

Case studies:

Circular food delivery systems for takeaway

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Interreg
Baltic Sea Region



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CIRCULAR ECONOMY

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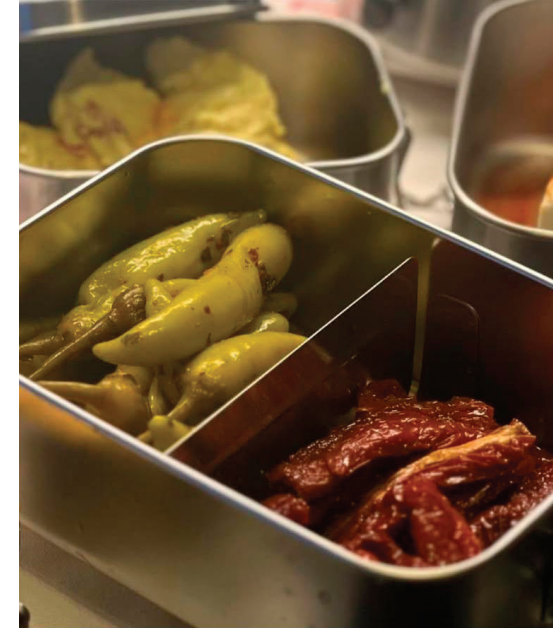
SURI SIGNATURE

Comparing reuse strategies for takeaway food at weekly markets

Testing bring-your-own and pooling systems in real market conditions

Weekly food markets are an important part of everyday food consumption in Hamburg. SURI Signature GmbH used the pilot to test whether reusable takeaway packaging could be introduced under real market conditions without reducing sa-

les. Two markets with different customer profiles were selected: Goldbekmarkt with many regular customers and Isemarkt with a higher share of spontaneous visitors. This allowed the project to compare two reuse strategies in practice.



Category
Weekly food market

Theme
Reusable takeaway packaging strategies for street food

Climate technology
Bring-your-own container model and provider-owned reusable bowl pooling system

Organisations
SURI Signature GmbH, REBOWL / RECUP, BEF Germany, Kiel University

Reductions

Single-use takeaway containers reduced through reusable container options

Gains

Two reuse strategies tested at different weekly markets

Bring-your-own containers used mainly by regular customers

Reusable bowl pooling system suited for spontaneous visitors

Investment

Reusable containers

Operational adjustments and washing logistics

Staff training and communication materials

●●●●●
Acceptability

●●●●●
Feasibility

●●●●●
Scalability



Climate return on investment

The pilot showed that reusable takeaway systems can work at weekly food markets without negatively affecting sales. By testing two different reuse models, the project generated insights into how customer behaviour and market structure influence the success of reusable packaging.

Things to be aware of

Customer behaviour differs strongly between markets. Locations with regular customers were more suited to bring-your-own systems, while markets with many one-time visitors required low-barrier deposit-based container systems.

How to get started!

1

Analyse customer behaviour

Identify whether the market mainly attracts regular customers or spontaneous visitors.

2

Select an appropriate reuse model

Test bring-your-own containers or provider-owned pooling systems depending on customer profiles.

3

Train staff to promote reuse

Explain the system directly at the point of sale and guide customers through the process.

4

Use incentives for behaviour change

Offer discounts or simple deposit systems to encourage customers to choose reusable containers.

Scaling potential



Reuse systems can be scaled at food markets when the chosen model matches the customer profile.



Combining different reuse strategies may be necessary in urban environments with diverse visitor groups.

Requirements



Technical:
Reusable food containers and washing logistics.



Economic:
Investment in reusable containers and operational adjustments.



Organisational:
Staff training and cooperation with pooling system providers.



Competence:
Customer communication and behaviour-change incentives.

ANYKŠČIAI MUNICIPALITY

Municipal reuse system for take-away food in Anykščiai

Testing a city-wide reusable container model for restaurants and cafés

Anykščiai Municipality developed and tested a local reuse system for takeaway food, combining municipal coordination with practical solutions for cafés and restaurants. The pilot focused on

introducing reusable containers supported by a deposit-return system, aiming to reduce single-use packaging while ensuring the system worked in everyday local food service operations.

**Category**

Municipal reuse system for take-away food

Theme

Reusable packaging for local food service

Climate technology

Shared reusable container system with deposit return

Organisations

Anykščiai Municipality,
local restaurants and cafés

System setup

Municipality-led reusable container system with €3–4 deposit

Participation

16 restaurants and cafés joined the pilot

Key insights

A simple trust-based system without apps or QR codes proved easy for both businesses and residents to adopt.

**Acceptability****Feasibility****Scalability**



Climate return on investment

The pilot demonstrated that municipalities can initiate reuse systems even without national legislation requiring reusable packaging. By introducing a shared container pool and deposit system, Anykščiai enabled local restaurants to offer reusable take-away packaging without investing individually in infrastructure. The initiative reduced dependence on single-use packaging while strengthening cooperation between businesses and the municipality.

Things to be aware of

The system relied on voluntary participation from restaurants, which required continuous communication and trust-building. Public procurement rules prioritising the lowest price also created challenges when selecting durable reusable containers.

How to get started!

1

Build a local reuse coalition

Engage restaurants and cafés early and develop agreements for participation.

2

Provide shared containers

Procure standardised reusable containers and distribute them to participating businesses.

3

Introduce a simple deposit system

Allow customers to return containers at any participating establishment.

4

Communicate locally

Use signage, stickers and local media to familiarise residents with the system.

Scaling potential



The pilot shows that small municipalities can lead reuse transitions by providing shared infrastructure and coordination.



The system is transferable to other towns where restaurants are located within a compact urban area.

Requirements



Technical
Standardised reusable take-away containers



Economic
Municipal investment in container procurement



Organisational
Coordination between municipality and restaurants



Competence
Communication campaigns targeting both residents and businesses

CITY OF COPENHAGEN

City-wide reuse system with reverse vending machines

Testing reusable takeaway packaging infrastructure in Copenhagen

Copenhagen launched a city-wide reusable packaging system using reverse vending machines placed in public spaces. The system combines reusable takeaway packaging, digital deposit refunds

and QR-based return technology to support reuse across cafés, food courts and takeaway businesses in the inner city.

**Category**

Urban takeaway reuse infrastructure

Theme

Reusable takeaway packaging in public spaces

Climate technology

Reusable packaging system with reverse vending machines and digital deposits

Organisations

City of Copenhagen, NewLoop, Torvehallerne and participating businesses

Reductions

Single-use takeaway packaging reduced through city-wide reuse system

Gains

38 return points installed across central Copenhagen

Digital deposit refund system launched through QR-based app

Torvehallerne food court integrated into the system

Investment

Reverse vending machines and digital infrastructure

Business incentives and operational coordination

Communication and behavioural nudging activities

**Acceptability****Feasibility****Scalability**



Climate return on investment

The pilot demonstrated how municipalities can support city-wide reuse systems through public procurement, strategic partnerships and financial incentives. Reverse vending machines simplified the return process and created the foundation for a scalable reuse infrastructure.

"Reuse only becomes mainstream when returning the packaging is as easy as throwing it away."

— City of Copenhagen

Things to be aware of

City-wide systems require strong coordination between technology providers, businesses and municipalities. User participation depends on convenient return infrastructure and clear communication.

How to get started!

1

Install public return infrastructure

Place reverse vending machines in accessible urban locations.

2

Partner with local businesses

Recruit cafés and food vendors into the reuse system.

3

Simplify the return process

Use digital deposits and QR-based refunds.

4

Encourage user participation

Test behavioural nudging and communication measures.

Scaling potential



Public return infrastructure can support reusable packaging systems at city scale.



The model is particularly relevant for dense urban areas with high takeaway food consumption.

Requirements



Technical:
Reverse vending machines and digital deposit systems.



Economic:
Investment in infrastructure and business incentives.



Organisational:
Coordination between operators, businesses and municipalities.



Competence:
User communication and operational management.

BALTIC RESTAURANTS ESTONIA

Removing single-use packaging in workplace canteens

Testing reusable takeaway packaging in ministry canteens in Tallinn

In a joint ministry building in Tallinn, two workplace canteens tested the removal of disposable packaging for takeaway food. The pilot introduced multiple reusable options including bring-your-

own containers, deposit-based system and reusable boxes for purchase, aiming to reduce packaging waste in a closed workplace environment.



Category
Workplace takeaway food system

Theme
Reusable takeaway containers in institutional catering

Climate technology
Reusable container systems including bring-your-own, deposit and purchased containers

Organisations
Baltic Restaurants Estonia AS, Ringo Eco OÜ, Ministry building stakeholders

Reductions

Single-use takeaway packaging removed from workplace canteens

Gains

Reusable systems adopted by employees in the ministry building

Bring-your-own containers widely used by customers

Deposit system introduced with limited but growing use

Investment

Reusable containers and deposit system setup

Staff training and communication efforts

Operational adjustments in canteen workflows



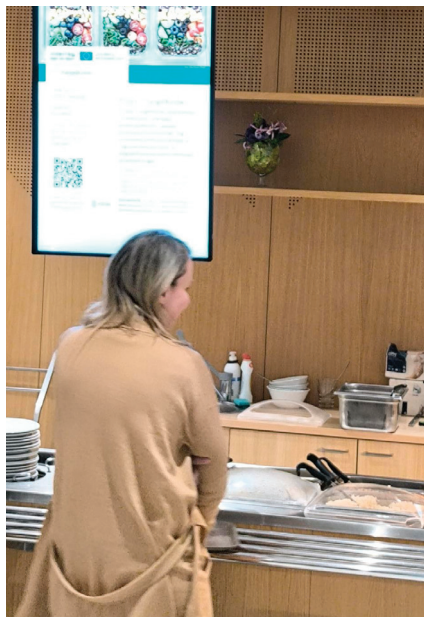
Acceptability



Feasibility



Scalability



Climate return on investment

The pilot showed that removing single-use packaging can significantly reduce waste while maintaining service efficiency. By offering several reusable options, users quickly adapted to new routines and reusable systems became the default choice.

“If you remove the disposable option, people quickly adapt to reusable solutions.”

– Tiiu Endrikson

Things to be aware of

User convenience is critical. If return systems are fragmented or require additional effort, adoption decreases. Clear communication and removing single-use alternatives are essential for success.

Scaling potential



Closed environments such as office buildings are highly suitable for reusable takeaway systems.



The approach can be replicated in workplaces, campuses and similar settings.

Requirements



Technical:
Reusable containers and return infrastructure.



Economic:
Initial investment in containers and deposit systems.



Organisational:
Staff training and coordination.



Competence:
Communication and user engagement.

How to get started!

1

Remove single-use options

Eliminate disposable packaging to drive behaviour change.

2

Offer multiple reuse options

Provide deposit systems, reusable containers and bring-your-own options.

3

Inform clients and train staff

Provide information signs and ensure employees understand new tasks and explain the system clearly to users.

4

Make return convenient

Install simple and accessible return solutions.

VENLOOP

Venloop pilot validates a high-return reuse system

Three vending machines, one delivery and long-shelf-life meals proved that reuse can work with minimal operational overhead.

The Venloop pilot introduced reusable-jar meal vending in a real-world office setting in Poland. The goal was to test whether smart vending, reusable jars and a digital deposit flow could create a practical low-waste food distribution model in

offices. Across the pilot, the system focused less on maximising immediate climate savings and more on validating user behaviour, return habits and operational simplicity.



Category
Food vending pilot

Theme
Reuse systems & circular food packaging

Climate technology
Smart vending, digital tracking and reusable jars

Organisations
Venloop, local restaurant partners, office hosts

Reductions

~17 kg CO2 saved through returned containers entering the next reuse cycle

~6 kg waste avoided through 170 successful returns

0 food waste enabled by products with a 6-month shelf life

Gains

44% conversion from 102 onboarded users to 45 buyers

85% return rate achieved across sold meals

3.8 orders per active user showing repeated behavior instead of one-off trials

System

3 vending machines

1 delivery only

55.6% sell-through (200 of 360 delivered meals sold without expiry pressure)

●●●●●
Acceptability

●●●●●
Feasibility

●●●●●
Scalability



System return on investment

The pilot is strongest as proof of behavior change and operational simplicity, not yet as a net-climate optimization case. Across 120 days, the pilot demonstrated the fundamentals required for scaling: users converted, came back repeatedly and returned jars at a very high rate without heavy logistics. At the same time, the pilot demonstrated the fundamentals required for scaling: users converted, came back repeatedly and returned jars at a very high rate without heavy logistics. Each additional order improves utilization while infrastructure and delivery effort stay comparatively stable. This is why the pilot should be presented as validation of a working reuse loop: nearly half of users converted, active users averaged almost four orders each, and the system ran with one delivery and zero food waste.

Things to be aware of

Low utilization can make early-stage energy use look heavy on a per-order basis. That is typical for a pilot phase and should be read together with the strong return loop, low logistics burden and long-shelf-life stock model. A small share of jars is still outside the loop, but this is better described as a delayed return cycle than permanent loss because users can continue to return packaging over time. Energy use across the three machines totalled 698 kWh over 120 days (≈ 489 kg CO₂ at 0.7 kg CO₂/kWh), which looks heavy per order at this stage but will improve significantly as usage scales on the same installed base.

Scaling potential

- The model is highly relevant for offices, campuses, hospitals and public buildings where users repeat purchases in the same location.
- The pilot shows that long-shelf-life products decouple logistics from consumption, allowing stock to remain available without constant refilling.
- As usage grows on the same installed base, CO₂ per order falls while the reuse loop becomes more attractive operationally and financially.

Requirements

- Technical:**
Connected vending machines, payment flow and simple tracking of returns and reuse cycles
- Economic:**
Reusable jar inventory plus a product mix that stays saleable long enough to avoid waste
- Organisational:**
One operator coordinating vending locations, jar loop reporting and occasional collections
- Competence:**
User onboarding, clear return communication and simple reporting of funnel and return metrics

How to get started!

1

Find local restaurants

Start with restaurants that want to reach new customers through office distribution.

2

Share the Venloop playbook

Share the Venloop playbook from the Change(K)now website, including materials and instructions for preparing a product line that fits the system.

3

Launch through the platform

The restaurant joins the ready ecommerce flow and adds products directly to the platform.

4

Install the vending where demand exists

The operator deploys a ready Venloop machine in offices where managers choose the meal selection from the local restaurants.

The publications of Circular food delivery systems were produced under the Change(K)now! project. The Change(K)now! project is co-funded by Interreg Baltic Sea Region. The project's main objective is a mindset change from single-use to circular or multiple-use of food delivery systems in cities and residents of the Baltic Sea Region. The responsibility for the content lies with the author(-s) and don't necessarily reflect the funder position on these topics.

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