well as associated economic and societal benefits. By working towards decreasing our dependence on disposables, the food sector is positioned to make significant and crucial headway in addressing the urgent need for sustainable food systems for present and future generations.

Table 2: Issues Related to Single-Use Packaging and Tableware and Possible Solutions

Problem	Advantages	Disadvantages	Solutions
Single-use plastics	• Convenience • Low cost • Hygiene	• Long-term environmental harm • Contribution to landfills and ocean pollution (microplastics) • High waste generation • Resource depletion	• Transition to biodegradable or compostable alternatives • Incentivize reusable packaging programs
Reusable packaging (containers and cups)	• Reduces waste significantly • Lowers long-term cost • Builds brand image	• Requires customer engagement and behavior change • Potential for contamination • Higher initial investment	• Deposit return schemes • Provide incentives for customers to bring their own containers
Implementation of deposit and return schemes for containers	• Reduces waste • Encourages recycling and reuse	• Requires infrastructure • High upfront cost for businesses • Requires customer participation • May deter some customers due to inconvenience	• Government and business collaboration to subsidize systems • Promote schemes through public campaigns
Refillable options (e.g. drinks)	• Reduces single-use packaging • Builds customer loyalty through incentive programs	• Needs behavior change • Customers may forget or be unwilling to bring containers • Cleanliness concerns	• Offer discounts or loyalty rewards for reusable containers • Easy-to-use and hygienic refill stations
Eco-friendly packaging and cutlery materials (paper, bamboo, etc.)	• Reduces plastic waste • Biodegradable alternatives • Better for brand sustainability image	• Can be more expensive • Not always fully sustainable • Materials can still end up in landfills • Materials may not perform well	• Increase innovation in material performance • Reduce cost through bulk options • Offer on request
Bioplastics	• Derived from renewable resources • Reduces reliance on petroleum-based plastics	• Can lead to contamination in recycling streams • Many bioplastics require industrial composting • Greenwashing concerns	• Clear labeling • Consumer education on disposal • Improve infrastructure for processing bioplastics
Customer awareness and engagement	• Can result in long-term behavioral changes • Higher customer satisfaction with eco-conscious brands	• Difficult to enforce, requires sustained effort and resources	• Campaigns promoting sustainable practices • Reward programs for responsible customer behavior



03

Strategies to Reduce Single-Use Packaging and Tableware in the Food Sector

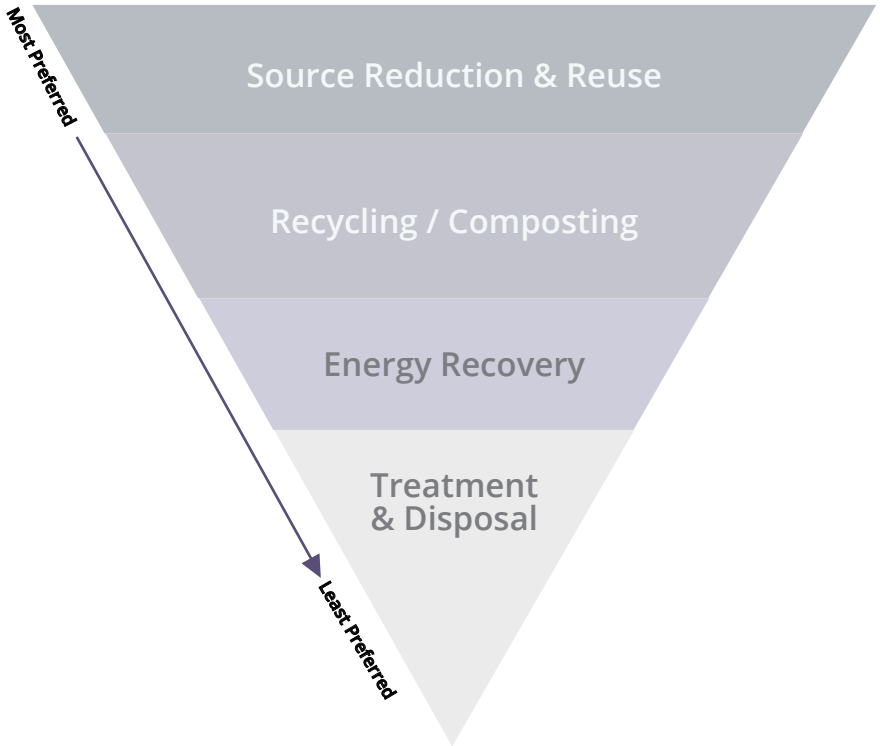
Addressing the issue of single-use packaging and tableware and its implications for sustainability is a significant global challenge. This section explores various strategies to reduce single-use packaging and tableware in the food sector.

Waste Management Hierarchy

The ***Waste Management Hierarchy*** developed by the Environmental Protection Agency (EPA) **(see Figure 1)** *is a waste management approach* that can be applied to single-use packaging and tableware in the food sector. This hierarchy ranks various waste management strategies according to preference from the most to least environmentally friendly and acknowledges that there is no single waste management approach that is suitable for managing all materials in all circumstances. **The Waste Management Hierarchy emphasizes reducing, reusing, recycling and composting as key aspects of a practical approach towards waste management.**

Figure 1: Waste Management Hierarchy

(Source: EPA, 2024)



The top priority in the Waste Management Hierarchy is to **reduce the use of materials and products.** For single-use packaging and tableware, this can be achieved by offering reusable alternatives, either provided by the business or brought by the customer. While reduction is the most effective way to minimize disposable waste, **biodegradable and compostable options** can serve as viable alternatives when disposables are necessary.

The second key strategy in the Waste Management Hierarchy is reuse, which emphasizes **extending the life cycle of products by using them multiple times** before disposal. Reusing items, such as durable packaging, containers, or tableware, helps to significantly reduce the demand for new materials and minimizes waste generation. Businesses can encourage reuse by offering incentives for customers who **"bring your own" (BYO) reusable items** and implementing **returnable packaging systems.** By prioritizing reuse, we can decrease reliance on single-use disposables and reduce the overall environmental impact of single-use waste.

The next strategy focuses on **recycling items.** While single-use items can sometimes be recycled and made into new items, the feasibility of doing so depends largely on the material. Metals and certain plastics benefit from well-established recycling infrastructures, making their recycling more accessible. However, for other materials, **recycling options may be limited** due to less developed infrastructure. As demand from businesses and consumers for broader recycling options increases, it is likely that more recycling solutions will become available for a wider range of materials.

There is often confusion surrounding the meaning of the chasing arrows symbol on products, especially regarding recycling. It is important to understand that just because an item has this symbol, it does not mean it is recyclable by local waste management facilities. This is particularly true for plastics.

The chasing arrows symbol, along with the number inside, simply indicates the type of plastic resin the product is made from.

This number does not guarantee that the plastic can be recycled in all areas, but it helps guide how the plastic should be managed.

Table 3: Categories of Plastics with Resin Codes and Examples

(Source: New York State Department of Environmental Conservation, 2018)

1	2	3	4	5	6	7
						
PET, PETE (Polyethylene Terephthalate)	**HDPE (High-density Polyethylene)**	**PVC (Polyvinyl Chloride)**	**LDPE (Low-density Polyethylene)**	**PP (Polypropylene)**	**PS (Polystyrene)**	**Other (often polycarbonate or ABS)**
• Soft drink, water and salad dressing bottles; peanut butter and jam jars... • Suitable to store cold or warm drinks. • **Bad idea for hot drinks**	• Water pipes; milk, juice and water bottles; grocery bags; some shampoo / toiletry bottle...	• Not used for food packaging. • Pipes, cables, furniture, clothes, toy... • **Heating PVC releases toxic fumes**	• Frozen food bags; squeezable bottle, e.g. honey, mustard; cling films; flexible container lids...	• Reuseable microwareable ware; kitchenware; yogurt containers; microwaveable disposable take-away containers; disposable cups and plates...	• Egg cartons; packing peanuts; disposable cups, plates, trays and cutlery; disposable take-away containers;... • **Avoid for food storage**	• Beverage bottles; baby milk bottles; compact discs; "unbreakable" glazing; lenses including sunglasses, prescription glasses, automotive headlamps, riot shields, instrument panels...

Another issue with plastics is that they are often downcycled, meaning that the products made from recycled plastics are typically of lower value or quality than the original items. This contrasts with materials like glass and metals, which can be recycled to produce new products of the same quality. **Table 3** summarizes the seven categories of plastics, including their symbols, resin types, and examples of products made from each type. Among these, plastic #1 (PET, PETE) and plastic #2 (HDPE) are the most commonly recycled, while plastic #6 (Polystyrene) is not recommended for food storage. A clear understanding of these plastic categories and their recyclability is crucial for making informed, environmentally responsible choices, particularly regarding food safety.

For items that cannot be reduced, reused or recycled, there may be the opportunity to **compost the item into non-toxic, nutrient-rich organic material.** Some items such as paper products and food waste lend themselves to composting, which can be done on-site or off-site. For items that cannot be composted but are burnable, there is the option for **energy recovery through incineration.** Both composting and energy recovery should be undertaken only if reduction, reuse or recycling cannot be undertaken. Caution should be taken when it comes to biodegradable products as the end result is not always non-toxic.

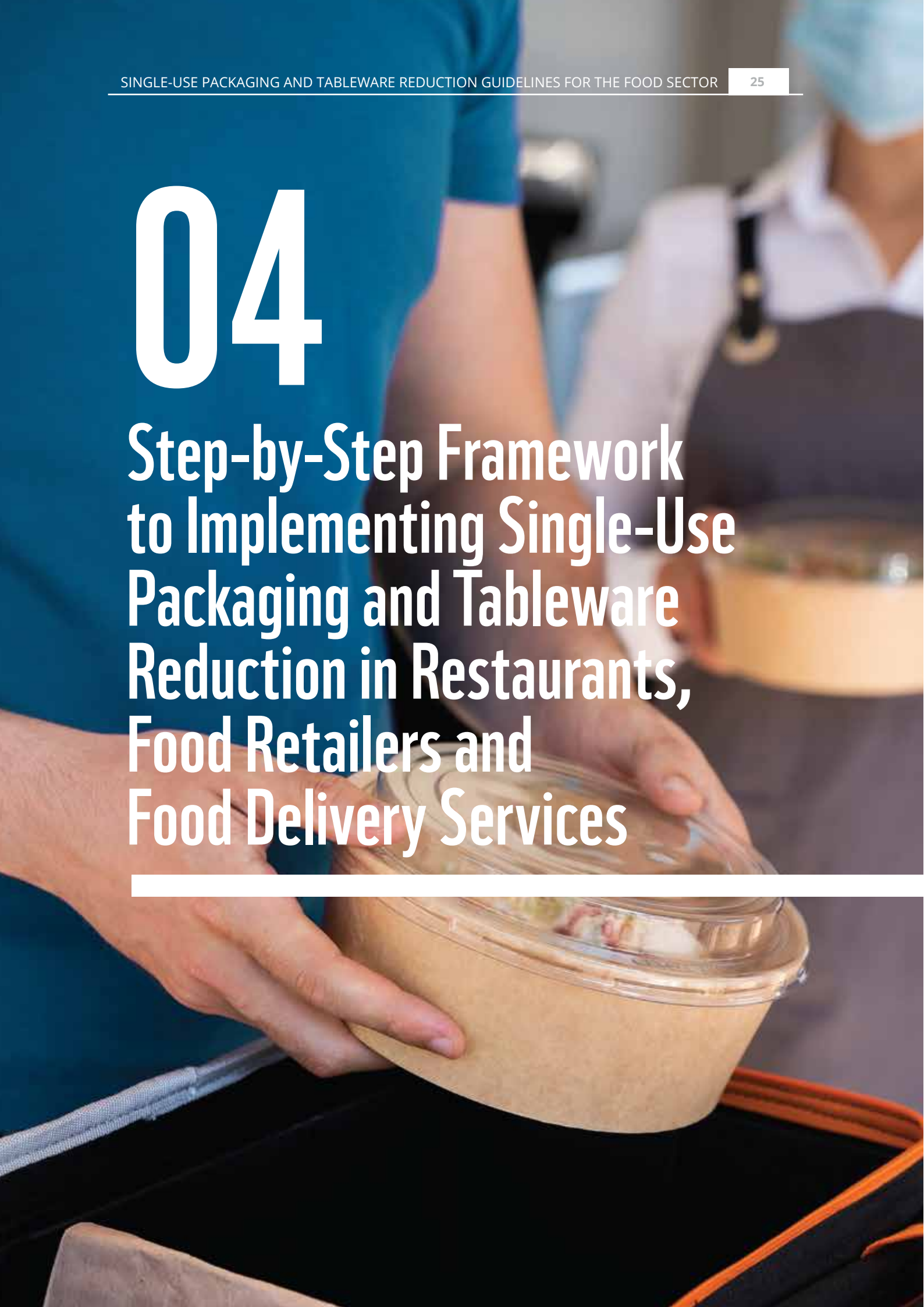
The last avenue for waste management of single-use items is **treatment and disposal through landfilling** or other methods of waste treatment. This is considered the least desirable option in the Waste Management Hierarchy, as it involves the permanent disposal of waste materials, often resulting in environmental harm. Landfills can contribute to pollution through the release of greenhouse gasses, leachate, and other harmful substances, while valuable resources are lost.

The Waste Management Hierarchy encourages exploring all other options—reduction, reuse, recycling, composting, and energy recovery—before resorting to disposal.

By following this hierarchy, the food sector and consumers can make more environmentally responsible decisions regarding single-use packaging and tableware.

Additionally, when considering the treatment and disposal stage, there is increasing pressure by government agencies for extended producer responsibility. ***Extended Producer Responsibility (EPR)*** *is a policy that holds producers responsible for the entire lifecycle of their products.* This includes the disposal and waste management of the items after it has been used by the consumers and has reached the end of its lifecycle. Many times, the producer passes the associated expenses related to EPR to their customers by increasing the price of the item or in the form of a recycling or disposal fee. In many instances, EPR helps to ensure that products are responsibly disposed of and it is particularly important for harmful substances.

The Waste Management Hierarchy presented offers a pragmatic approach towards addressing the issue of disposables in the food sector. By prioritizing the reduction of single-use items, especially those made from plastic, various benefits in terms of environmental, economic and societal impacts can be realized as the waves of tremendous amounts of single-use items sent to landfills or incinerators is lessened or stemmed.



04

Step-by-Step Framework to Implementing Single-Use Packaging and Tableware Reduction in Restaurants, Food Retailers and Food Delivery Services

01 Setup and Planning

The first step in tackling single-use packaging and tableware is to obtain management buy-in and establish a committed project team, comprising of key personnel from various departments within the organization.

02 Plan and Conduct Single-Use Packaging and Tableware Assessment

Plan and conduct the assessment of single-use packaging and tableware to develop the baseline for identifying the sources and how much waste is being created as well as progress made towards reduction goals.

03 Implementation of Single-Use Packaging and Tableware Reduction Measures

After completing the baseline assessment, it is important to set reduction goals, develop strategies and the implementation plan to achieve them.

04 Employee Engagement and Training

Since employees interact directly with customers, it is important that they receive proper education on the program's protocols and are equipped to effectively communicate these sustainability efforts to customers.

05 Customer Engagement

Customer preference for environmentally friendly options is growing and many customers are willing to go out of their way to seek out these options. Raising customer awareness and engaging customers in single-use packaging and tableware reduction efforts is an important component of meeting this demand and improving sustainability practices.

06 Continuous Monitoring and Feedback

Continuous monitoring of data related to single-use packaging and tableware waste reduction, along with responsive feedback mechanisms, is crucial for achieving the reduction goals.

07 Summary and Outreach

Summarize the outcomes of the single-use packaging and tableware reduction efforts and share success stories while promoting best practices. This helps communicate progress toward reduction goals and spreads knowledge and skills within the industry to encourage broader adoption of waste reduction strategies.

08 Waste Recovery and Processing

An important consideration in reducing single-use packaging and tableware waste is the recovery and processing of materials for reuse, recycling, or responsible disposal. While the primary focus of this framework is on reduction, businesses should also explore waste recovery strategies.

This step-by-step framework presents a comprehensive approach to reducing single-use packaging and tableware, highlighting the key stages of planning, assessment, and implementation within the food sector. These strategies are actionable and measurable, aimed at helping businesses reduce waste from single-use items and enhance sustainability efforts.

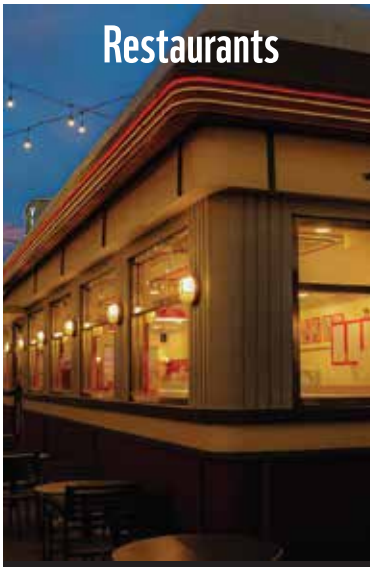
In order to facilitate the use of this framework by the different types of businesses in the food sector, all of the strategies in this step-by-step framework will be marked with a different icon to identify the types of businesses to which the strategy would be the most relevant.

The types of businesses in the food sector and their icons are associated as follows:

Restaurants

Food Retailers

Food Delivery Services



Obtain Management Buy-In

The first task is to gain support from upper management by presenting the business case for reducing single-use packaging and tableware. Financial benefits, such as cost savings from adopting reusable alternatives and lowering waste disposal costs, along with the potential to boost the company's reputation as a sustainable enterprise should be highlighted.

Assemble a Dedicated Team

Form the single-use packaging and tableware reduction team, clearly outlining the roles and responsibilities of each member. Assigning specific tasks ensures accountability and enhances the team's efficiency.

Designate a project leader or coordinator to manage the team's activities. The project leader will act as the main point of contact for upper management and other stakeholders, ensuring the team's efforts align with the company's overall goals.

Involve all Departments for Maximum Implementation

Promote and facilitate collaboration across all departments to enhance the effectiveness of the single-use packaging and tableware reduction strategy. Involving every department ensures that waste reduction becomes integrated into all facets of the organization.

Schedule regular meetings to foster communication among team members and ensure alignment. These meetings should focus on reviewing progress, sharing insights, identifying challenges, and brainstorming solutions.

Make sure each department is equipped with the necessary resources to contribute effectively to the project. This may include access to relevant data, training programs, or budget allocations for specific waste reduction initiatives.

Perform Initial Assessments

Identify major points of waste from disposables within the supply chain that can be addressed strategically.

Conduct a materiality assessment to help identify and understand the relative importance of single-use packaging and tableware reduction to the organization.

Plan the Assessment

Define the scope of the single-use packaging and tableware assessment, including the sample size, frequency, and duration. Establish clear objectives to guide the assessment, such as identifying major sources of single-use packaging and tableware or evaluating the effectiveness of existing waste management practices.

Materials Preparation

Data record form: Use a standardized form to log single-use packaging and tableware data (number of items and weight) according to single-use packaging and tableware categories appropriate for businesses in the food industry **(see Appendix).**

Scale: Ensure accurate measurement of packaging and foodware waste.

Single-use packaging and tableware collection bins with labels: Choose bins based on the area generating the waste, available space, and volume of waste. Label bins with photos and descriptions to ensure correct waste segregation. Use transparent or semi-transparent bags for visual inspection.

Collect Data as a Benchmark

Perform daily measurements and record data on single-use packaging and tableware over a specified period, with a recommended minimum of two weeks to capture accurate trends. This data will help identify patterns, establish targets, and develop improvement strategies, while also serving as a benchmark to assess the effectiveness of reduction efforts.

Analyze and Report Results

Analyze and examine the collected data to pinpoint the primary categories, sources and quantities of single-use packaging and tableware. Report to management and appropriate departments.

Set Reduction Targets

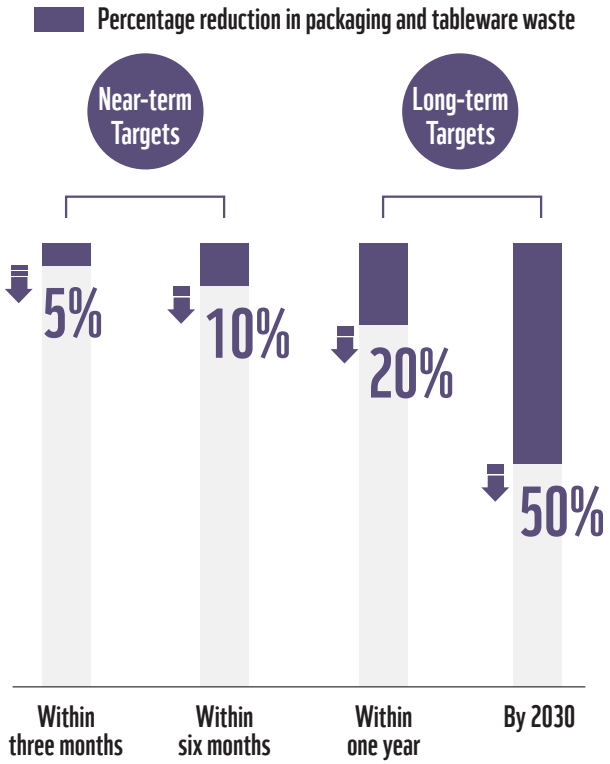
Based on the assessment, set achievable reduction targets:

Near-term Targets (3-6 months): Focus on quick wins, such as using alternatives to plastics for takeaway containers or switching to reusable containers.

Long-term Targets (1 year or more): Aim for broader changes, such as improving supply chain collaboration or enhancing recycling practices.

Figure 2: Near-term and Long-term Single-use Packaging and Tableware Reduction Targets

(Source: adapted from Shenzhen One Planet Foundation, 2017)



Develop and Implement Improvement Measures

Regularly assess and refine waste reduction strategies to ensure ongoing improvement. Below are several improvement measures relevant to the management of single-use packaging and tableware by businesses in the food sector:

Eliminate Unnecessary Packaging from Supply Chain

- **Establish Packaging Guidelines**

  Create detailed packaging guidelines for suppliers that specify the types of materials acceptable for delivery. Require suppliers to use sustainable, recyclable, or compostable packaging materials and eliminate unnecessary packaging.

- **Set Sustainability Standards**

  Demand that suppliers follow sustainability standards in their operations. This includes reducing the packaging used for products delivered to restaurants and retailers and opting for reusable transport containers instead of single-use boxes, plastic wraps, or pallets. Suppliers should also use recycled or eco-friendly materials whenever possible.

Require Transparency and Reporting

Request that suppliers report on the packaging they use, thereby providing transparency in the supply chain. Work with suppliers that track and report their packaging waste, material sources, and sustainability initiatives in order to reduce single-use packaging in the supply chain.

Incentivize Sustainable Practices

Request that suppliers report on the packaging they use, thereby providing transparency in the supply chain. Work with suppliers that track and report their packaging waste, material sources, and sustainability initiatives in order to reduce single-use packaging in the supply chain.

Advocate for Returnable Packaging in Delivery

Encourage suppliers to use returnable or reusable containers for deliveries, especially for bulk food items or frequently ordered ingredients in order to eliminate the need for single-use packaging for product transportation.

Packaging and Tableware Provided on Request Only

Cutlery and Napkins Upon Request

Implement policies in restaurants and food delivery services where disposable cutlery, napkins, lids for cups, or straws are provided only upon request, significantly reducing unnecessary waste.

Opt-Out Option in Delivery Apps

Include options in food delivery apps that allow customers to opt out of receiving single-use items like straws, cutlery, and condiments, cutting down on unnecessary waste.

Implement Digital Solutions

Digital Menus and Receipts

Use digital menus and e-receipts to reduce paper waste. In restaurants and delivery services, customers can place orders and receive receipts electronically, minimizing the need for printed materials.

QR Codes for Nutritional Information

Replace printed labels and excessive packaging with QR codes, allowing customers to access product information digitally.

Reusable Packaging and Tableware Programs

Deposit-Return Schemes

Implement deposit programs where customers pay a small fee for reusable containers, which they can return for a refund, encouraging container reuse.

On-Site Reusable Tableware

Prioritize reusable plates, cups, and cutlery in dine-in settings, including food courts and cafeterias. Reusable options often pay for themselves over time.

Encourage Use of Reusable Containers

Promote the BYO culture and allow customers to bring their own containers for take away items to reduce the use of disposables.

Reusable Container Programs

Establish a network of local businesses that share reusable containers. Customers can borrow reusable containers, such as pintos, and return them to any participating business, promoting a circular approach to packaging.

Bulk Sales and Refill Stations

• Bulk Food Sections

Set up bulk food sections in grocery stores where customers can bring their own containers for grains, nuts, and pre-prepared meals, reducing individual packaging of consumer-packaged goods (CPGs) and other takeaway items.

• Self-Serve Refill Stations

Install refill stations for condiments, sauces, water, and beverages in restaurants and food courts to eliminate single-use packets and bottles.

Shift to Sustainable Alternatives

• Biodegradable or Compostable Packaging and Tableware

When packaging or tableware is needed, replace plastic and Styrofoam with biodegradable or compostable alternatives like bamboo, sugarcane, or corn-based products. Communicate with customers the importance of switching to sustainable packaging.

Government Collaboration and Incentives

Adhere to Government Regulations

Be aware of laws that have been enacted to target single-use packaging and tableware, especially single-use plastic products such as polystyrene foam containers, plastic bags, etc. Taking action on reducing single-use packaging and tableware can help to stay ahead of these legislations.

Advocate for Government Support

Work with government agencies to create policies that incentivize the reduction of single-use packaging through tax breaks or eco-friendly packaging standards.

Participate in National Initiatives

Join national campaigns, such as plastic-free days, or collaborate with industry partners to run large-scale initiatives to reduce packaging waste.

Educate and Train Staff on the Importance of Reducing Single-Use Packaging and Tableware Waste

Educate staff on the significance of reducing single-use packaging and tableware waste, including its environmental impact and its economic implications.

Develop tailored training sessions for different roles within the organization. Staff who interface with customers are particularly important as they will be the primary contact and provide key messaging to customers about single-use packaging and tableware reduction measures.

Develop and Provide Educational Materials

Create clear and concise educational materials, including visual aids like infographics and step-by-step guides for minimizing packaging and tableware waste. Quick-reference cards and checklists, such as reminders to offer reusable options or limit disposable items, can help reinforce best practices in employees' daily routines.

Develop protocol details for single-use packaging and tableware reduction program in employee orientation to facilitate continuity in case of resignation or rotation.

Service Expressions and Customer Engagement Scripts

Develop scripts and talking points for staff to use when interacting with customers about reducing waste from packaging and tableware. Train staff to weave reduction messages into their everyday interactions with customers.

Feedback and Follow-Up

Encourage staff to gather feedback from customers about their experiences with single-use packaging and tableware waste reduction. Use this feedback to improve practices and enhance customer engagement in sustainability efforts.

Employee Incentives and Recognition

Implement a reward system that recognizes employees who excel in reducing single-use packaging and tableware waste and meeting reduction goals.

Hold regular events to acknowledge employees who have made significant contributions to the reduction of disposables.

Link waste reduction achievements to performance reviews, with incentives such as promotions or raises for those who consistently demonstrate commitment to sustainability.

Awareness Raising

Signage and Displays

Place clear and visually engaging signage in key areas, such as ordering stations, dining areas, and takeout counters, to inform customers about the importance of reducing single-use packaging and tableware waste.

Use signage, digital platforms, and employee training to educate customers about how to responsibly dispose of and sort single-use packaging and tableware. Inform customers about the importance of using designated bins to prevent contamination.

Display posters that guide customers on making responsible choices, such as bringing reusable containers or selecting minimal packaging options for takeout and delivery orders.

Campaigns

Run educational campaigns that inform customers about the environmental impact of single-use items and encourage them to choose reusable or sustainable alternatives. Provide information on how customers can participate in reduction efforts.

Utilize digital platforms like social media, websites, and apps to raise awareness about single-use packaging and tableware waste reduction. Share tips, infographics, and success stories to inspire customers to participate in sustainable practices and reduce their environmental impact.

Initiatives and Incentives

Discounts

Provide discounts or promotions to customers who actively participate in reducing single-use packaging and tableware waste and encourage BYO culture. For instance, offer a discount to those who bring their own containers for takeout or reward customers with a loyalty program for consistently opting for sustainable practices.

Activities and Contests

Create challenges that encourage customers to reduce their use of single-use packaging and tableware over a designated period. Participants can track their efforts and share experiences on social media for a chance to win prizes or receive discounts.

Host contests where customers submit creative ideas for reducing waste from disposables, such as innovative ways to reuse or minimize packaging materials. Winning ideas can be featured or promoted through the company's media channels.

Customer Feedback

Incorporate customer surveys or comment cards that focus on their experience with the company's single-use packaging and tableware reduction efforts. This can include questions about packaging choices, their effectiveness, and customers' willingness to engage in waste reduction initiatives.

Seek specific feedback on the packaging used for takeout and delivery, emphasizing its ability to preserve food quality while reducing waste from disposables.

Leverage digital channels, such as email surveys, social media polls, or feedback sections on your website, to collect customer input on packaging and tableware practices.

Regularly Monitor Single-Use Packaging and Tableware Data

Implement a system to continuously collect and track data related to single-use packaging and tableware waste. Establish specific metrics to measure various aspects, such as the volume of waste generated, the reasons for waste (e.g., overuse, disposal after a single use), and the stages where waste occurs (e.g., procurement, distribution, post-use).

Schedule periodic reviews of the collected data—whether monthly, quarterly, or annually—depending on the scope of your operations. These reviews should involve key stakeholders, including management, operational staff, and sustainability officers, to evaluate the trends, successes, areas needing improvement and current progress of single-use packaging and tableware reduction efforts.

Refine Strategies Based on Data and Feedback

Leverage the insights gained from monitoring to guide strategic decisions. If the data indicates that certain areas are not achieving waste reduction targets, adjust your approach by introducing new practices, improving existing ones, or reallocating resources. On the other hand, if certain strategies are highly successful, consider expanding them or applying them to other parts of the operation.

Maintain a flexible approach that allows for quick adjustments based on emerging data to adapt to changing conditions or unforeseen challenges.

Treat the monitoring process as part of an ongoing improvement cycle. Regularly revise waste reduction goals and targets using the latest data, feedback, and industry best practices, ensuring your efforts evolve alongside shifting environmental and business conditions.

Compile the Results of Waste Reduction Efforts

Compile and analyze the data collected throughout the process including gathering quantitative metrics such as the volume of waste diverted from landfills, reduction in single-use packaging and tableware usage, and savings in purchasing and disposal costs.

Periodically compare results to the baseline data collected before implementing the waste reduction strategies. This comparison will help assess progress, identify successful areas, and pinpoint gaps that require further attention.

Establish a regular reporting schedule to track the ongoing progress of the single-use packaging and tableware reduction program. Reports can be generated monthly, quarterly, or annually such as in Annual Reports or ESG and Sustainability Reports.

Promote Success Stories and Best Practices

Use internal communication channels to highlight the successes and best practices of the single-use packaging and tableware reduction program with employees.

Host workshops or seminars where teams or departments that have excelled can share their strategies and experiences with others across the organization.

Share successes and best practices with other businesses, NGOs, and the public sector as well as customers and the local communities to increase knowledge sharing and demonstrate commitment to single-use packaging and tableware reduction.

Develop partnerships and collaborate with other businesses, NGOs, and the public sector to work cooperatively towards shared single-use packaging and tableware reduction goals.

Responsible Disposal Awareness

Supplier Collaboration for Sustainable Disposal

Work with suppliers to ensure that the packaging and tableware they provide are compatible with local recycling and composting programs, helping to streamline disposal and minimize waste.

Composting Programs

Partner with Composting Services

Establish partnerships with local composting services that can process biodegradable and compostable packaging, ensuring proper handling of these materials.

On-Site Composting

Restaurants and supermarkets can set up their own composting systems to manage organic waste and compostable packaging directly on-site.

On-Site Sorting Stations for Recyclables

Back-of-House Composting and Recycling

Set up dedicated composting and recycling stations in kitchen or prep areas to ensure that organic waste and recyclable materials are properly sorted and disposed of by staff.

Front-of-House Recycling

Install clearly labeled sorting stations for customers to separate recyclables, compostables, and landfill waste, making it easier for businesses to manage waste efficiently.

Offer donation points to accept customers' packaging such as milk cartons and plastic bottles. Signage to education customers on the environmental impacts of disposables can also be provided at the drop off station.

Disclaimer

Although not exhaustive, the strategies outlined in this step-by-step framework offer a comprehensive starting point for businesses in the food sector to implement single-use packaging and tableware reduction measures. Bear in mind that there is no one way to attack the issue of single-use packaging and tableware reduction and that this framework can be modified to accommodate a particular business.

Furthermore, the implementation of sustainable consumption and production measures suggested in the guidelines in this series may prove challenging as some aspects may conflict with each other and it may be difficult to find a balance amongst all of the goals presented. It is recommended that businesses designate their top priorities and targets and take action on those strategically.

05 A Call to Action

The challenge of reducing single-use packaging and tableware in Thailand's food sector is a pressing issue that presents both a barrier to sustainability and an opportunity for transformative change. Businesses along with consumers play a vital role in shaping a sustainable future by reducing environmental impacts caused by single-use packaging and tableware and making more efficient use of resources.

For businesses, this is the time to act by adopting and implementing strategies to significantly reduce single-use packaging and tableware. The shift toward sustainable packaging is not only necessary but urgent. Businesses that embrace this challenge can lead the way in transitioning to more responsible, resource-efficient operations. Meanwhile, consumers' choices and behaviors can drive the demand for greener alternatives, collectively creating a significant impact.

Now is the time for businesses to adopt sustainable packaging practices that will drive real change. Each action that businesses take to reduce single-use packaging and tableware will contribute to a broader societal movement toward environmental concern and responsibility. By collaborating together with government, NGOs, businesses and consumers can create a future in which single-use packaging and tableware is minimized, and sustainability is at the core of the food sector.

Resources

1. **Beyond Plastics. (2020).** *Hold the Plastic, Please: A Restaurant's Guide to Reducing Plastic.* https://static1.squarespace.com/static/5eda91260bbb7e7a4bf528d8/t/62e2b5cb2e8f1126d6bd19f0/1659024853946/Restaurant-Guide-To-Reducing-Plastics-Print.pdf
2. **Greenpeace. (2020).** *Unpacked: How supermarkets can cut plastic packaging in half by 2025.* https://www.greenpeace.org.uk/wp-content/uploads/2024/07/Greenpeace_Unpacked_Report.pdf
3. **Litter Free Rivers. (n.d.).** *Litter Free Businesses: A toolkit for businesses to reduce single-use plastic.* https://www.taronga.org.au/sites/default/files/content/documents/19-115_A4_LitterFreeRivers_Toolkit_Business_V4.pdf
4. **National Restaurant Association. (2019).** *Plastic Packaging Resource Guide.* https://restaurant.org/getmedia/f15bc964-45e3-4afe-a258-ef9e97431410/Plastic-Packaging-Guide.pdf
5. **Plastic Pollution Coalition. (n.d.).** *Plastic Free Eateries: How restaurants and food business owner/operators can reduce plastic in food prep, service and delivery.* https://www.plasticpollutioncoalition.org/takeaction/guides/plastic-free-eateries
6. **Product Stewardship Institute. (2020).** *5 Easy Steps to Reduce Plastic and Benefit Your Business: A guide for restaurants and eateries.* https://productstewardship.us/wp-content/uploads/2022/11/Plastic_Reduction_Guide_for_.pdf
7. **Putnam, H. (2021, May 27).** *Four Ways Grocery Stores Can Take a Lead Role in Solving the Plastic Crisis.* Ratio Institute. https://ratioinstitute.org/four-ways-grocery-stores-can-take-a-lead-role-in-solving-the-plastics-crisis/
8. **Shenzhen One Planet Foundation. (2017).** *Food Waste Reduction Practical Guide.* https://www.switch-asia.eu/site/assets/files/3901/food_waste_reduction_practical_guide.pdf
9. **Shrauner, D. (2023, May 2).** *Restaurant Plastic Waste: Today's Facts and Future Solutions: A guide to present day facts and innovative solutions for reducing plastic waste in the restaurant industry.* Unsustainable Magazine. https://www.unsustainablemagazine.com/restaurant-plastic-waste-guide/

Appendix

14-day Plastic Waste Weighing Log

Please enter the quantity in the field
*Unit: Pieces & G

PIECES
GRAMS (G)

Start date:

	Cups and lids	Straws	Bags	Bottles and caps	Soft food packaging	Foodware: cutlery, plates	Food take away containers
Day 1							
Day 2							
Day 3							
Day 4							
Day 5							
Day 6							
Day 7							
Day 8							
Day 9							
Day 10							
Day 11							
Day 12							
Day 13							
Day 14							
Total							

Instructions for use

1. Count the pieces of plastic waste according to the classifications.
2. Weigh the amount of the same plastic waste in grams (G) according to the classifications.
3. Record data in the boxes: number of pieces in the top left, and weight in grams (G) in the bottom right corner.
4. Fill in 0 for zero waste options.
5. Keep one digit after the decimal point for weights, e.g. 7.8 G.
6. If possible, record the number of orders to help understand and optimize the zero waste options.

** This tool was adapted from a tool developed by Litter Free Rivers, the Rare Center for Behavior with the support of the EU Switch-Asia Program, and is intended for corporate reference only and not as research, commercial or legal advice.

Supported by:

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

based on a decision of
the German Bundestag