# Change(K)now!


## Solutions for circular food delivery systems

### CLUSTER I:

## INSTITUTIONAL CATERING

Interreg Baltic Sea Region

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CIRCULAR ECONOMY
Change(K)now!

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## Cluster I: Institutional Catering

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# 1 Introduction

The widespread use of overpackaging and single-use packaging in public institutional catering represents a growing environmental and resource management challenge across Europe. Large volumes of packaging waste are generated every day through the preparation, transport, serving, and consumption of food within schools, kindergartens, hospitals, elderly care homes, workplaces, and other public institutions. Much of this packaging consists of single-use plastic products and composite materials that are difficult to recycle and often end up as waste after only a few minutes of use.

Packaging waste contributes significantly to pollution, greenhouse gas emissions, marine litter, and the depletion of natural resources. Although packaging plays an important role in ensuring food safety, hygiene, logistics, and convenience, current food service systems frequently rely on packaging solutions that exceed what is functionally necessary. In institutional catering, single-use packaging is often embedded in procurement systems, transport logistics, meal delivery models, and consumption habits, making single-use solutions appear operationally efficient and economically convenient. However, these practices generate substantial waste streams and place increasing pressure on municipal waste management systems and public budgets.

At the same time, public institutions have significant potential to drive the transition toward more circular, resource-efficient food systems. Public institutional catering serves large numbers of meals daily and therefore has a strong influence on suppliers, catering companies, packaging producers, and consumer behaviour. Decisions made by municipalities and public catering providers can significantly reduce packaging waste, support the adoption of reusable systems, and stimulate market demand for circular solutions.

This guidance document focuses on solutions to create more circular food provision systems in public institutional catering. In this document, institutional catering refers to organised food service operations that provide meals and beverages within public or semi-public institutions. These systems may include on-site kitchens, centralised production kitchens, outsourced catering services, school cafeterias, hospital food services, kiosks, vending systems, and takeaway food operations. Institutional catering differs from commercial restaurant services because it is typically organised through public procurement systems, serves recurring user groups, operates at a large scale, and must simultaneously meet requirements related to nutrition, food safety, affordability, operational efficiency, and public policy objectives.

The guidance document particularly focuses on institutional catering systems operated or managed by municipalities and public authorities, including:

- schools and kindergartens,
- hospitals and healthcare institutions,

- elderly care homes,
- workplace canteens within public organisations,
- cafeterias, kiosks, and takeaway services connected to public institutions.

The document addresses multiple stages of the institutional catering value chain, from food procurement and transport to meal preparation, serving, consumption, and takeaway services. Packaging-related challenges occur throughout this entire chain and therefore require both systemic and operational responses.

The overall objective of this guidance is to support municipalities, public institutions, and catering service providers in preventing and reducing single-use packaging and overpackaging in public food systems. The document presents practical circular solutions that can be integrated into procurement systems, catering operations, and everyday food service practices.

The guidance focuses on two complementary areas:

**Circular procurement**

At the municipal and institutional level, procurement plays a central role in shaping food delivery systems and influencing packaging use throughout the value chain. Circular procurement enables municipalities and public institutions to integrate environmental and circular economy objectives into purchasing decisions and service contracts.

The guidance, therefore, provides recommendations for applying circular procurement practices in institutional catering. This includes selecting packaging and food provision solutions, as well as suppliers and catering service providers, that minimise packaging waste; prioritising reusable systems; encouraging bulk delivery solutions; and requiring recyclable, reusable, or compostable packaging where prevention is not possible. Procurement criteria can also be used to encourage innovation, improve waste prevention, and stimulate the market uptake of circular food service solutions.

**Operational circular measures**

At the operational level, the guidance outlines practical measures to reduce reliance on single-use packaging across the institutional catering value chain. These measures range from reusable transport packaging and reusable meal containers to packaging-free serving systems, bulk food solutions, reusable dishes, and refill systems for beverages.

Operational circular measures require cooperation between municipalities, catering service providers, suppliers, kitchen staff, consumers, and waste management actors. Successful implementation often depends on enabling infrastructure, hygiene management, logistics systems, staff training, and user engagement. The guidance, therefore, combines technical, organisational, and behavioural perspectives to support practical implementation.

**Target audience**

This document is primarily intended for:

- municipalities and public authorities,
- procurement specialists,
- catering service providers,
- institutional food service managers,
- school, hospital, and care facility administrators,
- and other stakeholders involved in public food provision systems.

Municipalities and public institutions play a particularly important role in circular food delivery systems because they are responsible for organising and procuring public food services and can therefore create demand for circular solutions through procurement and policy decisions. Catering service providers, in turn, are key actors in implementing operational changes and integrating circular practices into daily food service operations. By making circular decisions both at the procurement level and through operational changes, these stakeholders can significantly reduce packaging waste, prevent resource loss, lower environmental impacts, and advance the transition toward more circular public food systems.

The guidance ultimately aims to support a broader transformation of institutional catering systems, moving from disposable, linear food-service models toward circular systems that prioritise waste prevention, reuse, resource efficiency, and long-term environmental sustainability.

# 2 Public food provision

This guidance document is framed within the broader public food system, which encompasses all stages of food provision, from agricultural production and food processing to distribution, preparation, consumption, and waste management. Each stage of this system contributes to environmental impacts through resource use, food and packaging waste, energy consumption, and greenhouse gas emissions.

The focus of this guidance, however, is on **the consumption and service phase of the public food system – specifically, food provision within public institutions managed or influenced by municipalities and other public authorities**. This includes schools, kindergartens, hospitals, elderly care homes, public workplaces, and other institutional settings where meals and beverages are prepared and served regularly to large numbers of users. By focusing on institutional food provision, this guidance aims to support the introduction of circular measures that prevent unnecessary packaging, reduce dependence on single-use products, and increase the use of reusable systems throughout public food services.

At the same time, the successful transition toward circular food delivery systems requires an **enabling environment**. Packaging prevention and reduction cannot be achieved solely through isolated operational measures; they also depend on institutional commitment, governance frameworks, supportive infrastructure, and the availability of sustainable solutions in the market. An important foundation for this transition is the development of a strategic framework at the municipal or institutional level, including policies, action plans, and legal instruments that support the shift towards a more circular public food system.

Public procurement is one of the most powerful instruments available to municipalities and public institutions for influencing market behaviour and shaping food service systems. Through procurement, public authorities can establish environmental requirements for food suppliers, catering operators, packaging systems, transport logistics, and service delivery models. Because institutional catering systems are often organised through long-term procurement contracts, procurement decisions strongly influence operational practices throughout the value chain. Circular procurement criteria can help shift food systems away from disposable, linear models toward more resource-efficient, circular solutions. By ensuring that supportive infrastructure, strategic frameworks, and procurement instruments are in place, municipalities and institutional catering providers can more effectively adopt sustainable packaging solutions that align with both environmental and operational objectives, leading to measurable reductions in packaging waste and single-use products.

More detailed guidance on developing strategic frameworks, governance approaches, and supportive policy instruments for circular food systems is provided in the guidance document developed within the Change(K)now! project: “Strategic framework guidance for

moving towards circular food delivery systems at the local level in Baltic Sea Region municipalities".

## 2.1 Food and catering service procurement system

Public institutions typically rely on procurement systems to organise food provision in a structured and efficient manner. Procurement systems ensure that food services meet institutional needs in nutrition, food safety, affordability, operational efficiency, sustainability, and service quality.

These procurement systems also play a central role in shaping the environmental impacts of food provision, including packaging use and waste generation. Procurement decisions influence:

- which suppliers and products are selected,
- how food is packaged and transported,
- whether reusable systems are used,
- how meals are prepared and delivered,
- and which circularity requirements apply throughout the catering value chain.

As a result, procurement systems are critical for addressing overpackaging, preventing unnecessary single-use packaging, and supporting the transition toward more circular food delivery systems.

The organisation of public food provision differs considerably across municipalities and countries in the Baltic Sea Region. Institutional catering systems are highly diverse and are often shaped by historical development, administrative structures, available infrastructure, political priorities, market conditions, and financial resources. Decisions regarding the organisation of public food provision are therefore not only operational but also strategic and political.

This guidance document primarily focuses on procurement systems for food products and raw materials, as well as for catering services and related institutional food service operations.

The following sections provide an overview of the main procurement models commonly used in institutional catering systems, falling within the scope of this guidance.

**Procurement of food products/raw materials**

In this procurement model, the institution itself is responsible for preparing meals in either on-site kitchens or municipality-owned central production kitchens. Procurement activities focus primarily on sourcing food products, raw materials, and ingredients, while food preparation remains under direct institutional control.

The institution's kitchen staff is responsible for meal preparation, storage, portioning, and serving, while the procurement department manages supplier selection and purchasing processes.

This model gives municipalities and institutions relatively strong control over:

- the types of products procured,
- packaging requirements,
- transport logistics,
- sourcing criteria,
- and operational waste prevention measures.

Because procurement is focused on raw materials rather than fully prepared meals, institutions may have greater opportunities to reduce unnecessary packaging, introduce bulk-purchasing systems, and implement reusable transport packaging.

**Procurement of catering service**

In this model, the institution outsources the entire food service operation to an external catering company. The catering provider is responsible for sourcing ingredients, preparing meals, organising logistics, and serving food. The institution's procurement team, therefore, primarily procures catering services rather than individual food products.

This procurement model can strongly influence packaging use because catering companies typically determine:

- food sourcing practices,
- packaging systems,
- serving models,
- and takeaway solutions.

Because catering contracts are often long-term and large-scale, they offer important opportunities to embed circular economy principles into institutional food provision.

**Procurement of food delivery**

In this model, meals are prepared in a municipality-owned or centrally operated production kitchen and delivered to institutions that lack their own food preparation facilities. This system is commonly used in schools, kindergartens, hospitals, and elderly care facilities, where centralised meal production improves operational efficiency and reduces staffing requirements.

The procurement system typically includes:

- procurement of raw materials,
- organisation of central meal production,

- and procurement of food transport and delivery services.

Packaging plays a particularly important role in this model because food must be transported between locations while maintaining hygiene and temperature requirements. Depending on how the system is organised, meal delivery may rely either on reusable transport systems or on individually packaged disposable solutions.

This procurement model, therefore, offers significant opportunities to introduce reusable transport containers, bulk delivery systems, and reusable meal packaging solutions.

**Procurement of kiosk or cafeteria service**

This procurement model applies to kiosks, cafeterias, and smaller retail food outlets operating within public institutions. These services may sell snacks, beverages, sandwiches, takeaway meals, and other convenience products.

Kiosk and cafeteria operations are frequently outsourced to third-party operators and may either function independently or be integrated into broader catering service contracts.

Because these services often rely heavily on convenience-oriented products and takeaway consumption, they can generate substantial packaging waste. Packaging-intensive products such as bottled beverages, disposable coffee cups, wrapped snacks, and takeaway containers are common in these settings.

At the same time, kiosk and cafeteria operators have important opportunities to implement circular measures, including:

- reducing unnecessary packaging,
- introducing reusable cups and containers,
- offering refill systems,
- encouraging customers to bring their own containers,
- and prioritising products with minimal or sustainable packaging.

Procurement criteria can support these measures by establishing requirements related to reusable systems, packaging reduction, and environmentally preferable products.

**Procurement of vending machine services**

Vending machines within institutions provide snacks, beverages, and sometimes ready-to-eat meals. Public institutions typically procure external vending machine operators responsible for stocking, maintaining, and managing the machines.

Although vending systems are often overlooked in institutional sustainability strategies, they can contribute significantly to packaging waste because they primarily rely on individually packaged products and disposable beverage containers.

Through procurement, institutions can influence:

- which products are sold,
- packaging formats,
- material choices,
- and environmental requirements for suppliers.

## 2.2 Institutional catering value chain and main packaging problems

Understanding the main packaging-related problems across the institutional catering value chain is essential for developing effective circular food delivery systems. Packaging use and waste generation occur at multiple stages of the value chain, from food production and transport to meal preparation, serving, consumption, and takeaway services. The type and scale of packaging problems differ considerably between these stages because packaging fulfils different operational functions related to food safety, hygiene, logistics, storage, transport efficiency, portioning, and convenience.

*Table 1. Institutional catering value chain stages and related packaging problems*

| Stage in the value chain and main activities | Typical packaging | Main packaging problems |
|---|---|---|
| **Food processing, production and transport:** Agricultural production, industrial food processing, wholesale distribution, storage, and transport of food products to institutional kitchens | Plastic films, vacuum packs, trays, transport packaging, pallet wrapping, disposable liners, and beverage containers | • Over-packaging for transport and storage;<br>• multiple packaging layers;<br>• heavy reliance on single-use plastics. |
| **Meal production and delivery:** Meal preparation, portioning, storage, and delivery to schools, kindergartens, hospitals, and workplace canteens | Plastic meal trays, sealed containers, films, individually packed meal portions, lids and sachets | • Repeated repackaging during preparation and delivery;<br>• packaging linked to hygiene and convenience requirements. |
| **Food serving:** Cafeteria and buffet service, bedside meal delivery, food distribution within institutions, beverage and snack service | Disposable cups and lids, plastic cutlery, straws, condiment sachets, wrapped sandwiches and snacks | • Extensive use of single-use plastics; individually wrapped serving items;<br>• over-packaging driven by convenience and hygiene practices. |
| **Consumption of food and beverages:** Consumption in canteens, dining rooms, classrooms, offices, hospital beds, care rooms, outdoor spaces, and other institutional settings | Portable food containers, disposable beverage packaging, individually packed meals and snacks, and takeaway-oriented packaging | • Increased use of portable single-use packaging;<br>• over-packaging linked to flexible and convenience-oriented consumption. |
| **Food takeaway from canteens, cafeterias and kiosks:** Grab-and-go meals, takeaway beverages and snacks, kiosk and vending sales | Plastic takeaway containers, coffee cups and lids, plastic bags, wrappers, and bottles | • Highest dependence on disposable packaging;<br>• large amounts of packaging per meal. |

A value chain perspective helps municipalities, institutional catering providers, and procurement specialists better understand where the largest packaging impacts occur, which packaging types are most problematic, and where the greatest potential exists for prevention, reuse, or reduction measures. It also helps avoid implementing circular solutions that may not be operationally feasible or environmentally beneficial within a particular institutional context.

In this chapter, an overview of the institutional catering value chain is given, along with alternatives related to packaging as well as resulting problems.

The overview is summarised in Table 1.

**Food processing and production, including transport**

The first level of the institutional catering value chain includes agricultural production, industrial food processing, packaging, storage, and transportation of food products to institutional kitchens and catering operators. Food originates from farms, fisheries, dairies, bakeries, and food manufacturing companies before entering wholesale distribution systems. Institutional caterers in Europe often procure large volumes of food through centralised supply chains that prioritise efficiency, standardisation, food safety, and cost control. As a result, even though some raw materials are purchased as unprocessed products, institutional catering also uses pre-processed ingredients (e.g., peeled vegetables, raw meat products), frozen foods (meat, fish, vegetables), chilled products, and sometimes ready-made meal components, as well as beverages.

Packaging plays a central role at this stage because food products must be protected during storage and transport. Ingredients are frequently wrapped in plastic films, vacuum-sealed bags, trays, cartons, and multilayer packaging materials. Fresh produce is often packed in plastic sleeves or containers, while bulk deliveries rely heavily on transport packaging such as pallet wrap, disposable liners, shrink films, and plastic crates. In many cases, products are packaged several times at different logistical levels, including primary packaging for the product itself, secondary packaging for grouping items, and tertiary packaging for transportation.

Over-packaging is a major issue at this level. Packaging often exceeds what is functionally necessary for food protection and instead reflects logistical convenience, standardisation requirements, branding practices, and attempts to minimise product losses during transport. This results in large volumes of waste even before meal preparation begins. Single-use plastics dominate because they are lightweight, inexpensive, durable, and compatible with cold-chain logistics, yet many of these materials are difficult to recycle, particularly when contaminated by food residues or composed of mixed materials. Although some European institutional procurement systems encourage local sourcing and reduced packaging, disposable transport and food packaging remain deeply embedded in industrial food supply systems.

**Meal production and delivery**

The second level of the institutional catering value chain consists of meal preparation, storage, packaging, and distribution within institutional catering systems. Meals may be produced directly in onsite kitchens located within schools, hospitals, elderly homes or workplaces, or prepared in centralised production kitchens that supply multiple institutions simultaneously. Across Europe, centralised catering systems are widely used because they improve operational efficiency, simplify procurement, and allow large-scale meal production.

In centralised kitchen systems, meals are often transported in bulk rather than individually packaged. Prepared food may be delivered in large, insulated thermoses, Gastronorm (GN) containers, stainless steel containers, trolleys, or other large-volume transport systems designed to maintain food temperature and food safety during distribution. Bulk delivery systems are common in schools, workplace canteens, and some care institutions where food is portioned closer to the point of serving. However, in hospitals, care homes, and institutions with strict dietary, medical, or hygiene requirements, meals are also frequently delivered as individually packaged portions. These may include sealed plastic trays, covered meal components, individually packed desserts, beverages, or special diet meals.

Packaging use at this stage therefore depends strongly on the organization of the catering system. Centralised meal delivery requires packaging and transport systems that maintain hygiene, ensure temperature stability, and protect food during transport between locations. This creates demand for insulated transport containers, plastic covers, sealing films, disposable inserts, lids, and meal trays. Individually packed meal systems generate particularly large amounts of packaging waste, as each meal component may require its own packaging.

By contrast, on-site kitchens generally require less packaging because food is prepared and consumed on-site. The shorter distance between production and serving reduces the need for transport packaging, additional protective layers, and disposable delivery containers. Meals prepared on-site are also more likely to be transferred directly into reusable serving equipment rather than individually packaged units.

Despite the use of some reusable bulk transport systems, packaging waste remains significant at this stage of the value chain. Over-packaging occurs when food is repeatedly packaged during preparation, storage, transport, and distribution. Food contamination further limits the recyclability of many materials used in meal delivery systems, especially plastic films and mixed-material packaging. As institutional catering systems increasingly prioritise efficiency, hygiene, and standardised meal distribution, dependence on disposable packaging remains widespread across many European catering operations.

**Food serving**

The third level of the value chain concerns the serving of meals and beverages to consumers within institutional settings. This includes self-service lines and buffet systems, single-portion serving in the classrooms, or bedside meal delivery in hospitals. Serving practices vary considerably across Europe depending on the type of institution, food service model, labour availability, hygiene regulations, and the organization of catering operations.

At this stage, packaging is closely connected to portion control, hygiene management, and convenience. Meals and beverages may be served using reusable plates, cups, and utensils, but disposable products remain widespread in many institutional environments. Single-use cups, lids, straws, sachets, condiment packets, plastic cutlery, wrapped sandwiches, disposable trays, and bottled beverages are commonly used because they simplify service operations and reduce washing requirements.

In hospitals, meals are often distributed directly to patients using individually packaged trays and covered components to reduce contamination risks and simplify bedside delivery. In schools and workplace cafeterias, self-service models rely less on disposable packaging and more on reusable dishes.

**Consumption of food and beverages in canteens and kiosks**

The fourth level of the value chain concerns the actual consumption of meals and beverages by institutional users. Consumption may occur in canteen dining rooms, cafeterias, and common eating spaces, as well as outside these designated dining environments. In many institutional settings across Europe, food is consumed in classrooms, offices, hospital beds, care home rooms, waiting areas, outdoor campus spaces, or during movement within facilities. The increasing flexibility of institutional eating practices has expanded the role of portable and individually packaged food products.

The location of consumption strongly influences packaging use. Meals in traditional dining rooms may involve reusable dishes and centralised waste collection systems, while meals elsewhere may rely more on disposable, portable packaging. Bedside hospital meals often include individually packaged beverages, sealed dessert containers, wrapped bread portions, disposable cups, and plastic utensils. In schools, snacks and drinks consumed in classrooms are often individually packaged for convenience and hygiene.

The growing consumption of food outside formal dining rooms has intensified reliance on single-use, portable packaging. Packaging must be lightweight, leak-resistant, hygienic, and easy to transport, which reinforces the use of plastics and composite materials. Convenience-oriented consumption patterns also contribute to over-packaging, as individually portioned products and disposable accessories become normalised even in settings where reusable systems could potentially function.

**Food takeaway from the canteen and kiosks**

The final level of the institutional catering value chain involves takeaway food and beverages purchased or collected from canteens, cafeterias, kiosks, vending points, and institutional retail outlets. This segment has expanded rapidly across Europe due to changing work patterns, flexible schedules, increasing mobility, and demand for convenience-oriented food services. Employees, students, patients, visitors, and institutional users increasingly consume food outside designated dining spaces, encouraging the growth of takeaway systems within institutional environments.

Takeaway services are highly packaging-intensive because food and beverages must remain portable, secure, and easy to consume outside the institution's dining infrastructure. Meals are commonly packed in plastic clamshell containers, disposable salad bowls, coated paper boxes, coffee cups and lids, plastic bags, and beverage bottles, as well as wrapped snack packaging. Even products marketed as paper-based alternatives often contain plastic coatings or composite materials that complicate recycling.

Single-use packaging dominates this stage because takeaway systems prioritise convenience, speed, hygiene, and portability. Packaging must prevent leakage, maintain temperature, protect food during transport, and support immediate disposal after use. As a result, institutional takeaway systems generate very large quantities of disposable waste, much of which consists of low-value plastic materials and mixed packaging formats that are difficult to recycle.

Over-packaging is particularly visible in takeaway food systems. A single meal may involve multiple disposable components, including containers, lids, cutlery, napkins, condiment sachets, beverage cups, and outer carrier bags. Packaging often serves marketing and convenience functions in addition to food protection. Individually packaged snacks, bottled beverages, and pre-packed sandwiches are increasingly common because they fit fast-paced institutional consumption patterns.

# 3 Circular procurement guidance

Public procurers can address the packaging problems described in Table 1 by implementing circularity criteria in procurement procedures and contracts. Procurement criteria can support reducing unnecessary packaging, encourage reusable systems, and promote the use of more sustainable packaging materials throughout the institutional catering value chain. The general strategies for selecting procurement criteria are presented in Table 2.

*Table 2. Examples of circular criteria throughout the value chain*

| Stage in the value chain | Problem | Strategies for selecting criteria in the procurement |
|---|---|---|
| **Food processing, production and transport** | Overpackaging (many layers of packaging)<br>Multiple materials in packaging<br>Single-use transport packaging (raw food) | Less packaging<br>Single material in packaging |
| **Meal production and delivery** | Single-use transport packaging (cooked food)<br>Single-use packaging of portions | Reuse transport packaging |
| **Food serving** | Single-use trays<br>Single-use packaging of portions | Reuse trays<br>Reuse the packaging of portions |
| **Consumption of food and beverages in canteens and kiosks** | Single-use packaging<br>Packaging in plastic<br>Multilayer packages | Reuse packaging<br>Reduce packaging<br>Packaging in biodegradable material |
| **Food takeaway from canteen and kiosks** | Single-use packaging<br>Packaging in plastic | Reuse packaging<br>Packaging in biodegradable material |

### Guidance for the systematic application of circular criteria in public procurement for institutional catering

The application of circular criteria in public procurement should be approached as a structured, continuous process that covers the entire institutional catering value chain. Since packaging use and waste generation occur at multiple stages of the system, procurement authorities should first develop a clear understanding of how the catering system operates and where the main circularity challenges occur. A systematic approach helps ensure that circular criteria are introduced as part of a broader transition toward more resource-efficient institutional catering systems rather than as isolated measures.

Such a process has been carried out by the Lahti municipality within the Change(K)now! pilot case ”Embedding circular packaging criteria in public procurement in Lahti”.

#### Step 1. Analyse existing procurement contracts and catering practices

The first step is to analyse the current institutional catering system and the procurement contracts that support it. This analysis should identify how food is sourced, transported,

prepared, served, consumed, and managed within the institution, whether food services are operated directly by the municipality or outsourced to an external service provider. Particular attention should be given to the types of packaging used throughout the value chain.

The analysis should examine:

- packaging used for transporting food supplies to kitchens,
- packaging used for transporting prepared meals (if applicable),
- serving systems in canteens, cafeterias, hospitals, classrooms, or other consumption settings,
- use of reusable versus disposable products,
- and waste management practices related to food and packaging.

Existing procurement criteria and contractual requirements should also be reviewed to assess whether circularity aspects are already addressed. In many cases, procurement systems primarily focus on price, hygiene, and operational efficiency, while packaging prevention, reusability, and waste reduction receive limited attention.

### Step 2. Determine the institutional catering value chain and circularity gaps

The next step is to map the institutional catering value chain and identify the main circularity gaps at each stage. This includes assessing where excessive packaging, single-use plastics, inefficient transport systems, or low recyclability occur.

The assessment should consider all main stages of the value chain, as explained in Chapter 2.2:

1. Food production, processing, and transport;
2. Meal production and delivery;
3. Food serving;
4. Consumption of food and beverages;
5. Takeaway food and beverages.

For each stage, institutions should identify:

- where unnecessary packaging is generated,
- where reusable alternatives may be feasible,
- which packaging materials create recycling challenges,
- and which operational practices reinforce disposable consumption patterns.

This mapping exercise helps procurement authorities prioritise the most important intervention areas and select criteria that are relevant to the actual operation of the catering system.

### Step 3. Consult stakeholders and market actors

Before introducing new procurement criteria, it is important to organize consultations with stakeholders involved in the institutional catering system. Circular procurement criteria often affect several actors simultaneously, including catering companies, food suppliers, packaging providers, kitchen staff, waste management operators, and end users.

Stakeholder consultations can help:

- assess the technical feasibility of proposed criteria,
- identify market availability of reusable or lower-waste solutions,
- understand operational barriers,
- and increase acceptance of new procurement requirements.

Consultations are particularly important when introducing procurement criteria for reusable packaging systems, bulk delivery models, or restrictions on single-use products, as these may require adjustments to logistics, infrastructure, staffing, and hygiene procedures.

### Step 4. Apply circular criteria in procurement procedures

After analysing the system and consulting stakeholders, circular criteria can be integrated into procurement procedures and contracts. Criteria should address the different stages of the catering value chain and should be linked to clear verification methods.

Examples of circular procurement criteria may include:

- preference for bulk delivery systems instead of individually packaged products,
- restrictions on unnecessary single-use plastic packaging,
- requirements for reusable transport containers,
- requirement of using only reusable serving items (trays),
- requirement of using only reusable tableware (dishes and cutlery),
- minimisation of packaging volume (see tips in chapter 4),
- and requirements for recyclable or reusable packaging materials.

Examples of criteria for procuring more environmentally friendly alternatives to food packaging can be found on the platform "Procurement criteria for food packaging in institutional catering". These criteria were developed and verified during Change(K)now! project pilot in Lahti and are mainly applicable to the procurement of food products and raw materials, but they can also serve as inspiration for procuring catering services or for the delivery of ready-made food from the central kitchen.

Procurement criteria should be practical, measurable, and aligned with the institution's operational realities. Verification methods may include supplier declarations, technical specifications, packaging inventories, delivery documentation, audits, or monitoring reports. Clear verification procedures are important to ensure that suppliers comply with the contractual requirements.

### Step 5. Monitor implementation and evaluate impacts

The final step is to monitor the implementation of circular procurement criteria and evaluate their impact on the institutional catering system. Monitoring allows institutions to assess whether the criteria are functioning as intended and whether they contribute to reducing packaging waste and improving circularity.

Monitoring may include:

- tracking the quantities of packaging waste generated,
- assessing reductions in single-use plastics,
- evaluating the use of reusable systems,
- monitoring supplier compliance,
- and collecting feedback from kitchen staff and users.

The monitoring process should also identify practical challenges and opportunities for improvement. Circular procurement should be viewed as an evolving process in which criteria can be gradually strengthened and adapted over time based on experience, technological developments, and market availability.

A systematic approach to circular procurement helps public institutions move beyond isolated packaging measures and supports broader changes in institutional catering systems. Because public catering systems serve large numbers of meals every day, procurement decisions can play a significant role in reducing packaging waste, supporting reusable systems, and influencing wider food service markets toward more circular practices.

# 4 Circular measures for preventing and reducing food packaging

This chapter provides guidance for municipalities, public institutions, catering service providers, and kiosk and canteen operators on practical circular measures that can be implemented to prevent and reduce food packaging throughout the institutional catering value chain.

As demonstrated in the previous chapters, packaging-related challenges occur at multiple stages of the institutional catering value chain and are closely linked to the organisation of food service systems, hygiene requirements, transport logistics, consumption patterns, and operational practices. Different stages of the value chain involve different types of packaging, packaging functions, and limitations to circularity.

Because packaging problems differ across the value chain, circular solutions must also be adapted to the specific operational context of each stage. Some measures focus on preventing packaging entirely, while others aim to replace single-use packaging with reusable systems or, where prevention and reuse are not feasible, to shift toward more sustainable packaging materials. The measures presented in this chapter, therefore, follow the logic of the institutional catering value chain and are organised according to the main stages where packaging is used and waste is generated.

The measures presented in this guidance represent a combination of:

- packaging prevention measures,
- reuse and refill solutions,
- operational improvements,
- alternative material solutions,
- and behavioural and organisational changes.

The measures were developed through a co-creation and co-generation process involving project partners, municipalities, public catering providers, experts, and other stakeholders participating in the Change(K)now! project. Many of the measures are also based on existing good practices and practical experiences already implemented in municipalities and catering systems across Europe. In addition, several measures were tested and piloted in practice within the framework of the Change(K)now! project. These pilot activities provided valuable insights into the feasibility, operational requirements, user acceptance, and practical implementation challenges of circular food packaging solutions in real institutional settings.

The measures are presented by the stages of the institutional catering value chain and summarised in Table 3. While the measures are primarily targeted at public catering service providers and kiosk and canteen operators, they may also be relevant for private companies

and service providers involved in food production, transport, delivery, and catering operations throughout the value chain.

*Table 3. Overview of circular measures applicable in the institutional catering system throughout the value chain*

| **Stage in the value chain** | **Circular measures** |
|---|---|
| Food processing and production, including transport | Measure 1. Changing the material of single-use food transport packaging |
| | Measure 2. Shifting from single-use to reusable transport packaging |
| | Measure 3. Shifting from plastic single-use to reusable transport packaging |
| Meal production and delivery | Measure 4. Shifting from single-use delivery containers to reusable containers |
| Food serving | Measure 5. Replacing single-use trays with Gastronorm trays |
| | Measure 6. Replacing single-use dishes with reusable ones |
| | Measure 7. Shifting from single-use to reusable meal packages |
| Consumption of food and beverages in canteens and kiosks | Measure 8. Shifting from single-use soft drinks to tap water |
| | Measure 9. Shifting from (plastic) packaging to no packaging (food) |
| | Measure 10. Shifting from single-use bulk packaged to small portions of non-packaged food |
| | Measure 11. Shifting from plastic to an alternative biodegradable packaging material |
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## 4.1 Food processing, production and transport

The options for circular measures in food transport packaging have been piloted during the Change(K)now! project. project. Details about the pilot can be found in the pilot case description "Optimising wholesale packaging practices in Lahti's institutional catering supply chain".

### Measure 1. Changing the material of single-use food transport packaging

This measure aims to replace the transport packaging for food from plastic to biodegradable materials, such as biodegradable cardboard boxes. While these materials can also be single-use, their biodegradability significantly reduces environmental harm compared to conventional plastics.

**Involved stakeholders and their roles**

- **Food suppliers** offering biodegradable packaging options for transporting raw food and food products. These suppliers must ensure that the packaging meets your specific needs for product safety, moisture resistance, and food preservation.
- **The public food institutions** (schools, hospitals, etc.) must support the shift to more sustainable practices. Collaboration with administrators to align procurement policies with sustainability goals is necessary.
- **Catering service provider** staff need to be trained in handling biodegradable packaging, especially in receiving, storing, and preparing raw food products that arrive in alternative packaging materials.

**Preconditions and technical requirements**

- **Cost considerations:** As the institutional catering industry operates within tight budgets, particularly in public sectors like education and healthcare, biodegradable packaging solutions must be cost-effective or supported by financial incentives to make the transition feasible.
- **Food safety compliance:** Packaging must comply with food safety regulations, ensuring that raw foods like meat, vegetables, and dairy products are safely transported without contamination. Biodegradable materials need to perform under varying conditions, including refrigeration.
- **Biodegradable food packaging:** The packaging used for raw foods (meat, vegetables, fruits, dairy, etc.) must be strong enough to withstand handling and transportation. Biodegradable options such as cardboard boxes with moisture-resistant liners, compostable bags, or plant-based wraps are alternatives to plastic. These materials must maintain the food's freshness and safety during storage, particularly under refrigerated or frozen conditions.
- **Storage and refrigeration adjustments:** Depending on the type of biodegradable packaging used, minor adjustments may be needed in how food is stored in refrigeration units to ensure the packaging retains its integrity. Packaging that is compostable or moisture-sensitive may require more careful stacking and handling.

**Operational description – step-by-step actions to be taken**

1. Start by reviewing your current suppliers and working with those who can switch to biodegradable packaging. Update contracts and procurement policies to specify requirements for sustainable packaging for raw food and food products.
2. Work with suppliers to pilot biodegradable packaging options, ensuring that they meet the quality standards required for institutional catering. This pilot phase will help you assess the packaging's performance, durability, and impact on the food supply chain.
3. Train your staff in the proper handling and storage of raw food products in biodegradable packaging. They should understand how to manage the packaging to prevent damage or compromise to food safety.
4. Adjust kitchen workflows to ensure biodegradable materials are properly handled, stored, and disposed of. This might involve slight changes in how items are unpacked and stored or how waste is separated for composting or recycling.
5. Monitor the performance of biodegradable packaging, gathering feedback from kitchen staff on ease of use and durability. Assess the waste stream to ensure that biodegradable materials are being processed as intended.
6. Continuously review your partnerships with suppliers and waste management providers, seeking improvements in packaging options and disposal processes.

### Measure 2. Shifting from single-use to reusable transport packaging

Institutional catering providers can replace single-use transport packaging (e.g., cardboard boxes and plastic wraps) with durable, reusable alternatives, such as crates, bins, or pallets.

**Involved stakeholders and their roles**

- **Catering service providers:** Procure and purchase food from the suppliers transporting products in reusable transport packaging.
- **Reusable packaging service provider:** Supply, manage, and clean reusable transport packaging items.
- **Suppliers and distributors:** Adapt their operations to accommodate the use of reusable containers in deliveries.

**Preconditions and technical requirements**

- **Established reusable transport packaging system:** The existence of a city- or national-level reusable transport packaging system or service provider that collects, cleans, and redistributes reusable transport packaging across institutions.
- **Storage facilities:** Dedicated space for storing reusable containers before and after use.
- **Logistics system integration:** Coordination with suppliers and service providers to facilitate packaging return and cleaning.
- **Cleaning facilities:** Centralised or outsourced cleaning services to ensure reusable packaging meets hygiene requirements.

**Operational description – step-by-step actions to be taken**

1. Engage a reusable packaging provider to access return logistics and cleaning services.
2. Coordinate with suppliers to replace single-use transport packaging with reusable containers for deliveries.
3. Train staff on handling, storing, and returning reusable transport packaging to ensure efficient use.
4. Establish a workflow for collecting and returning reusable containers after each delivery.
5. Ensure the packaging is returned to the service provider for cleaning and redistribution.
6. Use tracking systems to monitor packaging usage, minimise losses, and improve operational efficiency.

### Measure 3. Shifting from plastic single-use to plastic reusable transport packaging

Institutional catering service providers can replace single-use plastic transport packaging, such as plastic wraps used for securing items during delivery, with reusable plastic or rubber elastics. These durable, flexible solutions reduce waste while maintaining secure and efficient transport of goods.

**Involved stakeholders and their roles**

- **Catering service providers:** Implement the use of reusable packaging in their supply chain and internal operations.
- **Suppliers and distributors:** Adopt reusable packaging for secure delivery of goods.
- **Logistics teams:** Ensure proper use, handling, and return of packaging after delivery.

**Preconditions and technical requirements**

- **Availability of suppliers and distributors:** The institutional catering service provider can only apply this measure if there are suppliers and distributors on the market who are using or are willing to use reusable packaging in food delivery.
- **Storage facilities:** Designate areas for storing reusable packaging after use to ensure their accessibility and proper maintenance.

**Operational description – step-by-step actions to be taken**

- Collaborate with suppliers and distributors to replace plastic wraps with reusable elastics in transport processes.
- Establish a system for collecting and storing elastics after each use.
- Track performance and gather feedback from staff and suppliers to optimise the system and address any challenges.

## 4.2 Meal production and delivery

### Measure 4. Shifting from single-use to reusable delivery containers

This action focuses on replacing the single-use containers used for food transport from the central production kitchen to schools with reusable, multiple-use containers. The goal is to minimise waste from single-use delivery containers and to establish a sustainable, efficient logistics system.

**Involved stakeholders and their roles**

- **Central kitchen staff:** The exact role depends on the washing system chosen.
- **Onsite kitchen staff:** The exact role depends on the washing system chosen.

**Preconditions and technical requirements**

- **Cleaning and sanitisation infrastructure**: A cleaning system needs to be in place to ensure that the reusable containers are washed and sanitised after each use, ensuring hygiene and safety standards. This could be done by an external washing service provider, in the central kitchen's washing facilities, or at the washing stations installed at the school that receives the food.
- **Reusable delivery containers:** These should be durable, stackable, insulated containers capable of holding large volumes of food for transportation. They must comply with food safety standards.
- **Washing infrastructure:** Based on the chosen cleaning option (external company, central kitchen, or on-site), suitable facilities for cleaning the containers are needed.
- **Transport logistics:** A transport and inventory system to manage the movement of containers between the central kitchen and the schools needs to be established.

**Operational description – step-by-step actions to be taken**

1. Purchase thermally insulated, food-safe containers.
2. Set up systems for tracking and cleaning reusable containers, with assigned responsibilities for central kitchen staff, external washing companies, or staff.
3. Provide training for production and service kitchen staff, and selected pupils on container handling, cleaning, and maintenance.
4. Start with a few schools to test the logistics and resolve issues before full-scale implementation. Track container usage, cleaning efficiency, and resolve logistical or operational challenges.

## 4.3 Food serving

### Measure 5. Replacing single-use trays with Gastronorm trays

This measure describes replacing single-use serving trays with Gastronorm (GN) trays, which offer a durable, reusable solution that reduces packaging waste, improves operational efficiency, and aligns with sustainability goals. GN trays, standardised for foodservice operations, can be used for food storage, transportation, and serving, making them an ideal alternative for institutional catering settings.

**Involved stakeholders and their roles**

- **Catering service providers:** Responsible for adopting and implementing GN tray systems in food service lines.
- **Equipment suppliers:** Provide GN trays, compatible lids, and accessories tailored to institutional catering requirements.
- **Cleaning and maintenance staff:** Ensure proper cleaning and sanitisation of trays to maintain hygiene standards.

**Preconditions and technical requirements**

- **GN trays and accessories:** Availability of GN trays in appropriate sizes and materials (e.g., stainless steel, polypropylene) to match food service needs.
- **Dishwashing infrastructure**: On-site or outsourced dishwashing facilities capable of cleaning and sanitising GN trays effectively and efficiently.
- **Transport equipment:** Trolleys and carts compatible with GN trays to streamline movement between kitchens, serving lines, and dishwashing areas.

**Operational description – step-by-step actions to be taken**

1. Procure a sufficient number of GN trays in various sizes for food service, storage, and transport. Purchase also necessary accessories, such as compatible lids, handles, and racks.
2. Set up storage systems to accommodate GN trays
3. Purchase and install industrial-grade dishwashers capable of cleaning large volumes of GN trays quickly to meet service demands.
4. Establish a workflow for collecting, cleaning, and sanitising trays after each use.
5. Train staff to handle and serve food using GN trays, emphasising proper hygiene and operational efficiency.
6. Regularly inspect trays for wear and replace damaged ones as needed.
7. Track operational performance, including tray turnaround times and cleaning efficiency.

### Measure 6. Replacing single-use dishes with reusable ones

This measure describes replacing single-use dishes (e.g., plates, bowls, and cutlery) with multiple-use alternatives made from durable materials such as ceramic, stainless steel, or hardened glass.

**Involved stakeholders and their roles**

- **Catering service providers:** Responsible for procuring, implementing, and maintaining the multiple-use dish system.
- **Dishware suppliers:** Provide durable, food-safe, and reusable dishes tailored to the catering provider's needs.
- **Cleaning and maintenance Staff:** Manage dish collection, cleaning, and sanitisation.
- **Customers (students, patients, staff, etc.):** Indirectly participate by using and returning reusable dishes appropriately.

**Preconditions and technical requirements**

- **Reusable dish inventory:** A sufficient number of durable dishes (plates, bowls, cups, and cutlery) to accommodate peak service demand and cleaning turnaround times.
- **Dishwashing equipment:** Industrial-grade dishwashers capable of efficiently handling the increased volume of reusable dishes.
- **Dish transport and storage:** Trolleys and racks to transport dirty dishes and store clean ones.
- **Collection points:** Stations for collecting used dishes, ensuring smooth workflow from dining areas to dishwashing facilities.

**Operational description – step-by-step actions to be taken**

1. Purchase durable, food-safe reusable dishes and supporting equipment like racks and carts.
2. Upgrade or enhance dishwashing facilities to manage the increased workload.
3. Establish a streamlined process for collecting, cleaning, and redistributing dishes.
4. Train staff on proper handling of reusable dishes to avoid damage and ensure efficiency.
5. Monitor cleaning standards to ensure hygiene compliance.
6. Inform diners about the switch to reusable dishes and encourage proper return behaviour (e.g., returning dishes to collection points).
7. Regularly inspect reusable dishes for wear and replace damaged ones.
8. Monitor operational performance, including dishwashing efficiency and breakage rates.

### Measure 7. Shifting from single-use to reusable meal packages

This solution addresses the shift from single-use meal packaging to reusable, multiple-use containers for meal service in institutional catering, allowing customers (students, patients, etc.) to carry meals within the building, such as from the cafeteria to classrooms, beds, common areas, or other locations.

**Involved stakeholders and their roles**

- **Catering service provider:** Oversees the procurement of containers, implementation of the system, and coordination of cleaning services (either onsite or external).
- **Cafeteria and kitchen staff:** Responsible for preparing meals in reusable containers, managing the collection, and ensuring that containers are properly cleaned and sanitised.
- **Customers (students, patients, staff, etc.):** Play a key role in transporting their meals in reusable containers within the building and returning them to designated collection stations after use.
- **External cleaning service (if applicable):** May handle the cleaning and sanitising of containers if the school does not have sufficient onsite dishwashing capacity.

**Preconditions and technical requirements**

- **Multiple-use meal containers**: These containers should be durable, food-grade, and suitable for multiple uses. They should be lightweight and portable, spill-proof, and leak-resistant to prevent food or liquid from spilling while being transported. Containers should be designed to save space when stored or returned for cleaning.
- **Cleaning and sanitising systems**: Catering service providers must have adequate cleaning infrastructure, including dishwashers or manual washing stations, to ensure the reusable containers are properly sanitised after each use.
- **Storage and tracking system**: A system to store and track the containers is needed to avoid losses and ensure all containers are returned and cleaned in a timely manner.

**Operational description – step-by-step actions to be taken**

1. Purchase high-quality, food-safe, reusable meal containers that are designed for mobility. These containers should be suitable for various meal types (solid and liquid foods).
2. Implement a collection and cleaning system within the school, such as central collection points for students to return containers after meals. The school cafeteria or an external service can clean and sanitise the containers before their next use.
3. Create designated areas around the school (cafeteria, classrooms, common areas) where students can easily return used containers. A system should be in place to promptly collect and clean the containers.
4. Provide training for cafeteria staff, teachers, and students on how to properly use, transport, and return the containers. Emphasise the importance of hygiene, proper handling, and timely return of the containers.

5. Start with a small-scale pilot program to identify any logistical challenges, such as handling spills, managing container returns, or ensuring proper cleaning. Adjust the system based on feedback before full-scale implementation.

**Piloting:** This measure has been piloted during the Change(K)now! project. Details about the pilot can be found in the pilot case description "Reusable food containers in Copenhagen's schools".

## 4.4 Consumption of food and beverages in canteens and kiosks

### Measure 8. Shifting from single-use soft drinks to tap water

This measure is about shifting from using soft drinks (e.g., soda, juice, iced tea, flavoured water) in canteens and cafeterias to using only tap water as a beverage. Tap water can be provided in jugs, at water filling stations, or at water fountains.

**Involved stakeholders and their roles**

- **Food service providers:** cafeteria and food service operators are responsible for planning and implementing the shift to tap water in canteens and kiosks. Food service providers need to replace single-use bottled beverages with tap water, train staff to promote its use, and maintain the jugs and water stations. They need to collaborate closely with institutional management when choosing the best option for providing tap water and determining whether the institution needs broader infrastructure for it.
- **Institutional management** (schools, hospitals, government offices): management will be responsible for the overall planning and funding of the shift to tap water. They will also play a key role in fostering acceptance and commitment to the transition.
- **Staff, students, patients, and visitors:** the end users who will shift their beverage consumption habits need to be engaged and educated about the benefits of choosing tap water over bottled drinks.

**Preconditions and technical requirements**

- **Access to safe tap water:** Institutions must have access to clean, safe, and reliable tap water.
- **Staff and consumer trust in tap water:** Both staff and consumers (students, employees, patients, etc.) must trust the safety and quality of the tap water provided.
- **Water jugs:** The easiest and least expensive way is to provide water in jugs in canteens and kiosks. However, this requires additional work, as the jugs need to be cleaned daily and refilled multiple times throughout the day.
- **Water refill stations:** Another option is to install the water refill stations in dining areas, cafeterias, and food service sections. Depending on the available space, these can be wall-mounted, countertop models, or free-standing dispensers.
- **Drinking fountains:** Drinking fountains can also be installed in canteens, kiosks, and/or corridors. The institutional management should support the latter.
- **Water filtration systems:** In regions where water quality may be a concern, water filtration systems need to be installed or upgraded to ensure a consistent supply of clean drinking water.
- **Reusable bottles:** It is suggested to provide the customers with reusable bottles (stainless steel, glass, or BPA-free plastic).

**Operational description – step-by-step actions to be taken**

1. Conduct an initial assessment of the institution's current water supply infrastructure. Identify areas where to install or upgrade refill stations, fountains, or filtration systems.
2. Gradually phase out single-use bottled beverages from vending machines, cafeterias, and dining halls. Replace them with tap water options and communicate the reasons for the change to the public.
3. Create and distribute educational materials highlighting the environmental and economic benefits of choosing tap water over bottled soft drinks. Include the information about the safety and reliability of tap water and the health benefits of drinking tap water. These materials can be displayed on digital screens, posters in cafeterias, and in staff newsletters.
4. Train food service staff to encourage the use of refill stations, maintain refill infrastructure, and handle any customer questions or concerns about water quality. Include training on proper cleaning and maintenance of water refill stations.
5. Track the usage of refill stations, get feedback from staff and consumers, and adjust the program as needed. If there are concerns about water quality or availability, address them immediately to maintain trust.

### Measure 9. Shifting from (plastic) packaging to no packaging (food)

This action focuses on eliminating single-use plastic packaging for ready-to-eat food items, such as buns, sandwiches, and pastries, by serving them without any packaging in public institutions' canteens and kiosks. The shift aims to reduce waste, promote sustainability, and encourage more environmentally friendly practices in institutional catering.

**Involved stakeholders and their roles**

- **Food service providers:** Responsible for implementing the day-to-day operations, including preparing, presenting, and serving unpackaged food. They are responsible for maintaining hygiene standards, training staff, and ensuring customer satisfaction. They must also allocate budgets for necessary infrastructure upgrades (e.g., trays, cleaning equipment) and ensure compliance with food safety regulations.
- **Institutional management** (schools, hospitals, elderly homes): Management of public institutions should provide leadership and approve the switch to no packaging.
- **Consumers (staff, students, visitors):** Consumers are the primary users who will need to adapt to the new system of packaging-free food. They play a crucial role by participating in reusable programs, bringing their own containers, and supporting the initiative.
- **Suppliers of reusable items:** Suppliers will need to provide institutions with a steady supply of reusable trays, plates, or takeaway containers and protective barriers. They can also assist with logistics and resupply in case of increased demand.

**Preconditions and technical requirements**

- **Adequate infrastructure for serving unwrapped food:** Cafeterias, canteens, and kiosks need appropriate serving and display setups, such as trays, protective covers (e.g., sneeze guards), and counters, to present food hygienically without packaging.
- **Trays and containers:** Institutions will need an adequate supply of reusable trays, plates, or food containers that can be easily washed and reused.
- **Sneeze guards/Protective barriers:** To ensure food hygiene, institutions must install protective barriers (e.g., sneeze guards) over food displays where items like sandwiches and buns are offered without packaging.
- **Cleaning and sanitisation equipment:** Adequate cleaning facilities must be in place to ensure the reusable trays, plates, and containers are properly sanitised after use.
- **Clear communication and signage:** End users (staff, students, patients, etc.) must be willing to accept food served without packaging. Public awareness campaigns may be necessary to explain the benefits of the shift and manage consumer expectations. Signage must be available to guide consumers through the process, such as signs encouraging the use of reusable trays or boxes and explaining the purpose of the no-packaging initiative.

**Operational description – step-by-step actions to be taken**

1. Conduct an assessment of current food items that are wrapped in single-use packaging (e.g., sandwiches, buns, baked goods). This assessment should identify how many items are sold and under what conditions they require packaging.
2. Purchase necessary equipment (trays, protective barriers, etc.). Eliminate the use of disposable wrappers, plastic bags, or packaging materials in food service lines.
3. Train kitchen and food service staff on how to handle and present unpackaged food while maintaining hygiene standards. Training should include food safety practices like using gloves, maintaining clean serving areas, and monitoring cross-contamination risks.
4. Develop and distribute materials that explain the environmental benefits of going packaging-free and how it contributes to reducing plastic waste. Information can be provided on posters, websites, and cafeteria screens. Communicate clearly how food hygiene is maintained even when items are not wrapped. This is especially important in settings such as hospitals and schools, where food safety is a priority. Use digital platforms to inform students and visitors about the switch to no-packaging and the actions they can take (e.g., bringing reusable containers).
5. Monitor consumer feedback and operational challenges during the early phase of implementation. Adjust serving methods, signage, or additional hygiene measures as needed to ensure food safety and consumer satisfaction.

**Piloting:** This measure has been piloted during the Change(K)now! project. Details about the pilot can be found in the pilot case description "Replacing single-use food packaging with reusable trays in Tallinn hospitals".

### Measure 10. Shifting from single-use bulk packaged to small portions of non-packaged food

This action focuses on shifting from the sale of cookies, candies, and other small snack items in large single-use bulk packaging to offering them in smaller, non-packaged portions. The aim is to reduce single-use packaging waste, encourage more conscious consumption, and potentially offer consumers healthier and more cost-effective choices.

**Involved stakeholders and their roles**

- **Food service providers (cafeterias, kiosks):** These teams will implement the change by purchasing appropriate display bins and utensils, setting up the self-serve stations, training staff, and managing day-to-day operations, including monitoring hygiene and replenishing stock.
- **Institutional management:** Responsible for overseeing the implementation of the packaging-free system, including budget allocation and compliance with health and safety regulations.
- **Consumers:** Consumers play a key role in accepting the new system, understanding how to hygienically serve themselves, and potentially bringing their own containers. Their feedback will be crucial in refining the program.

**Preconditions and technical requirements**

- **Infrastructure for display and distribution:** There must be adequate infrastructure to hygienically display unpackaged small portions, such as bins, jars, or dispensers, with tools like scoops or tongs for serving to ensure hygiene.
- **Consumer acceptance and willingness:** Consumers must be comfortable with the concept of buying food in small portions without packaging. Awareness campaigns may be needed to explain the benefits of the shift, including reduced waste, cost savings, and improved health.
- **Display bins and dispensers:** Purchase and install clear, airtight display bins or dispensers to store and present items like cookies, candies, and snacks in bulk, allowing customers to select the quantity they want.
- **Hygiene infrastructure:** Protective sneeze guards, frequent sanitisation of containers and scoops, and guidelines for handling unpackaged food are critical for maintaining safety standards. Food service staff may also need gloves and cleaning supplies to maintain hygiene.
- **Reusable or compostable containers:** Offer consumers the option to use their own reusable containers or provide compostable paper bags for smaller portions. You can incentivise the use of reusable containers by offering discounts or rewards.

**Operational description – step-by-step actions to be taken**

1. Assess which items (e.g., cookies, candies, nuts, dried fruit) can be sold without packaging while maintaining freshness and hygiene. Consider the shelf life and environmental conditions needed to store these items safely.
2. Set up dedicated areas with gravity-fed dispensers, bulk bins, or jars for consumers to serve themselves or request a portion. Ensure bins are labelled with product names, prices, and nutritional information.
3. Install protective sneeze guards and provide scoops, tongs, or serving utensils that customers can use to serve small portions without contaminating the rest of the product.
4. Train staff to monitor and maintain the cleanliness of the self-serve area, refill bins, and ensure that serving utensils are sanitised regularly. They should also be prepared to help consumers with portioning or answer questions about the new system.
5. Establish a pricing system based on the weight or quantity of small portions. For instance, price cookies, candies, and snacks by the gram or piece to allow customers to purchase as much or as little as they want, providing a more flexible, cost-effective option.
6. Encourage customers to bring their own reusable containers by offering a small discount or incentive. Alternatively, provide reusable jars or compostable bags for reuse or sustainable disposal. Include signage explaining the benefits of reducing packaging waste.
7. Gather feedback from consumers and adjust the system as needed. For example, if consumers prefer portion recommendations, consider offering pre-measured scoops. Regularly assess hygiene practices, replenish supplies, and ensure that the system operates smoothly.

**Piloting:** This measure has been piloted during the Change(K)now! project. Details about the pilot can be found in the pilot case description "Introducing packaging-free solutions for school cafeterias in Tallinn".

### Measure 11. Shifting from plastic to an alternative biodegradable packaging material

For institutional catering providers with on-site production or central production kitchens, replacing plastic wrap with biodegradable packaging for sandwiches, buns, and similar items offers a practical way to reduce environmental impact. This approach is particularly suited for operations where items are freshly prepared and packaged for immediate or short-term consumption.

**Involved stakeholders and their roles**

- **Catering service providers:** Responsible for sourcing, using, and educating staff on biodegradable materials.
- **Packaging suppliers:** Provide a steady supply of biodegradable packaging tailored for fresh food items.
- **Consumers:** Actively engage in disposing of biodegradable packaging in the correct waste stream.

**Preconditions and technical requirements**

- **Packaging compatibility:** Biodegradable materials should maintain product freshness, moisture levels, and hygiene while being easy to handle and seal during production.
- **Packaging storage:** Biodegradable materials should be stored in a dry, temperature-controlled environment to maintain usability and integrity.
- **Packaging equipment:** Ensure compatibility of biodegradable materials with existing wrapping and sealing machines or invest in new equipment designed for such materials.
- **Waste sorting bins:** Install bins designated for biodegradable waste in food service areas to support proper disposal.

**Operational description – step-by-step actions to be taken**

1. Source biodegradable materials suited for food items, such as grease-resistant wraps or compostable containers. Choose materials that align with food safety standards and production workflows.
2. Adjust packaging procedures in onsite kitchens or central production facilities to accommodate biodegradable materials, ensuring staff are trained in their use.
3. Train kitchen staff on proper handling and storage of biodegradable materials to avoid waste.
4. Use signage and designated bins to streamline disposal for staff and customers.
5. Monitor packaging efficiency, product freshness, and customer feedback to refine material selection and processes.

### Measure 12. Shifting from single-use bulk packaged to reusable containers

This solution addresses the need to move away from providing food in small, single-use packages (e.g., yoghurt, juice, individual servings) by shifting to bulk packaging for on-site consumption, distributed into multiple-use dishes and containers. It aims to reduce packaging waste, lower costs, and encourage sustainable practices in cafeterias, dining halls, or other public dining settings.

**Involved stakeholders and their roles**

- **Food service management:** Oversee the procurement of bulk food products, reusable dishes, and the implementation of the system. Facility managers ensure that the shift to bulk packaging and reusable dishes aligns with food safety regulations and operational capacity.
- **Cafeteria or dining hall staff:** Responsible for managing food service, including operating bulk dispensing systems and overseeing dish collection and cleaning. Staff will also guide customers in using the new system to ensure a smooth transition.
- **Customers**: Customers are responsible for participating in the system by using the reusable dishes and returning them after eating.

**Preconditions and technical requirements**

- **Reusable dishes and containers:** Durable and washable containers such as bowls, cups, and plates are required for onsite food service. These should be easy to clean, stackable, and designed for repeated use.
- **Dishwashing and cleaning facilities:** The facility needs an efficient cleaning system, such as commercial dishwashers, to handle the increased volume of reusable containers. This system must comply with hygiene and safety standards, ensuring that dishes are properly sanitised after each use.

**Operational description – step-by-step actions to be taken**

1. Establish contracts with suppliers to provide food items in bulk packaging rather than individually wrapped portions. Products like yoghurt, soups, cereals, and other frequently served items should be available in large containers for easy dispensing into reusable dishes.
2. Acquire a range of reusable bowls, cups, plates, and containers that can be used for different food types. Ensure that these are sturdy, reusable, and suitable for the types of food being served.
3. Set up self-serve or staff-managed bulk dispensing stations where students or customers can receive food from bulk packaging directly into reusable dishes. These stations should be user-friendly and minimise food waste.
4. Introduce the shift to reusable containers and bulk food serving through a communication campaign that explains how the system works, its environmental benefits, and the role of students or customers in returning used dishes.
5. Set up clear collection points in the dining area where students or customers can return their used dishes and containers. Ensure that the dishwashing system can

handle the volume of dishes and that clean dishes are readily available for each meal service.

6. Track dish return rates, dishwashing efficiency, and overall customer satisfaction. Adjust the system as needed, adding more collection points, optimising dishwashing schedules, or increasing the stock of reusable dishes.

**Piloting:** This measure has been piloted during the Change(K)now! project. Details about the pilot can be found in the pilot case description "Introducing packaging-free solutions for school cafeterias in Tallinn".

### Measure 13. Shifting from single-use multilayer packaged to refillable deposit bottled beverages

This measure aims to shift from single-use multilayer packaged beverages (e.g., small juice boxes with straws) to healthier soft drinks packaged in refillable deposit bottles. Such systems can only be implemented in countries with established deposit return schemes that refill bottles (e.g., Germany, Sweden). In addition to reducing packaging waste, this solution promotes healthier beverages (e.g., organic drinks without added sugar) as part of the shift to sustainable consumption.

**Involved stakeholders and their roles**

- **Catering service providers:** Responsible for procuring refillable deposit bottles, managing inventory, and promoting the switch to customers.
- **Beverage suppliers and bottling companies:** must supply beverages in refillable bottles and ensure easy returns through the deposit return scheme.
- **Deposit return scheme operators:** support the infrastructure for bottle returns, collection, and refilling.

**Preconditions and technical requirements**

- **Bottle storage and return facilities:** Dedicated storage space for empty deposit bottles is required. Operators need easily accessible collection points or reverse vending machines (where feasible) for bottle returns.
- **Supplier network for healthier beverages:** Availability of suppliers who offer healthier, organic, no-sugar-added drinks in refillable deposit bottles.

**Operational description – step-by-step actions to be taken**

1. Identify suppliers that offer refillable deposit bottles with healthier, organic drink options. Negotiate terms that align with the DRS and provide competitive pricing.
2. Promote the environmental and health benefits of refillable bottles and healthier beverages through signage, digital displays, and staff communication.
3. Set up storage and return processes for empty bottles, and work with DRS operators to facilitate regular pickups. Educate staff on deposit, return, and refund management.
4. Track product turnover, bottle return rates, and customer feedback to optimise inventory and improve service quality.

## 4.5 Food takeaway from canteen and kiosks

### Measure 14. Introduction of a reusable lunch box for food

This action focuses on providing students with reusable lunch boxes, replacing single-use packaging for food. This lunch box can be used to take away school food from the canteen, e.g., for school trips or when collecting the school lunch from the canteen or kiosk. Each student is given their own set, eliminating the need for disposable containers and reducing plastic waste while fostering a culture of environmental responsibility and sustainability within schools.

**Involved stakeholders and their roles**

- **School administration:** Responsible for organising and funding the program, purchasing the reusable containers, and overseeing implementation. They also play a key role in communicating the importance of the initiative to students and parents.
- **Teachers and staff:** Teachers should encourage the use of reusable containers by integrating the program into daily school routines (e.g., reminding students to use their containers during lunch). Support staff, such as custodians or kitchen workers, may be involved in cleaning the containers if the school offers this service.
- **Parents and guardians:** Parents are essential partners in this program. They need to ensure that students bring their reusable containers to school daily, clean them at home (if not done at school), and encourage their children to take care of their lunch boxes and bottles.
- **Students:** Students must take responsibility for using and maintaining their reusable containers. They should be educated on the environmental impact of single-use packaging and the importance of personal responsibility in sustainable habits.

**Preconditions and technical requirements**

- **Reusable lunch boxes and bottles:** The school should provide each student with a set of reusable food containers and drink bottles made from durable, food-grade materials such as stainless steel, BPA-free plastic, or silicone. The containers should be easy for younger students to open.
- **Cleaning facilities:** Ideally, schools should provide designated areas where students can wash their lunch boxes and bottles after use. If this is not feasible, encourage students to take the containers home for cleaning. Some schools may choose to offer an optional dishwashing service for students.
- **Storage and personalisation:** Lunch boxes and bottles should be clearly labelled or personalised with the student's name to avoid mix-ups. Schools could provide markers, stickers, or other means of customisation to make it easier for students to identify their items.
- **Student and parent engagement:** Students and parents must be aware of the program's goals and benefits. They must agree to take responsibility for using and maintaining the reusable containers.

**Operational description – step-by-step actions to be taken**

1. Schools should procure high-quality reusable lunch boxes that are suitable for students of all ages. The containers should be durable, easy to clean, and designed to last for several years.
2. At the start of the school year (or during the program launch), distribute a lunch box to each student. Provide instructions for proper use and care, and ensure students and parents understand the importance of using these items daily.
3. If schools choose to offer cleaning facilities, set up a system for washing and storing the containers. If this is not possible, remind students to take their containers home daily for cleaning. Encourage parents to reinforce this habit at home.
4. Monitor the success of the program through regular check-ins with students and staff. Ensure that students consistently use their lunch boxes and bottles and address any issues, such as lost or damaged containers, through periodic replacements or reminders.

### Measure 15. Introduction of reusable deposit containers

This measure describes the introduction of reusable deposit containers, e.g., cups, and/or boxes, in institutional catering services instead of single-use containers.

**Involved stakeholders and their roles**

- **Catering service providers:** Responsible for integrating the external system's containers into their operations and promoting participation among customers.
- **External deposit system operators:** Manage the collection, cleaning, redistribution, and deposit/refund mechanisms for containers.
- **Customers (students, patients, staff, etc.):** Participate by returning containers to designated city or national return points for deposit refunds.

**Preconditions and technical requirements**

- **Established deposit system:** The existence of a city- or national-level reusable deposit system that collects, cleans, and redistributes reusable containers across institutions.
- **External collection and return points:** Easily accessible return points throughout the city or institution where customers can drop off used containers for refunds, managed by the external system.
- **Customer awareness and ease of participation:** Clear, consistent communication to ensure customers understand how to use the deposit system, including where and how to return containers across locations.

**Operational description – step-by-step actions to be taken**

1. Select a suitable deposit system provider to introduce standardised reusable containers (cups/boxes) into the catering operations.
2. Promote customers' awareness of the external deposit system, including information on how to participate, where to return containers, and the environmental benefits of reusable options.
3. Work with the external provider to arrange a sufficient supply of the containers. Ensure the system includes reliable tracking and oversight for timely container availability.
4. Track customer engagement and the operational efficiency of the external system. Collect data from customer feedback to improve service and participation.

**Piloting:** This measure has been piloted during the Change(K)now! project. Details about the pilot can be found in the pilot case description "Introducing reusable deposit systems in school canteens in Hamburg".

**Change(K)now! – 2026**

Website: https://interreg-baltic.eu/project/change-know/


*The Change(K)now! project is co-funded by the Interreg Baltic Sea Region Programme.*

*The project's main objective is a mindset change from single-use to circular or multiple-use of food delivery systems in cities and among residents of the Baltic Sea Region.*