ICLEI Local Governments for Sustainability

Circulars

# CITY PRACTITIONERS HANDBOOK

## Reuse Starter Kit for Food and Beverages

Circular City Labs

Testing Reusable Packaging Systems in Cities

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

## CITY PRACTITIONERS HANDBOOK: REUSE STARTER KIT FOR FOOD AND BEVERAGES


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## About ICLEI Circulars

ICLEI Circulars helps accelerate the circular economy transition by convening local governments, businesses, and research partners, and by advocating multi-level alignment.

From raising awareness and political momentum on the urgency of shifting away from unsustainable consumption and production patterns to designing policy approaches that address concrete challenges, ICLEI Circulars supports the ICLEI network and beyond throughout the transition to a circular economy.

Visit https://circulars.iclei.org/ to learn more.

## About Circular City Lab

The project Circular City Labs (CCL) – Testing reusable packaging systems in cities aims to reduce greenhouse gas emissions through waste prevention by promoting reusable packaging systems and strengthening women participation in local circular economies.

The project is carried out by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). It is funded through the BMZ Initiative for Climate and Environmental Protection (IKU).

Circular City Labs
Testing Reusable Packaging Systems in Cities

Implemented by

## Practitioners Handbook Series

The Practitioners Handbook series aims to support local governments, which have already identified priority sectors or materials they wish to apply circular economy principles to. The series offers sector-specific guidance to support city officers in identifying practical circular economy interventions in collaboration with stakeholders from businesses, academia, civil society, and more.

This handbook provides local governments with concrete tools their peers are using to facilitate the transition to reuse solutions, from stakeholder engagement to identifying effective policy levers. It draws on experiences from the ICLEI network and its Circular Development pathway, and learnings from the Circular City Lab Project. It is specifically designed for cities that are at the earlier stages of their reuse journey.

# INTRODUCTION

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*The widespread adoption of single-use items in the food industry can be traced back to post-World War II consumer culture, where mass production and convenience became hallmarks of modern living[1].*

Driven by changing lifestyles, increasing urbanization, and the rise of fast food, disposable packaging was marketed as hygienic, time-saving, and economically efficient[2]. These items, plastic cutlery, expanded polystyrene (EPS), Polyethylene terephthalate (PET) bottles, symbolized progress and mobility in a society increasingly shaped by consumerism and on-the-go consumption patterns[3].

Today, urban environments are overwhelmed by the volume of single-use packaging waste, particularly from food and beverage products. Packaging accounts for approximately 36% of all plastic production globally, and most is used once before being discarded[4]. While

1 Kortsen, K., Kilbride, S., Lowe, S. R., Peirce, A., & Shaver, M. P. (2023). A plastics hierarchy of fates: Sustainable choices for a circular future (Version 1). arXiv. https://doi.org/10.48550/ARXIV.2303.14664

2 Karasik, R., Vegh, T., Pickle, A., Virdin, J., Diana, Z., Bering, J., Caldas, J., & Rittschof, D. (n.d.). 20 years of responses to the global plastic pollution problem: The plastics policy inventory. NC: Duke University

3 Belis-Bergouignan, M., Burel, F., Cochet, Y., Dedeurwaerdere, T., et al. (2020). *The role of consumers in the transition to a circular economy*. Journal of Cleaner Production, 256, 120721. https://doi.org/10.1016/j.jclepro.2020.120721

4 UNEP (2023). *Turning off the Tap: How the world can end plastic pollution and create a circular economy*. https://www.unep.org/resources/report/turning-tap

some packaging is marketed as biodegradable or compostable, these materials often require industrial composting conditions not available in many urban areas. In addition, even when such packaging degrades, it results in the loss of embodied energy and resources used in its production[5]. In some cases, specific single-use options may demonstrate lower environmental impact than poorly managed reusables, but the dominant linear model of 'take-make-dispose' remains highly inefficient and unsustainable[6].

The environmental consequences of mismanaged waste are profound. Plastic pollution threatens biodiversity, clogs urban drainage systems, and contributes to habitat loss. Marine and terrestrial animals frequently ingest plastic debris or become entangled, leading to injury and mortality[7]. Moreover, microplastics have been detected in soils, water bodies, and even the atmosphere, raising concerns about ecosystem function and resilience[8]. These disruptions compromise critical ecosystem services such as pollination, nutrient cycling, and water purification. Furthermore, recent research indicates that plastics has a negative impact on all planetary boundaries[9].

Emissions savings from transitioning away from single-use packaging could be substantial. Reuse systems, such as container deposit schemes, refill stations, and return logistics, have the potential to reduce greenhouse gas emissions by up to 70% compared to single-use systems when well-designed and scaled[10]. These reductions stem from avoided raw material extraction, manufacturing, and energy-intensive waste processing.

In addition to environmental benefits there is considerable economic potential in reuse. A transition to reusable packaging could unlock an estimated USD 10 billion annually[11] in business value, innovation, and


© ache dipro / Unsplash

5 Ellen MacArthur Foundation (2020). *Reuse – Rethinking packaging*. https://ellenmacarthurfoundation.org/reuse

6 UNEP (2023). *Turning off the Tap: How the world can end plastic pollution and create a circular economy*. https://www.unep.org/resources/report/turning-tap

7 Kaza, S., Yao, L. C., Bhada-Tata, P., & Van Woerden, F. (2018). What a Waste 2.0: A Global Snapshot of Solid waste Management to 2050. In Washington, DC: World Bank eBooks. https://doi.org/10.1596/978-1-4648-1329-0

8 IPBES (2019). *Global Assessment Report on Biodiversity and Ecosystem Services*. https://ipbes.net/global-assessment

9 https://www.stockholmresilience.org/research/research-stories/2024-11-08-new-study-plastic-pollution-worsens-the-impacts-of-all-planetary-boundaries.html

10 SystemIQ & Ellen MacArthur Foundation (2020). *The Future of Reusable Packaging*. https://ellenmacarthurfoundation.org/future-of-reusable-packaging

11 Ellen MacArthur Foundation (2021). *Reusable packaging – Economic & environmental potential.* https://ellenmacarthurfoundation.org/reusable-packaging

cost savings across supply chains. Local governments and businesses stand to gain from reduced collection and landfill costs, while new employment opportunities may arise in reverse logistics, washing, and product design for durability.

Landfills in many cities are nearing capacity. The World Bank[12] warns that some urban centers will run out of landfill space within the next decade if the waste generation trends continue. Overflowing landfills pose heightened risks of soil and water contamination, methane emissions, and encroachment on urban land that could otherwise support housing or green infrastructure.

Finally, health risks associated with single-use plastic packaging are becoming increasingly evident. Chemicals commonly found in plastic food containers, such as phthalates, bisphenol A (BPA), and per- and polyfluoroalkyl substances (PFAS), can leak into food and drinks, especially when heated[13]. These substances have been linked to endocrine disruption, reproductive issues, and increased cancer risk[14]. The widespread use of these materials in food systems disproportionately affects vulnerable populations, reinforcing the urgency of systemic change toward safer, reusable alternatives.

12 World Bank (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. https://openknowledge.worldbank.org/handle/10986/30317

13 Ramos, T. M., Christensen, T. B., Bour, A., Almroth, B. C., Kristensen, D. M., Selck, H., & Syberg, K. (2023). A not so circular healthcare economy: A review of challenges with plastic associated chemicals. TrAC Trends in Analytical Chemistry, 166, 117191. https://doi.org/10.1016/j.trac.2023.117191

14 Wagner, M., & Oehlmann, J. (2011). Endocrine disruptors in bottled mineral water: Total estrogenic burden and migration from plastic bottles. *Environmental Science and Pollution Research*, 18(7), 1122–1136. https://doi.org/10.1007/s11356-011-0462-3

# Circular economy

## From linear to circular: A new economic paradigm

The Ellen MacArthur Foundation explains that a Circular Economy is a system where waste is avoided, resources are used for as long as possible, and nature is allowed to regenerate[15]. This is very different from the current linear economy, which follows a 'take, make, dispose' approach, focusing more on fast production and convenience than on saving resources. A real circular economy should go beyond just saving materials like plastic or metal. It should also protect things like culture, fairness, knowledge, and traditions, so that value is created not just for the economy, but also for people and the planet.


**Figure 1.** "Take, make, waste" linear economy model

## What makes a city circular?

As urban centers grow in size and impact, cities are emerging as powerful actors in driving the circular transition. Their unique governance structures, procurement power, and proximity to citizens and businesses allow them to embed circularity across multiple dimensions of urban life.

There are four main aspects to a city becoming circular:

- A circular city is one that **promotes and embeds circular economy principles** through relevant city functions and departments, including in strategies. This ultimately focuses on ensuring that relevant city owned, implemented and influenced activities are circular in nature.
- **Utilise appropriate policy levers to develop an enabling context** for all stakeholders to encounter low or no barriers to implementing their circular initiatives. This focuses on making all goods and services that occur within the city boundary or jurisdiction circular.
- Keeping in mind that neighbouring cities are only separated by jurisdictional lines, but are intricately linked in many ways. A truly circular city will **enable neighbouring circular cities, and integrate operations** of the administration and economic activities, at large, while identifying possibilities for shared infrastructure and other resources.
- A truly circular city pursues points 1 to 3 in a manner that is **just and equitable to all residents.**

15 https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

## The Circular City Action Framework

The Circular City Actions Framework[16] serves as a practical framework for local governments and urban circular economy practitioners to support systematic shifts toward a circular economy. Whether a city is just beginning its circular transition or seeking to deepen existing efforts, the framework offers a flexible structure for identifying entry points and scaling impact.

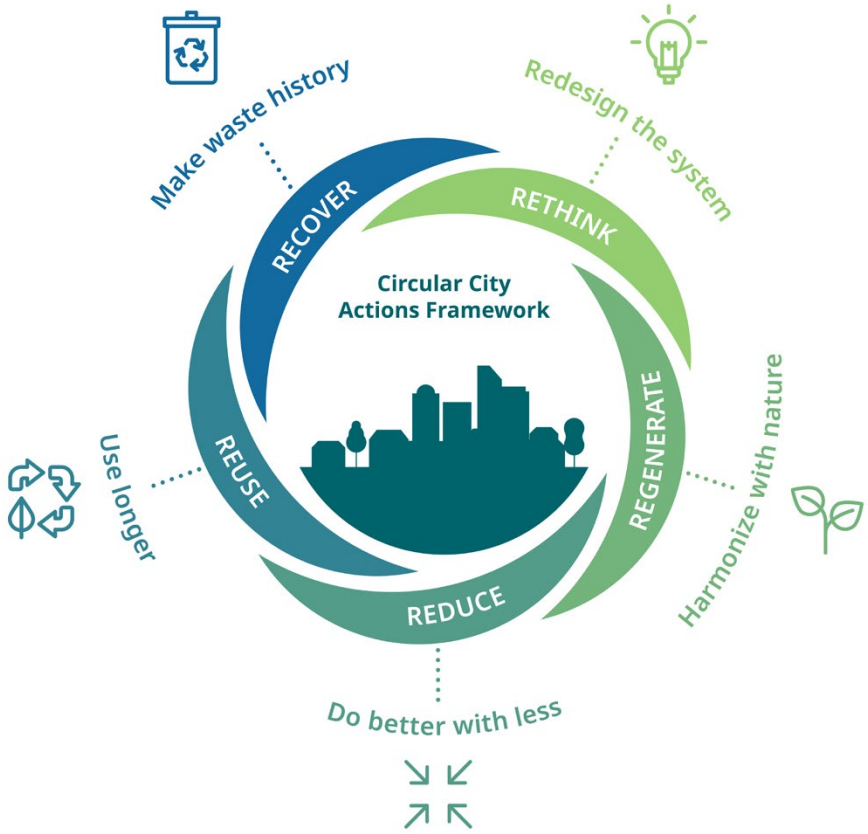


**Figure 2.** Circular City Action Framework

At its core, the Circular City Actions Framework is organized around five complementary R strategies, each representing a distinct but interconnected pathway to circularity:

**Rethink** – Redesign city systems and service models to support circular practices. For reuse, this could mean rethinking urban logistics, public procurement, or delivery models to prioritize reusable packaging and products.

**Regenerate** – Align urban development with nature by promoting sourcing and infrastructure that restore ecosystems. In a reuse context, regeneration may include supporting local refill stations, repair hubs, or nature-positive materials in shared-use systems.

16 https://circulars.iclei.org/action-framework/

| | |
|---|---|
|  | **Reduce** – Minimize material, energy, and water use through efficient design and behavior change. Cities can reduce demand for single-use items by investing in shared asset models and banning unnecessary disposables in public spaces. |
|  | **Reuse** – Extend the life and intensity of use of products, materials, and spaces. This is the core strategy for fostering urban reuse systems, from deposit-return schemes for containers, to community tool libraries, to policies that mandate reusable alternatives in food service. Cities can enable this by supporting local reuse businesses, incentivizing design for durability, and ensuring access to infrastructure like washing and redistribution centers. |
|  | **Recover** – Maximize the value of materials at end-of-use through recycling and resource recovery. While reuse takes precedence in the waste hierarchy, recovery still plays a supporting role when products can no longer be reused. |

By applying the Actions Framework, cities can move beyond isolated interventions and instead embed integrated reuse solutions into the broader fabric of urban systems, connecting policy, infrastructure, citizen engagement, and business innovation. This integrated approach not only reduces waste and emissions but also builds more resilient, inclusive, and resource-efficient urban economies.

*This guidebook focuses on 'Reuse' as a strategy to decrease and eliminate waste and pollution from the food and beverage sector. Nevertheless, it is essential to recognize that effective reuse systems do not work in isolation.*

Rather, they depend on a system-based application of all five-R-strategies, as introduced by the Circular City Actions Framework. Each strategy plays a critical enabling or reinforcing role in scaling and sustaining reuse models.

Reuse, involves rethinking procurement policies, business models and logistics to favor circular value chains, thus as the Ellen MacArthur foundation (EMF)[17] emphasizes, this is a prerequisite for a systemic change. Regenerate, ensures that reusable systems align with ecological and social regeneration. Reuse is supported by systems such as deposit-return schemes (DRS) and community-based programs, while Reduce complements these efforts by promoting behavioral and structural changes that lower overall consumption. Finally Recover, provides a backstop that maintains material value, reinforcing the circular system[18].

17 https://www.ellenmacarthurfoundation.org/cities-and-a-circular-economy-for-food/overview

18 OECD (2020), The Circular Economy in Cities and Regions: Synthesis Report, OECD Urban Studies, OECD Publishing, Paris, https://doi.org/10.1787/10ac6ae4-en

# Reuse

## What is Reuse?

According to the Ellen MacArthur Foundation[19], reuse refers to *"the repeated use of a product or component for its intended purpose without significant modification."* In practice, this means that an item, such as a bottle, container, or piece of equipment, is used multiple times for the same function it was originally designed for. While slight modifications - such as cleaning, re-labeling, or minor repairs - are sometimes needed to prepare the item for its next cycle of use, these adjustments do not significantly alter the core function or structure of the product.


*This image features glass containers, a jar and a bottle; glass utencils are durable, washable, and designed for repeated use, making them a* ***reusable packaging option.***


*The disposable tableware on this image is made from paper and bamboo, which are intended for single use and are therefore* ***not considered reusable packaging.***

**Figure 3.** Reusable and non-reusable packaging options

## What reuse is not

Reuse is often misunderstood or conflated with other concepts such as recycling, downcycling, or simply using less. It is important to distinguish that reuse is not recycling. Recycling typically involves breaking down a product into raw materials to be processed into new products, which often requires significant energy and resource input. Reuse, by contrast, aims to preserve the integrity of the original item for as long as possible, maintaining its highest utility value.

19 https://content.ellenmacarthurfoundation.org/m/af7397aab398037/original/Circular-economy-glossary.pdf

Reuse is also not just about using an item more times before throwing it away, such as reusing a single-use plastic bag multiple times. While that behavior helps reduce unsustainable consumption, true reuse systems are intentionally designed, with clear return loops, accountability mechanisms, and often, business models that support the reuse lifecycle (e.g., rental, refill, or subscription models). Furthermore, reuse is not a stopgap; it is a systems-level redesign aimed at eliminating the need for disposability altogether.

## Reuse in the Urban Context

For cities, reuse is a strategic and low-barrier entry point into the circular economy, particularly in sectors like food and beverage packaging, retail, and public procurement. Urban areas are uniquely positioned to promote reuse due to their dense infrastructure, proximity to consumers, and capacity for local coordination.

Cities can support reuse through policies, public-private partnerships, incentives, and investment in shared-use infrastructure (such as washing and reverse logistics systems). More than just waste prevention, reuse represents a shift in how cities design services, build relationships between stakeholders, and reimagine convenience for residents. A city's reuse strategy may include initiatives such as reusable takeaway container schemes, deposit-return systems, or circular public procurement programs that prioritize durable and reusable goods. In doing so, reuse in cities promotes local job creation, reduces pressure on waste management systems, decreases climate negative impact and supports a transition to systems where value is retained, not discarded.

## Reuse in the food and beverage sector

In the food and beverage sector, reuse plays a crucial role in reducing packaging waste, particularly single-use plastics, paperboard containers, and aluminum cans. Reuse systems in this sector include returnable beverage bottles, reusable take away containers, standardized refill jars, and even cup-as-a-service programs in cafes and public venues. These systems require careful coordination of logistics, hygiene standards, user incentives, and reverse collection systems. Food service providers, both large and small, are increasingly experimenting with reuse models that align with both environmental and economic objectives. For example, restaurant coalitions may adopt a shared pool of standardized containers for deliveries, or festivals may introduce reusable cup systems with refundable deposits. The food and beverage sector also intersects with health, hygiene, and regulatory concerns, which means that successful reuse systems must address not only material durability, but user trust, convenience, and food safety compliance.

***Freiburg cup system, Germany***

The City of Freiburg launched the Freiburg cup, a reusable coffee cup scheme in partnership with over 100 local cafés and bakeries. Customers can purchase the cup for a small deposit and return it at any participating location. The city supported the rollout by standardizing the design, raising public awareness, and collaborating with local businesses to ensure accessibility and hygiene. The system has reduced litter in Freiburg and significantly increased public awareness about disposable coffee cups, highlighting the need for policy action to address them. It has also decreased the number of disposable cups used each day, demonstrating how municipal coordination can drive the widespread adoption of reuse systems[20].


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***Reuse guidelines for food service, Quezon City, Philippines***

In 2023, Quezon City, Philippines, launched a local ordinance requiring malls, food outlets, and commercial buildings to promote reusable containers for dine-in and takeaway. The city provided technical guidance, ran a public education campaign, and piloted reuse stations in cooperation with private sector partners. Early results showed reduced packaging waste in pilot zones and increased acceptance of reuse among consumers. By embedding reuse into local regulations and service design, the city created momentum for long-term behavioral and business shifts[21].

© Beng Ragon / Unsplash

20 https://zerowasteeurope.eu/wp-content/uploads/2018/09/FreiburgCupfinal.pdf

21 Jcteamjoy, "QC Bans Disposables, Single-use Plastics Within City Hall Compound, Facilities | Quezon City Government," *Quezon City Government* (blog), April 22, 2025, https://quezoncity.gov.ph/qc-bans-disposables-single-use-plastics-within-city-hall-compound-facilities/

# Benefits of pursuing reuse interventions

Transitioning from single-use plastics to reuse systems offers a wide range of environmental, economic, and social benefits. As cities integrate circular economy principles into their strategies, reuse emerges as a practical, low-barrier, and high-impact solution. With global plastic waste projected to nearly triple by 2060[22], much of it originating in urban areas, cities face mounting pressure to address the plastic pollution crisis. Large volumes of discarded plastics often end up in waterways, landfills, or the natural environment, straining municipal infrastructure and ecosystems. By embedding reuse into waste strategies, cities can shift from reactive waste management to proactive, preventative systems that reduce resource consumption, lower waste generation, and foster long-term sustainability.


At the same time, reuse systems offer a pathway for inclusive green economic development. In many regions reuse models are already emerging through local innovation, whether in informal markets, social enterprises, or circular start-ups. These systems not only reduce environmental harm but also build new livelihoods and promote equitable participation in the circular economy. For local governments, enabling reuse can thus serve both sustainability and social inclusion goals. Below are some of the key benefits associated with reuse systems, each supported by examples that demonstrate their effectiveness.

## Reduction of single-use waste and litter

The **Refill Bristol campaign**[23] enabled over 200 local businesses to offer free tap water refills, helping residents avoid buying bottled water. By promoting reusable bottles and making refill points easy to locate via mobile app, the initiative significantly reduced plastic waste and litter in public spaces. The success of the program led to its national expansion, with over 30,000 refill stations established across the United Kingdom.

22 OECD (2024), Policy Scenarios for Eliminating Plastic Pollution by 2040, OECD Publishing, Paris, https://doi.org/10.1787/76400890-en

23 https://www.citytosea.org.uk/campaign/refill/

## Lower long-term costs for businesses and municipalities

Although reuse systems require initial setup, they often save money over time by reducing spending on disposable packaging. In **Santiago, Chile,** the startup Algramo[24] introduced "smart" reusable packaging equipped with Radio Frequency Identification (RFID) chips. This system allows consumers to pay only for the quantity of product they need and return refillable pouches. This system resulted in users saving between 30 to 50% compared to buying the same products in traditional single-use packaging. This model reduces costs for both retailers and shoppers while reducing plastic waste.

## Lower long-term costs for patrons

Consumers benefit financially through refill schemes and deposit refunds, which lower per-use costs. The **Topup Truck London**[25] offers mobile refill services for groceries and household goods, helping patrons save money by eliminating packaging costs and allowing them to buy only what they need. This model provides competitive bulk pricing and supports household budgeting, especially in low-income areas. By delivering directly to neighborhoods, this pilot project reported that 96% of products continued to be sold in customers' own containers, increasing accessibility while promoting both economic and environmental benefits. While customer savings are well documented, publicly available evidence on economic returns for the provider is limited. Potential provider-side benefits, such as reduced packaging procurement, improved inventory turnover, customer loyalty, and lower waste disposal costs.

## Climate benefits through lower carbon footprints

By avoiding repeated production and disposal cycles associated with single-use packaging, reuse systems can significantly cut greenhouse gas emissions. In **Singapore**, the city-funded Muuse project[26] piloted smart reusable containers at hawker centers. Since its inception in November 2022, and over a 10 month period, the pilot has been found to have directly saved 1.2 tons of carbon dioxide equivalent ($tCO_2e$) which is equivalent to driving 7,000 km. This was achieved through 608 unique users that utilized the containers 9,608 times.

## Alignment with circular economy goals and sustainability targets

By extending the lifespan of products and minimizing waste generation, reuse systems support the broader shift toward a circular economy. In **South Africa** the Circular City Labs [27]initiative piloted reusable packaging solutions for fast-moving consumer goods, exploring their potential to contribute to the reduction of the city's greenhouse gas emissions, waste generation and landfill use.

24 https://www.weforum.org/stories/2021/04/algramo-reusable-smart-packaging

25 https://relondon.gov.uk/resources/case-study-topup-truck-refill-groceries-in-reusable-packaging-to-your-door

26 https://www.britcham.org.sg/news/singapore-hawker-centre-reuse-programme-saves-almost-10000-disposable-containers-landfill

27 ICLEI Africa. 2024. Circular Economy in South Africa: Opportunities for reusable packaging systems and women's participation. Cape Town. 10 May.

## Health benefits from moving away from single-use plastic

Shifting to durable materials enhances food safety and eliminates harmful chemical leaching from single-use plastics. In **Vancouver, Canada,** the Field & Social restaurant chain[28] piloted reusable containers for their salad bowls. With this shift, food-safe reusable ware reduced plastic leaching risks and improved hygiene standards.

## Localized economic stimulation

Reuse initiatives often generate new local jobs in cleaning, logistics, and system management. In **Nairobi, Kenya,** Join The Pipe[29] established public water refill stations managed by local entrepreneurs and community groups. These stations generate income and reduce reliance on bottled water, creating green jobs and impacting informal economies.

## Community pride, ownership and environmental stewardship

When communities co-create and run reuse schemes, civic pride and participation grow. In **Accra, Ghana,** Trashy Bags Africa[30] collects plastic sachets from communities and transforms them into durable, reusable bags. Their model has processed over 30 million sachets, employing local collectors and elevating community ownership in waste recovery.

28 https://www.sustain.ubc.ca/sites/default/files/2024-039_Case_Studies_Reusable_Food_Service_Ware_Wiehr.pdf

29 "Join the Pipe," Search, n.d., https://www.universiteitleiden.nl/en/green-office/initiatives/join-the-pipe

30 https://www.trashybagsafrica.com/

# THREE-STEP PROCESS FOR IMPLEMENTING REUSE INITIATIVES IN CITIES

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*Cities operate in complex environments. A complex system is a system made up of multiple parts that interact in unexpected and unpredictable ways, and that can't be completely anticipated or managed from a central point - but information flows, insights and coordination can be enhanced to navigate the complexity.*

Within cities there are multiple stakeholders such as: politicians, private sector, various segments of the private sector, civil society, and academia to name a few. Each of these stakeholders have their own specific objectives, which more often than not, don't align - this results in stakeholders frequently undertaking actions to protect their interests. It's these actions that cannot be fully anticipated by the city.

It is with this basis that the **three-step process** has been developed, to take the complexity that city administrators face, and provide a roadmap that will help navigate the complexity.

**STEP 1** — **WHAT?**

**STEP 2** — **WHO?**

**STEP 3** — **HOW?**

## STEP 1 WHAT? | Identifying the scope

It begins with identifying the scope and focus of the initiative, testing the validity of the scope, identifying the appropriate levers contained in the ICLEI Policy Toolbox, and developing coherent plans for implementation of those levers.

## STEP 2 WHO? | Identifying the correct stakeholders

The second step is to identify the correct stakeholders and secure their buy-in, as it will take decentralized action to systemically replace all the elements that enable the consumption of single-use packaging with sustainable options, this while collecting appropriate data (also something stakeholders are gatekeepers to) to inform decisions at later stages. In Medellín[31], for instance, the process engaged public authorities, private companies, universities, recycling cooperatives, and community organizations, whose participation not only legitimized the work but also unlocked critical data on material flows, logistics, and consumer habits, enabling the prioritization of high-impact sectors such as food, beverages, and household products in early pilot projects.

It should be noted that as stakeholders are consulted and input received, there might be a need to revise the selection of policy levers, the specific implementation plans of those levers or even the scope and focus itself. This iterative process between steps 1 and 2, while resource and time intensive, and if coordinated with diligence, will result in an implementable plan that has buy-in of stakeholders, increasing the likelihood of successful adoption, effective implementation, and measurable impact of the policy.

## STEP 3 HOW? | Development of a roadmap

The third and last step involves the development of a roadmap that can then be utilised to secure approval of city administration, and for other purposes. In Medellín, this took shape as a formally validated "Hoja de Ruta"[32] for reuse systems, co-designed with stakeholders and aligned with the city's policy on circular economy, which now serves as both an implementation guide and a political instrument to mobilize resources, formalize commitments, and integrate reuse actions into official planning frameworks.

It's important to note that these sections are illustrative, and we encourage each city administration to adapt this into their templates, document styles and appropriate level of details.

There are also a lot of insights and data that underpin this guide that is not practical to include. The global ICLEI Circulars team can be contacted on circulars.development@iclei.org for further information, guidance and consultation.

31 ICLEI – Gobiernos Locales por la Sustentabilidad. (2025). *Hallazgos y recomendaciones: Transición circular en entornos urbanos*. ICLEI Colombia, ICLEI América del Sur y GIZ.

32 ICLEI – Gobiernos Locales por la Sustentabilidad. (2025). *Hoja de Ruta de estrategias en reuso de envases y empaques para Medellín*. ICLEI Colombia, ICLEI América del Sur.

# Step 1: What?

## First, the scope and focus

We need to keep in mind that reuse solutions can be applied to a number of very different aspects within the food and beverage sectors, and at various stages of the value-chain. Figure 4 and Table 1[33] provide some insights to the food and beverage sectors, and some common examples that could be implemented at different stages of the value-chain. Table 1 also indicates how resource intensive the various options are to implement.

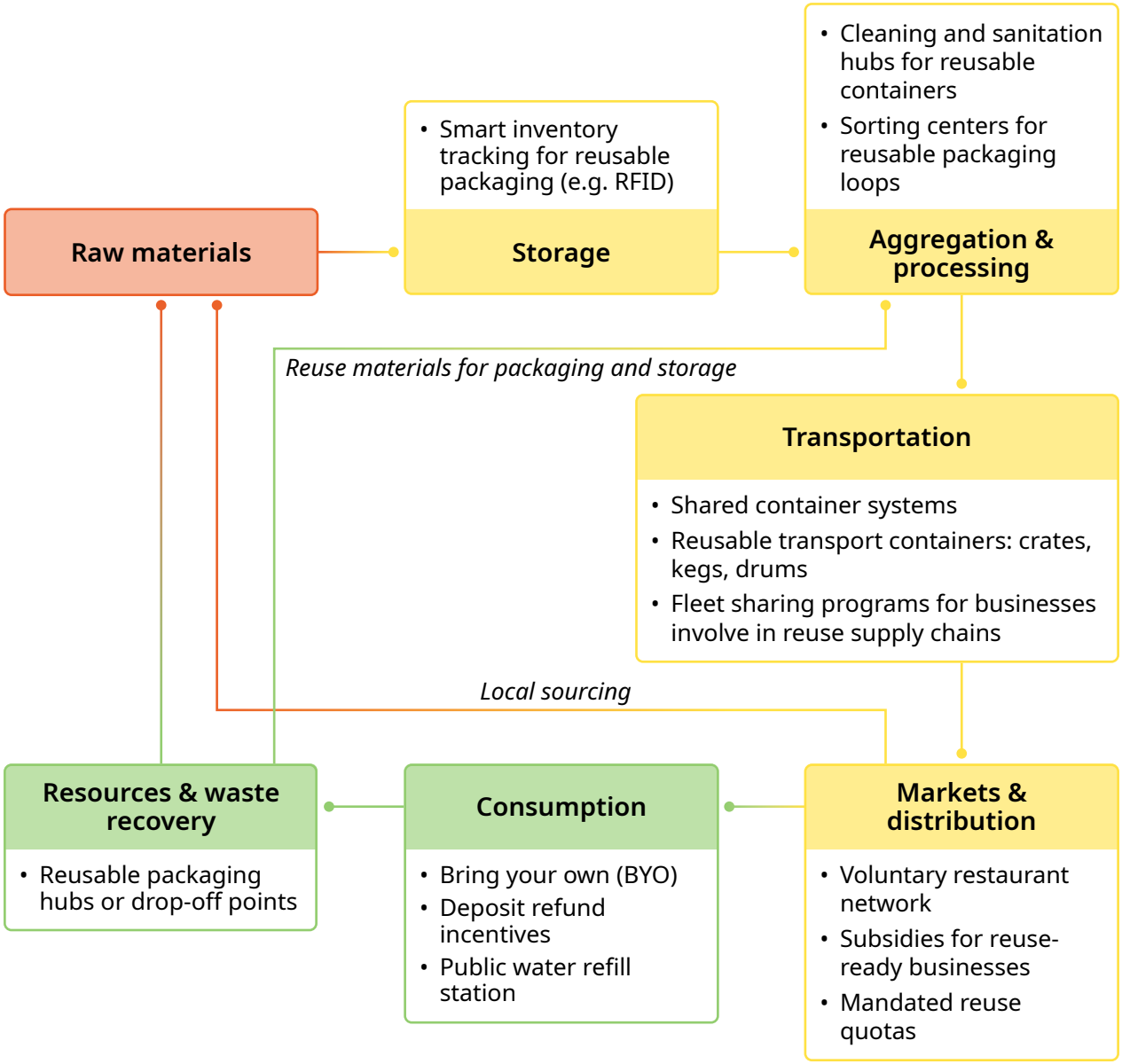



**Figure 4.** ICLEI's reuse initiatives across the packaging and supply chain

33 Both developed by ICLEI.

**Table 1.** ICLEI's implementation matrix for reuse initiatives

| Rank | Reuse intervention | Description | Ease | Cost | Regulatory needs |
|---|---|---|---|---|---|
| 1 | BYO | Consumers bring their own containers or bags for refills or purchases | *High* | *Low* | Minimal, guidance or hygiene standards are helpful for implementation |
| 2 | Reusable packaging hubs or drop-off points | Designated locations for dropping off or collecting reusable packaging | *High* | *Low* | Zoning permission and waste management coordination |
| 3 | Public water refill station | Stations where the public can refill water bottles to reduce single-use plastic | *High* | *Low* | Municipal approval and water safety standards |
| 4 | Subsidies for reuse-ready businesses | Financial support to businesses adopting reuse models (e.g. grants, tax breaks) | *High* | *Medium* | Policy or program for financial incentives or subsidies |
| 5 | Deposit return incentives | Financial incentives for consumers to return packaging (e.g., bottle deposits) | *Medium* | *Medium* | Requires legal framework for deposit and refund management |
| 6 | Shared container systems | Systems that allow multiple businesses or user to share standardized containers | *Medium* | *Medium* | Standardization and coordination frameworks |
| 7 | Reusable transport containers: crates, kegs, drums | Durable containers used for transporting goods, returned and reused multiple times | *Medium* | *Medium* | Standardization and safety regulations for transport containers |
| 8 | Voluntary restaurant network | Restaurants that voluntarily use standardized reusable containers | *Medium* | *Medium* | Standards for container hygiene and coordination support |
| 9 | Cleaning and sanitation hubs for reusable containers | Dedicated hubs with equipment and protocols to sanitize reusable containers | *Low* | *High* | Strict sanitation standards and operational regulations |
| 10 | Mandated reuse quotas | Government-enforced requirements for a percentage of packaging to be reusable | *Low* | *High* | Municipal approval and water safety standards |
| 11 | Sorting centers for reusable packaging loops | Facilities dedicated to sorting, cleaning, and preparing reusable packaging for reuse | *Low* | *High* | Health, safety and environmental regulation permits |
| 12 | Fleet sharing programs for businesses involved in reuse supply chain | Shared logistics services between businesses to transport and return reusable items | *Low* | *High* | Transportation licensing and legal agrements |

**LEGEND**

**Ease:** *How easy is to implement the intervention*

- *High* Easiest to implement
- *Medium* Somewhat challenging
- *Low* Hardest to implement, complex systems

**Cost:** *Estimated financial investment needed*

- *Low* Relatively inexpensive
- *Medium* Moderate investment
- *High* Expensive to implement

Table 1 provides a comparative overview of twelve reuse interventions, ranked by ease of implementation and associated costs. It begins with simple, low-cost strategies such as BYO (bring your own) campaigns and deposit-refund incentives, which are relatively straightforward to implement and require minimal regulatory support. However, even these measures can face challenges, such as public concerns over hygiene, especially in food service contexts where health regulations may restrict container reuse, and behavioral resistance, which help explain why they are not yet widely adopted at scale in many cities.

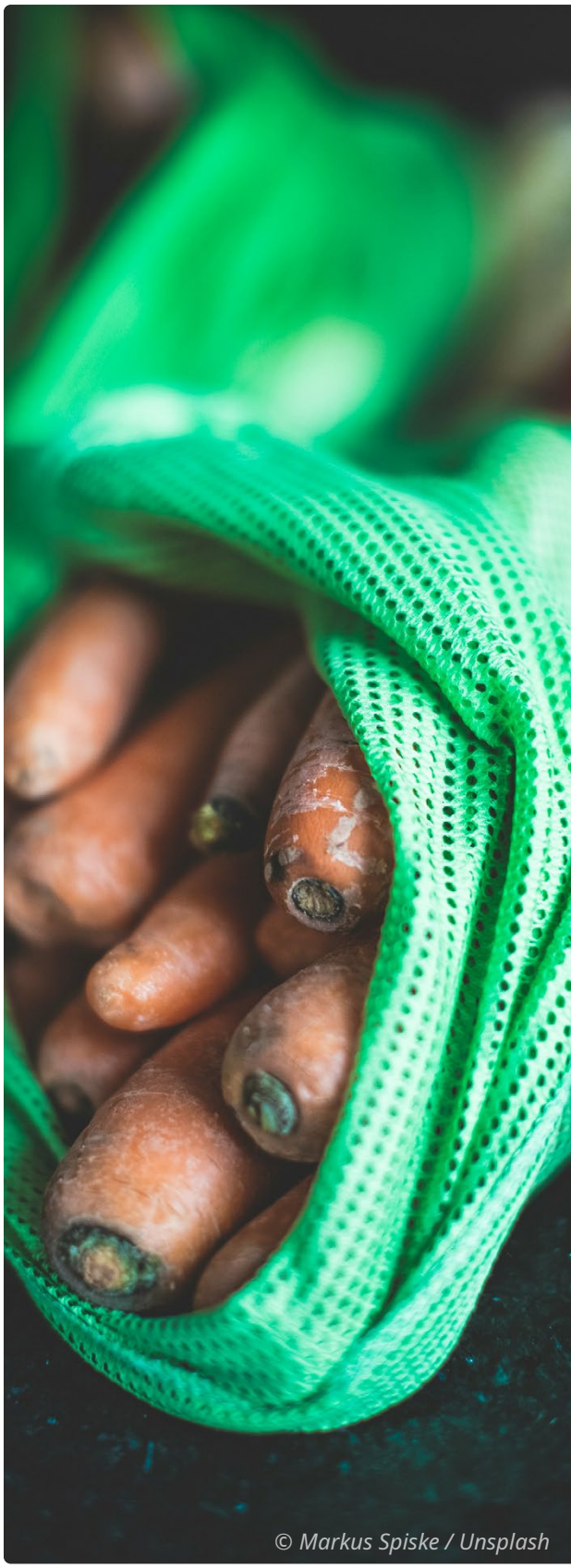
Moderately demanding interventions include voluntary networks, public water refill infrastructure, and reusable packaging hubs or drop-off points, which require more coordination and investment. Finally, complex and costly interventions, such as subsidies for reuse-ready businesses, shared container systems, and mandated reuse quotas, demand higher levels of investment, stakeholder alignment, and regulatory support.

## Baselines, data, insights and analysis

Understanding the current landscape, within the city's jurisdiction, of material and packaging use is essential for designing an effective reuse system for the type of activity you have selected. Establishing robust baselines allows cities and stakeholders to identify priority areas, tailor interventions to local realities, and measure progress. A combination of quantitative and qualitative methods can provide a comprehensive picture of the material flows, consumer behavior, system inefficiencies, and potential leverage points for circular and reusable solutions. Below is an overview of some methodologies that can be useful.

### *Overview of baseline methodology*

The South African baseline[34] for the CCL project utilised a mixed-method approach combining quantitative and qualitative methodologies[35]. The baseline sought to understand the flow of packaging materials, consumption patterns and waste generation in selected urban settings. It involved the review of relevant national and international publications, and relevant



*© Markus Spiske / Unsplash*

34 ICLEI Africa. 2024. Circular Economy in South Africa: Opportunities for reusable packaging systems and women's participation. Cape Town. 10 May

35 https://www.giz.de/en/worldwide/127407.html

economic data in South Africa in lieu of a reuse-specific dataset. It also included stakeholder consultations, specifically, interviews with businesses and cities. This mixed-method approach allowed the identification of gaps, triangulation of findings and proposed context-specific reuse interventions aligned to the local structure.

### *Material flow analysis*

Material Flow Analysis (MFA) is a systemic assessment method used to quantify the flows and stocks of material within a defined system boundary[36]. For a city, this method will track the input, use and output of materials like plastic packaging, across sectors, providing a macro-level view and resource efficiency and loss points. Therefore, this would quantify how much single-use material could be avoided through the use of reusable packaging.

### *Material stream analysis*

Material stream analysis is a more focused approach of MFA, this zooms in specific packaging types or material categories, for example PET bottles or polyethylene take-out containers. It helps city decision makers understand the quantities and characteristics of key material streams, circulating in, and exiting the system[37]. This is particularly useful for identifying the most problematic or high potential packaging types to target for reuse schemes.

### *Waste flow analysis*

This methodology maps the journey of packaging waste from its point of origin to its final treatment or disposal. It accounts for both formal and informal collection systems, sorting processes, recycling facilities, and end destinations such as landfills or incinerators[38]. By visualizing these flows, cities can pinpoint where reusable packaging is being lost to the waste stream and identify strategic locations for recovery hubs or reuse infrastructure. An example to support local authorities in understanding waste flows within municipal solid waste management systems, is the "waste flow diagram"[39] developed by GIZ. This tool estimates the plastic leakage into the environment, and identifies priority areas for investment in solid waste management infrastructure.

### *Waste stream Analysis*

Waste stream analysis focuses on the composition and volume of waste generated by different sources, for example: restaurants, households, retail outlets. This method involves physical waste sampling and categorization to understand what proportion of the waste stream is made up of reusable material[40]. This can help the cities and local authorities to estimate the potential impact of shifting from single-use to reusable packaging systems in specific sectors like food and beverage.

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36 Brunner, Paul H., and Helmut Rechberger. "Practical Handbook of Material Flow Analysis." *The International Journal of Life Cycle Assessment* 9, no. 5 (September 1, 2004): 337–38. https://doi.org/10.1007/bf02979426.

37 Ellen MacArthur Foundation, Upstream Innovation: A guide to packaging solutions (2020).

38 Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). *What a waste 2.0: a global snapshot of solid waste management to 2050*. World Bank Publications

39 https://www.giz.de/expertise/html/62153.html

40 https://www.giz.de/expertise/html/62153.html

***Life cycle assessment (LCA)***

LCA is an holistic tool used to evaluate the environmental impacts associated with all the stages of a product life, from raw material extraction through the production and design, use and end of life[41]. When applied to reuse systems, LCA helps to compare the environmental performance of reusable vs single-use packaging under different conditions, for example: number of reuses, transportation distance, washing processes. This is a complex tool that provides essential evidence for justifying reuse investment and shaping policies.

The choice of a particular assessment or combination of assessment tools could take the following into account:

- **Data availability**, including the quality and detail, i.e. localised disaggregated data is typically more useful than national aggregated datasets. However, there are methodologies to utilize to make national aggregated datasets applicable for specific localities.
- **Purpose** of the assessment.
- Financial and technical **resources** available.

At a minimum, municipalities can start with a basic material flow overview or waste audit using existing data. These simple assessments offer useful insights at low cost and without advanced technical skills. Limited resources for more complex tools like MFA or LCA should not prevent action, early steps can guide priorities, with detailed analyses added later as capacity increases.

41 European Commission - Joint Research Centre - Institute for Environment and Sustainability: International Reference Life Cycle Data System (ILCD) Handbook - General guide for Life Cycle Assessment - Detailed guidance. First edition March 2010. EUR 24708 EN. Luxembourg. Publications Office of the European Union; 2010

## Policy Toolbox

Once you have determined the focus of your reuse initiative or basket of initiatives, validated your initial hypothesis with data, and gathered insights that will inform implementation activities - you are now ready to utilise the Policy Toolbox to identify, and develop a set of policy levers.

The full ICLEI Policy Toolbox has been designed based on aspects that cities have direct control over, and elements that could be effectively influenced by a city. The version of the Policy Toolbox included below focuses on 4 main categories. Each category has been adapted to highlight only 3 policy levers that can act as leverage points to stimulate the uptake on reuse interventions.

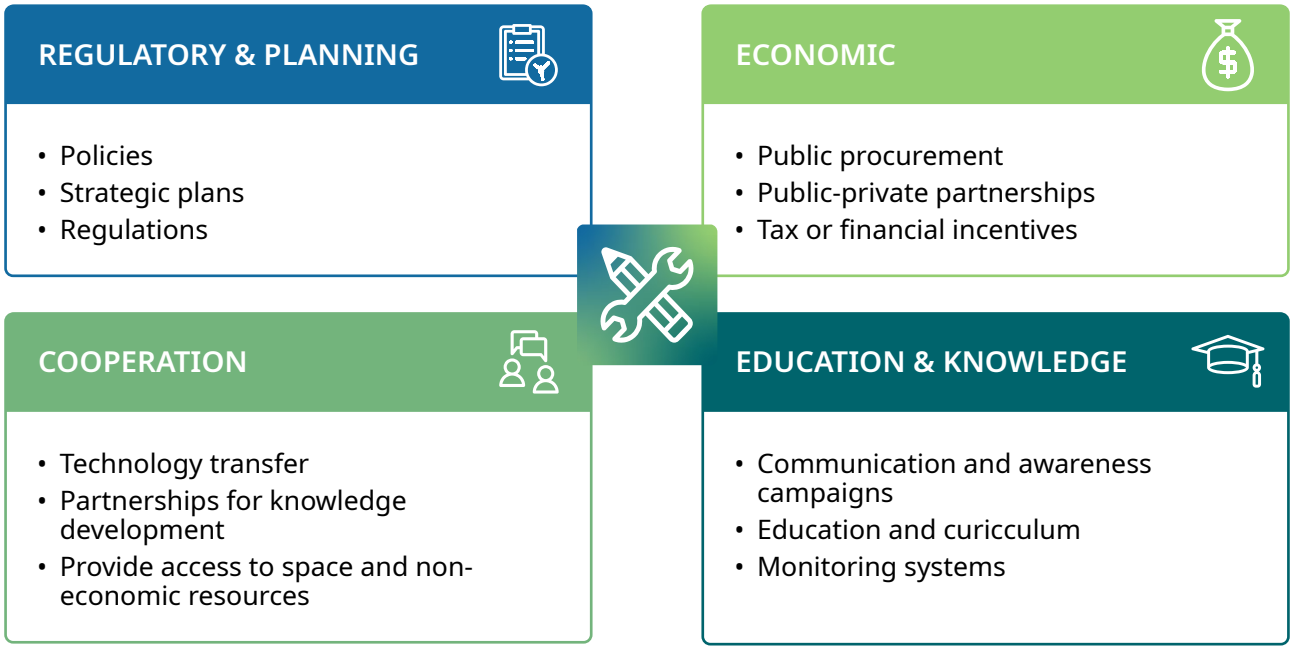



**Figure 5.** ICLEI Policy Toolbox

POLICY TOOLBOX | **REGULATORY & PLANNING**

This quadrant of the Policy Toolbox contains levers that offer a higher leverage potential, from a city perspective. The levers are often directly controlled by cities.

***Strategic plans***

In order for 'reuse' to find its way into the various city policies, which are often overseen by different departments and officials, it is first important to ensure that reuse is embedded into the key and integrated strategic or development plans of the city. Depending on the focus of the city at the time, easy entry points could be: the reduction of waste, increased local economic activity and reduction of greenhouse gas emissions.

***Policies***

Update existing city policies to embed reuse principles and enabling elements. For example, a city's public events policy can be amended to require that only reusable items be used during events. Tallinn, Estonia, provides a strong example: in 2023, the city amended its "Rule for organising and holding public events" to ban all single-use dishes made of any material, mandating the use of reusable tableware at public events. This local regulation proved so successful that it informed a national law, effective January 2024, requiring reusables at all public events across Estonia. Because cities already manage numerous policies, creating a standalone reuse policy is generally not recommended.

This is due to two main factors:

1. The development and adoption of a new policy is resource intensive, and
2. Relevant and dedicated city officials will have to be identified for the development and implementation of a policy, as a result the financial resource needed for the officials and related policy development costs can become exorbitant.

By focusing on existing policies, such as waste management regulations, public events guidelines, food service establishment regulations,and health and safety codes, cities are able to expand the number of officials that will ultimately implement reuse solutions, and from multiple departments.

***Regulations***

Regulations are often used to guide and support the technical implementation of policies. Implementation can begin once the relevant policy has been updated and reuse requirements are embedded into the regulatory framework. For example, waste management regulations could be amended to prohibit the disposal of single-use food and beverage containers at certain venues or events, and require organisers or vendors to provide systems for the return, collection, and cleaning of reusable items.

All three levels should be aligned to ensure sustainable uptake of reuse solutions. Entry can be at any level.

POLICY TOOLBOX | **ECONOMIC**

The second quadrant acknowledges that the private sector, stimulating demand, and the economics of reuse is a central component of successful reuse interventions. It's important to take into account that in many instances, the implementation of economic initiatives has linkages to the regulatory and planning quadrant.

***Public procurement***

In many instances city administrations are responsible for a large percentage of economic activity and purchases happening within a city. An easy to implement reuse initiative is to ensure that single-use materials are replaced with reuse solutions, where possible. This could include ensuring that all school lunches and public canteens do not have single-use packaging - this could also result in healthier meals.

***Public-private partnerships***

Large-scale facilities for reuse initiatives can be developed more effectively through public–private partnerships. This is particularly the case when multiple smaller businesses cannot reach scale to make reuse solutions financially viable, pooled infrastructure could provide the service to all or most businesses - and be underpinned by the city administration. For example, in a city with hundreds of restaurants, implementing a system that supplies, collects, washes and sanitizes, and then redistributes reusable food containers.

***Tax or financial incentives***

Tax or financial incentives play a strong role in stimulating the supply of and/or demand for reusable solutions. It should be noted that care needs to be taken with financial incentives, as businesses should not base their business models on an incentive that will have a limited lifespan - when the incentive is stopped, it could render the business model unviable. There are multiple ways in which an incentive could be provided, such as: subsidising the cost of purchase of reusable bottles by consumers, or offering lower property tax or waste charges for businesses - the specific incentive that will be utilised should be developed through consultation with stakeholders.

POLICY TOOLBOX | **COOPERATION**

When trying to systemically embed reuse in many existing areas, both within city administration and with other stakeholders, cooperation becomes important so that each stakeholder can play their role.

***Technology transfer***

City administrations can use their power and networks to seek international knowledge and technology transfer to local stakeholders. In addition, this could also be facilitated amongst local stakeholders. For example, peer-to-peer exchange with other cities, or partner with technology providers to pilot a digital tracking system for reusable take away containers.

***Partnerships for knowledge development***

Cities are well placed to establish and encourage partnerships for research and development, and broader knowledge development. Often, this requires substantial financial investments. A good approach includes working with knowledge hubs, impact hubs, innovation centers and local universities. For example, partnering with a local university to study consumer behaviour around reusable packaging and develop context-appropriate interventions for markets and food vendors.

***Provide access to space and non economic resources***

City administrations own and manage a lot of infrastructure and equipment that range from vacant land to buildings, from cars to trucks to bulldozers. Particularly with land and buildings - these are assets that are often in partial use, or not in productive use at all. The unproductive resources could be made available to stakeholders to further reuse initiatives. For example, a city warehouse that is not in use anymore, could be converted into a wash facility for bottles or food containers that have been used. This would result in lower overhead costs, and make an intervention more financially viable.

The last quadrant, but not the least important, relates to raising awareness of residents, perceptions, and ultimately switching consumer behaviour to more sustainable consumption patterns.

***Communication and awareness campaigns***

Activities under this lever, should be seen as a first step in the 'awareness to action' process - particularly when it comes to individual end users. Targeting segments of the population that are more likely to adopt new products, services and behaviours could be a good way to get quick results. However, for more long term and sustainable results, communication and awareness campaigns targeting young people need to be utilized. A good example could be the use of social media, to support normalizing the use of reusable cups and containers.

***Education and curriculum***

Working with schools and universities to evolve the curriculum and extra-curriculum activities in the education system is a powerful way to introduce new and sustainable consumption behaviours and practices into society. A good strategy could be introducing hands-on reuse workshops or including zero-waste modules that include reusable and circular economy practices.

***Monitoring systems***

Knowing what the current level of adoption of reuse behaviours are, and the corresponding reduction in single-use waste can be a powerful tool to reinforce these behaviours within a society - especially when it is effectively communicated. For example developing a dashboard to track the number of reusable items in circulation and measuring single-use waste reduction can empower communities.

# Step 2: Who?

## Who is a stakeholder?

We encourage the identification of 3 types of stakeholders:

| 1 \| Internal stakeholder | *Example* |
|---|---|
| Any government official, within a city department, such as officials in procurement, waste management, and circular economy offices, that will be needed to provide insights and support implementation. | *If a financial incentive is being provided by a city for business and property owners that adopt reuse solutions, then the Budgeting Office, Billing Office, Waste Management Office, and Circular Office become critical.* |

| 2 \| External stakeholder | *Example* |
|---|---|
| Any person or organisation that has a vested interest in a topic, or is directly impacted, outside of the city administration, and can include other government entities.<br><br>However, in instances the number of stakeholders could become very large, and then it's not practical or possible to consult with all - in such a situation a representative body of those stakeholders could be interacted with. | *If we seek to ban single-use plastic bags at grocery stores, then stakeholders will be the owners and managers of grocery stores, suppliers and manufacturers of the plastic bags, and consumers.* |

| 3 \| Key stakeholders | *Example* |
|---|---|
| Individuals or organisations with direct influence on adoption. These can be either internal or external. | *In order for the adoption of new policies, often a political sponsor is needed.* |

## When and How to identify stakeholders?

Identify stakeholders early, before policies or incentives are fully designed. At a fundamental psychological level, people want to be respected, acknowledged, and valued. Engaging stakeholders too late in the process increases the risk of failing to secure their buy-in and participation, and can lead to unintended consequences, such as overlooking the informal sector or other affected groups. However, it is unlikely that a comprehensive list of stakeholders can be developed without consulting other stakeholders, so this should be approached as an iterative process of building understanding. At the same time, if that iterative process is undertaken without clear boundaries, the scope may become unmanageably broad, so defining limits from the outset is essential.

## Systems mapping

Developing a Systems Map will help you in understanding the context of the reuse initiative that is to be implemented.

A Systems Map is a simple diagramming tool to identify the individual parts that make up the system that we're focusing on. While there are different types of Systems Maps, for this guide we focus on utilising Systems Maps to identify sub-systems and relationships. Early mapping helps to prevent blind spots, by using the tool to stitch together individual perspectives.

© Alexa / Pixabay

***How to develop a Systems map?****

### 1 | Confirm the purpose and scope

The first step of developing a Systems Map is to set the boundary of the reuse initiative's context that we are trying to understand. In the example contained in Figure 6 on the next page, a simple map is utilized for an incentive for a reusable coffee cup solution in a city.

### 2 | Identify key elements

The key elements that would enable the uptake, and sustainable implementation of the reusable coffee cup are then mapped out. In the example, we can see 4 main elements: regulatory environment, consumers, coffee shops, and incentive design.

### 3 | Identify sub-elements

Each element normally functions as a result of sub-elements, these also need to be identified. Taking the regulatory element as an example - we see that it is made up of the incentive approval and implementation, availability of finances, national regulatory aspects, and a monitoring and control element.

### 4 | Develop a mutually understood diagram with stakeholders

Once you have an initiative outline of your diagram, input should be provided by stakeholders to determine if any elements or sub-elements are missing.

** If multiple Policy-Toolbox elements are used, create a separate systems map for each.*

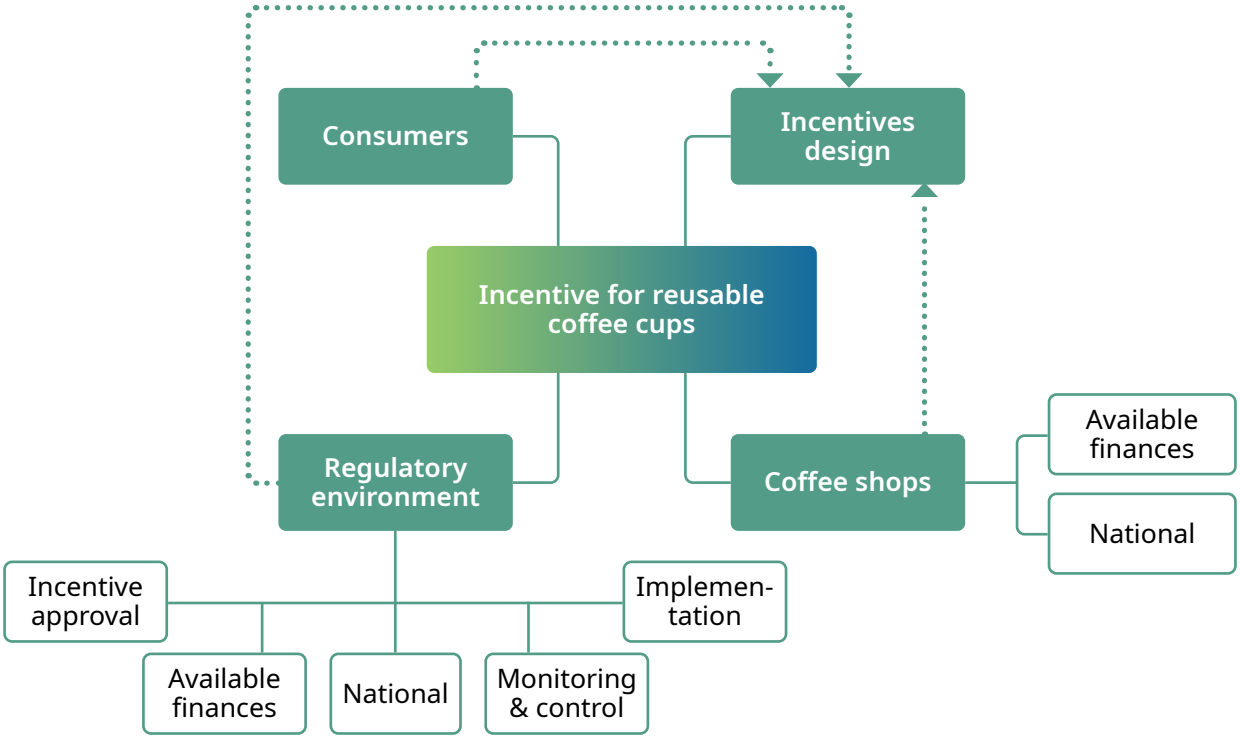



**Figure 6.** A basic example of a Systems Map

From the example we use in the Systems Map, we can now determine the important stakeholders. Utilising the example of coffee shops in Figure 6, we can identify the following stakeholders:

| 1 \| Internal stakeholders | 2 \| External stakeholders | 3 \| Key stakeholders |
|---|---|---|
| • Budgeting office<br>• Legal Office<br>• Project Management or office responsible for implementation<br>• Policy drafting<br>• Council for the approval | • Consumers<br>• Coffee stores<br>• Suppliers of reusable cups and related services<br>• Suppliers of single-use items | • Council for approval of the incentive and a political sponsor<br>• Reuse suppliers<br>• Coffee Shops |

It is important to note that stakeholders and key stakeholders will differ from reuse solution to solution.

# Step 3: How?

This step provides a template that will help guide the conceptualisation of the process to develop and implement your reuse activity. It is not envisaged to be a replacement for a detailed plan, but rather to assist with high-level conceptualisation.

| Steps | Considerations | City notes |
|---|---|---|
| WHAT?<br>**Setting the focus and scope** | What type of reuse intervention or interventions are being focused on? | |
| | Which analysis tools are most applicable? | |
| | Take into account the current waste data to determine what the composition of household waste and/or waste collected in public areas is collected by the city. | |
| | Determining the composition of waste that is not managed or that leaks into the natural environment. | |
| | What intervention will have the lowest barrier to implementation within your city's context, while having the highest benefit. | |
| WHO?<br>**Systems Map and stakeholder identification** | Has a Systems Map been developed? | |
| | Who provided and how was further input gathered to enhance the map? Are there any gaps, and who could help identify more gaps? | |
| | Which stakeholders have been identified through the systems map, and what role does each stakeholder play? | |
| | How will the city engage with these stakeholders? | |
| HOW?<br>**Identifying relevant Policy levers** | What are the main types of levers that are most relevant for the current context in the city? | |
| | Which Regulatory and Planning policy lever is needed, and what could an outline look like? | |
| | Are any Economic policy levers necessary? If yes, which levers and what could an outline look like? | |
| | Are any Cooperation policy levers necessary? If yes, which levers and what could an outline look like? | |
| | Are any Education and Knowledge policy levers necessary? If yes, which levers and what could an outline look like? | |

# BRINGING IT ALL TOGETHER

© Rajesh Balouria / Pixabay

*This guidebook aims to provide insights to cities beginning their reuse journey, on specific steps that can be taken to narrow down the focus to specific and implementable reuse solutions as a prelude to formal and detailed planning, not as a substitute, and with specific examples from cities around the world.*

A 3-step process was presented that guides a city along a journey of identifying a focus area, and validating the focus, while identifying key stakeholders that will be responsible for enabling the reuse solution. It concluded with providing a template that helps to unpack important questions that assist with setting the focus, identifying an appropriate mix of policy levers and stakeholders - all of which will be the basis for undertaking the formal processes to further develop and seek approval for the implementation of the policy levers.

# REUSE INITIATIVES AROUND THE WORLD

© Anna Oliinyk / Unsplash

*This section presents a curated selection of reuse initiatives from around the world, showcasing diverse approaches to introducing reusable packaging systems.*

The cases span multiple regions and illustrate how reuse can be implemented in various contexts such as festivals, food services, Each example highlights key features, outcomes, and lessons learned, offering valuable insights into how reuse systems can contribute to circular economy goals while addressing local challenges and opportunities.

# Alexandra, South Africa

© Josephine Katumba

Gcwalisa (isiZulu for "refill" or "fill up") operates in Alexandra township near Johannesburg, tackling food insecurity and plastic waste simultaneously. Piloted under GIZ's Circular City Labs (CCL) initiative[42] in collaboration with Plastics SA, the model supports low-income households by offering nutritious bulk food and household products in reusable containers, with a focus on gender-inclusive community engagement.

Gcwalisa's model empowers customers to reuse safe, durable packaging provided in-store, such as polypropylene (PP) jars and PET bottles for various groceries. Each container is tracked via QR codes, filled on demand, and purchased through a small refundable deposit system. Once returned, containers are professionally cleaned, refilled, and reissued, forming a closed-loop reuse system that minimizes waste and encourages repeat use.

Between April and July 2025, across four outlets, Gcwalisa recorded over 3,036 reuse transactions, including 1,562 first purchases and 1,470 active container returns, demonstrating strong community uptake. Community activities have been particularly impactful, reaching over 6,000 residents and reinforcing the pilot's strategic focus on high-density, female-dominated communities.

These targeted engagements successfully built deeper awareness and education around the benefits of reuse, from cost savings to environmental stewardship. The initiative also trained four women as "Reuse Ambassadors" enhancing local livelihoods and embedding reuse within community culture. The containers are recyclable, food-safe, and designed for multiple cycles of reuse, helping customers reduce packaging costs while offering cash-back incentives to encourage responsible return behavior.

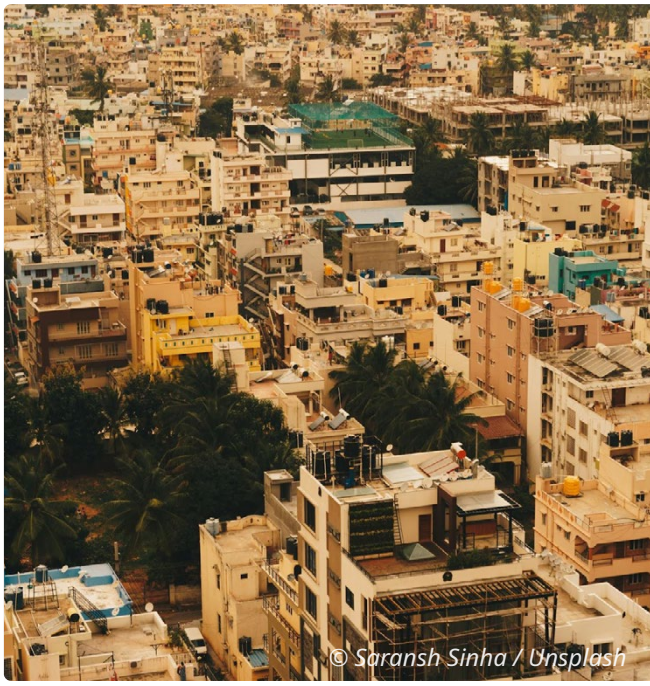
***Key lessons:***

- Integrating community activations (music, live demos) and social media (TikTok, WhatsApp) builds trust and behavior change.
- The project empowers low-income women, addressing both environmental and social goals.
- Durable, locally sourced containers and digital tracking are essential to operational success.

42 https://www.giz.de/en/worldwide/207093.html

# Bengaluru, India

From July 2022 to October 2023, Hasiru Dala Innovations, a social enterprise focused on improving livelihoods for wastepickers through environmentally impactful business models, and Refillable, a zero-waste refill service founded in 2020, operated a mobile refill pilot across Bengaluru, India[43]. The initiative aimed to reduce plastic consumption at the source by offering refillable home-care products via a truck outfitted with dispensing stations.


© Saransh Sinha / Unsplash

The truck circulated in residential and commercial zones, such as apartment complexes and malls, offering laundry detergent, floor cleaner, toilet cleaner, and hand wash from sustainable or premium brands. Customers could either specify the amount (in ml) or set a spending amount for the refill. Pre-filled glass bottles were also delivered to doorsteps for customers unavailable during the truck's visit, some of whom left empty bottles for collection, supporting a return-from-home model.

The project aimed for 2,000 orders per month with an average basket size of ₹600. Customer acquisition was driven through social media, a website, and a helpline, targeting Bengaluru's environmentally conscious citizens.

***Key lessons:***

- Expecting consumers to simultaneously shift brands, price point, and behavior (i.e., from single-use to refill) was overly ambitious for a short pilot.
- Low geographical density of orders made the delivery model costly and inefficient.
- Delayed delivery (sometimes up to 7 days) discouraged repeat customers in a market used to rapid e-commerce service.
- Despite logistical challenges, 55% of orders came from returning customers, signaling promising user satisfaction once engaged.
- Future trials should prioritize well-known, high-market-share brands to ease consumer transition and scale customer acquisition.

43 https://sustainabledevelopment.in/wp-content/uploads/2024/05/LA-reuse-models-in-India-Web.pdf

# Bogotá and Medellin, Colombia


Xiclo, operating in Bogotá and Medellín, Colombia, provides reusable packaging solutions for takeaway food and beverages, powered by a software-as-a-service (SaaS) platform that tracks each container's usage, return status, and environmental impact. The company is a participating pilot business in the Circular Cities Lab (CCL) project. Through the project support, Xiclo developed its SaaS platform and is currently piloting scalable reuse systems in Medellín with the University of Antioquia and the City Government of Medellín.

Xiclo also offers a reusable container app-based service for food delivery and pickup, currently active only in Bogotá, where it operates its own washing facility and reverse logistics. While this model helped Xiclo learn from real-world operations, the company is now focused exclusively on scaling its SaaS platform.

In closed-loop environments such as corporate cafeterias or large events, Xiclo enables full-service reuse systems with accredited packaging, drop-off points, and integration with local cleaning infrastructure. Each container can be reused up to 500-1,000 times depending on the material. In 2025, from June to July, Xiclo has prevented the use of 925 single use containers in Medellin through the pilots being implemented and has achieved a 99% return rate in the reuse systems.

Additionally, by the end of the year, Xiclo will partner with the City of Bogotá to introduce reusable containers in public school meal programs, starting with 24,000 meals per day and scaling up to 200,000 per day by 2026. Xiclo is also preparing to launch operations on San Andrés Island, further extending its reach in Colombia. Expansion into stadiums and other high-volume settings is also being explored. Since 2021, Xiclo has replaced more than 50,000 single-use containers and it currently employs 19 team members.

***Key lessons:***

- Closed-loop systems (like schools and events) yield higher return rates and better scalability than open-loop takeaway settings.
- Public partnerships can help scale operations and align with governmental plastic reduction goals.

# Bolzano, Italy

In the Province of Bolzano, Italy, the local government supports waste reduction at public events by offering a mobile dishwasher rental service. Managed by the Provincial Agency for Environment and Climate Protection in partnership with Novum2[44]. This service provides industrial dishwashers and reusable tableware for festivals and gatherings. Event organizers rent reusable dishware and dishwashing services, with logistics and sanitation handled by Novum2. The service helps events transition away from disposables by making reuse systems accessible and supported with setup and collection.

The Province subsidizes rental fees for certified GreenEvents, helping lower financial barriers. The dishwasher fleet is publicly funded and maintained, and available for events province-wide. The impact: active since 2006, with use expanding during summer festivals, several tons of waste avoided annually and greenEvent certification linked to system adoption.


***Key lessons:***

- Subsidies and recognition schemes (e.g., GreenEvent) promote uptake.
- Collaboration with social enterprises enhances delivery and logistics.

44 ICLEI Europe and ICLEI World Secretariat, *Packaging Reuse at Events*, 2025. https://circulars.iclei.org/wp-content/uploads/2025/05/CCL-case-studies-portfolio-www-1-1.pdf

# Boulder, Colorado, United States

The City of Boulder, Colorado, has prioritized reuse as a key strategy for reducing single-use waste. This initiative supports the city's zero-waste goals and aligns with circular economy principles, particularly targeting waste at large public events and in local food service businesses.[45]

Boulder partners with reuse service providers such as r.World and Hiccup to deploy reusable containers and cups at events, including the city's annual Boulderthon marathon. Hiccup supplies reusable silicone cups for runners at aid stations, manages their collection, and ensures sanitation for reuse. The city also collaborates with Partners for a Clean Environment (PACE) to help businesses adopt reuse practices through rebates for durable dishware and in-house systems.


©Globelet Reusable / Unsplash

To support adoption, Boulder offers financial incentives of up to $5,000 per event to cover the costs of implementing reuse systems (typically $800–$1,200 per event). These subsidies have proven effective in encouraging participation among event organizers and local businesses.

Since the initiative's launch, Boulder has replaced 111,188 single-use containers. Reduced landfill waste by 632 kg avoided 5,386 kg of GHG emissions. The return rate for reusable containers is impressive: 90–92% for r.Cups and 99.7% for Hiccup cups during Boulderthon.

***Key lessons:***

- Financial support is crucial to incentivize adoption, but additional research into behavioral drivers is needed for long-term uptake.
- Strategic partnerships with specialized service providers improve efficiency and scalability.
- Sustaining momentum requires ongoing engagement, as interest among restaurants in reuse incentives has plateaued.

45 ICLEI Europe and ICLEI World Secretariat, *Packaging Reuse at Events*, 2025. https://circulars.iclei.org/wp-content/uploads/2025/05/CCL-case-studies-portfolio-www-1-1.pdf

# Bremen, Germany

The City of Bremen has implemented a citywide regulation mandating reusable food and drink containers at public events, supported by a strategic Reusable Roadmap and pilot initiatives such as the Breminale festival[46]. The roadmap promotes reusable systems across events, restaurants, and public spaces, with the city allocating €149,902 for its development and €35,000 for mobile dishwashing units.

At Breminale, a five-day festival attracting over 220,000 visitors, organizers distribute reusable plates, cups, and bowls, with central collection points and mobile dishwashers to clean and recirculate them. The regulations require deposit-return systems for reusables at all city-supported events. At Breminale, the mobile dishwashing system, capable of cleaning for up to 15,000 people per day, helped avoid more than 2.6 tons of waste, while achieving high public participation and strong vendor compliance.

© Paola Castaneda Rodriguez

***Key lessons:***

- Clear signage and uniform deposit systems ensure high return rates.
- Strong policy support reduces competitive disadvantage among vendors.

46 ICLEI Europe and ICLEI World Secretariat, *Packaging Reuse at Events*, 2025. https://circulars.iclei.org/wp-content/uploads/2025/05/CCL-case-studies-portfolio-www-1-1.pdf

# Cape Town, South Africa

In 2023, the South African Plastics Pact, in partnership with the Oranjezicht City Farm Market (OZCF) in Cape Town and reuse service provider Return - Reuse, launched a reusable cup pilot project aimed at reducing single-use beverage cup waste[47]. The initiative tested the feasibility of a deposit-return reuse model in an open-air market setting with a diverse customer base.

Over the course of 13 weekends, market vendors served beverages in durable polypropylene reusable cups, provided through Return - Reuse. Customers paid a R30 refundable deposit per cup and could return it at clearly marked stations within the market. The returned cups were collected, cleaned, and sanitized for reuse.

A total of 5,379 reusable cups were distributed during the pilot. Of these, 72% were returned, while many of the remaining cups were reported to have been reused at home by customers. Stakeholders observed positive consumer response, with high return rates attributed to clear communication, visible signage, and the convenience of the system.

© The SA plastics pact

***Key lessons:***

- Deposit-based reuse systems are viable in market environments, especially when designed for convenience and trust.
- Clear operational roles and robust cleaning logistics are essential to maintaining hygiene and stakeholder confidence.
- Consumer engagement and behavior change are strengthened through simple messaging and on-site staff training.

47 https://www.saplasticspact.org.za/2023/09/22/project-report-reusable-cup-pilot-project-at-the-oranje-zicht-city-farm-market/

# Ghent, Belgium

The Ghent Festival ("Gentse Feesten"), one of Europe's largest public cultural events, welcomes over 1.5 million visitors each July in Ghent, Belgium[48]. To address the environmental burden of single-use plastics, the city introduced a mandatory reusable cup system in 2018, aligning with Flanders' and EU directives on plastic waste reduction. In 2020, regulations were expanded to restrict all single-use containers and cutlery at public events.

The Ghent Festival enforces a deposit-return system for reusable cups and food containers, supported by uniform cup designs and standardized return points across festival zones. A centrally appointed "cup coordinator" manages distribution, collection, and cleaning logistics, ensuring that visitors can return items at any vendor location thanks to interoperable systems across most festival areas.

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In 2024, the City of Ghent allocated €160,000 in subsidies to implement the system, covering key logistics such as the cup coordinator role and the establishment of uniform return infrastructure. Washing is carried out off-site by the social enterprises Groep Intro and Wash-it, which clean and prepare the items for reuse.

Between events, the 400,000 reusable cups are stored under the management of the festival or city in a central facility, with plans to rent them out to other events year-round to maximise their use. These measures address previous challenges, such as inconsistent cup types and limited return points, by expanding return locations, increasing standardisation, and ensuring the system is convenient, efficient, and widely accessible.

The reuse initiative has yielded significant environmental and operational benefits: 40% waste reduction per visitor (2022 vs. 2019), 20 tonnes less waste collected, 12% reduction in waste management costs: 9% less staff, 20% fewer vehicles, 14% drop in processing costs, 440 hours of cleaning labour avoided Return rates: 95% for cups, 83% for food containers.

***Key lessons:***

- Standardization and interoperability across venues improve user experience and return rates.
- Reuse systems not only reduce waste but also cut operational costs and labour demands.
- Effective communication and logistics are essential to maintain high compliance and user satisfaction.

48 ICLEI Europe and ICLEI World Secretariat, *Packaging Reuse at Events*, 2025. https://circulars.iclei.org/wp-content/uploads/2025/05/CCL-case-studies-portfolio-www-1-1.pdf

# Jakarta, Indonesia

Kecipir is a farm-to-consumer platform in Indonesia focused on organic groceries, which has adopted a refill and return system to reduce single-use plastic in its packaging[49]. The company delivers items in reusable packaging and encourages customers to return containers for cleaning and reuse. Customers order groceries through Kecipir's app or website. Products are delivered in glass jars, cloth bags, and reusable boxes. On the next delivery, the customer returns the used packaging, which is cleaned and re-circulated. The program prioritizes zero-waste delivery and locally sourced products.


Kecipir supports local farmers and small producers, aligning sustainable packaging with sustainable sourcing. It uses its digital platform to educate customers about circular lifestyles and product origins. Impact: Has reached over 9,000 customers in the Jabodetabek area, reduced dependency on single-use packaging in over 80% of deliveries and promotes low-waste supply chains alongside circular logistics.

***Key lessons:***

- Combining circular packaging with ethical sourcing enhances brand appeal.
- Return incentives and communication are key to keeping packaging in the loop.

49 Ambily Adithyan et al., "Unpacking reusa in Asia: A brief report featuring select case studies on reuse systems for packaging"ed. Andrea Lema et al. (Global Alliance for Incinerator Alternatives, 2024), https://www.breakfreefromplastic.org/wp-content/uploads/2024/11/Upacking-Reuse-in-Asia.pdf

# Manchester, United Kingdom

As part of its Zero Carbon Manchester strategy, the city launched a reusable cup initiative at major events like the Christmas Markets and Manchester Day to reduce single-use plastic waste[50]. The city provides reusable cup stock, available via free loan, with deposit schemes in place. Organizers receive guidance and optional cup-washing services, supporting easier adoption at both small and large events.

Funded by the URBACT C-Change project, Manchester produced a detailed sustainable events guide and funded £7,000 for impact analysis and educational materials. The impact: 1.7 million single-use cups avoided in first two years, 96% plastic waste reduction, 82% $CO_2$ reduction, and 40% cut in waste costs.

*© Ksenia Yakovleva / Unsplash*

***Key lessons:***

- Raising the deposit from £1 to £2 improved return rates.
- Providing washing services encourages participation.

50 ICLEI Europe and ICLEI World Secretariat, *Packaging Reuse at Events*, 2025. https://circulars.iclei.org/wp-content/uploads/2025/05/CCL-case-studies-portfolio-www-1-1.pdf

# Quezon City, Philippines

Back2Basics (B2B) Eco Store, located in Quezon City, Philippines, is a zero-waste bulk retail store offering refillable home care, personal care, and pantry staples[51]. Founded in 2019 by five women environmental advocates, B2B aims to promote a sustainable, community-driven lifestyle. Its model caters primarily to mid- to high-income consumers through Refill-at-Home and Refill-on-the-Go services.

© Beng Ragon / Unsplash

B2B encourages customers to bring their own containers to refill products in-store or opt for home delivery using reusable packaging, including sanitized bottles provided by the store. Around 70% of products are locally sourced in bulk reusable containers. For new or walk-in customers, B2B offers repurposed containers to lower the barrier to entry.

They collaborate with local suppliers and community-based enterprises that share its sustainability values. B2B offers e-bike delivery to minimize carbon emissions and provides educational programming, including Zero Waste workshops and community events, and engages in advocacy with civil society organizations to promote reuse systems nationally.

Over 92,000 pieces of plastic packaging have been avoided since launch. Average customer savings of 25–35% per transaction, depending on product. Monthly consumer visit data not disclosed, but the service includes a loyal and growing customer base.

***Key lessons:***

- Transparency in sourcing and environmental impact builds consumer trust.
- Community education and advocacy are vital tools for mainstreaming reuse culture.
- Providing ready-to-use containers and delivery options lowers access barriers and supports customer convenience.
- Partnerships with local businesses and eco-logistics providers (e.g., e-bikes) enhance environmental and social value.

51 Ambily Adithyan et al., "Unpacking reusa in Asia: A brief report featuring select case studies on reuse systems for packaging"ed. Andrea Lema et al. (Global Alliance for Incinerator Alternatives, 2024), https://www.breakfreefromplastic.org/wp-content/uploads/2024/11/Upacking-Reuse-in-Asia.pdf

# Seoul, South Korea


To reduce single-use cup waste and promote reusable alternatives, the City of Seoul, in collaboration with the Ministry of Environment and the Container Deposit System Management Organization (COSMO), launched the Disposable Cup Collection Pilot Project in the Gwanghwamun–Namdaemun Eco Zone (Jung-gu and Jongno-gu districts) from August 6 to December 31, 2024[52].

The pilot featured a multi-pronged approach: 42 volunteer cafés installed clearly marked bins for collecting paper and plastic disposable cups. These were collected by a professional contractor and upcycled into new materials, such as fibers and tissue paper. In addition, 30 public cup-only bins were installed in busy areas like bus stops, and automated return machines were set up at Seoul City Hall's Seosomun Office and Jongno-gu Office.

The project also supported stores with washing infrastructure for reusable cups and helped businesses sort other waste streams like coffee grounds and milk cartons, contributing to holistic resource recovery.

This initiative was designed to test scalable systems for cup collection and recycling, while simultaneously encouraging behavioral change among consumers and businesses. The Ministry and the Seoul Metropolitan Government plan to evaluate results and consider expansion to other districts.

***Key lessons:***

- A combination of private-sector engagement, infrastructure, and public education is critical for reuse and recycling initiatives.
- Decentralized but coordinated roles across ministries, local government, and service providers enable smooth implementation.
- Behavior change campaigns must be supported by visible infrastructure and convenient return options to increase public participation.

52 https://www.me.go.kr/eng/web/board/read.do;jsessionid=jqDdI63R_yDyxoWaJiwaD0N_28SR7iaugYJynVLD.me-home1?pagerOffset=130&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=461&orgCd=&boardMasterId=522&boardCategoryId=&boardId=1691330&decorator=

# Tallinn, Estonia

In 2023, the City of Tallinn transformed its Youth Song and Dance Festival into a zero-waste event, using it as a flagship for its European Green Capital commitments[53]. Through a mandatory regulation, Tallinn required only reusable dishware at public events. The system featured deposit-return schemes, 11 dish collection stations, and 100 trained green ambassadors to manage education and sorting.

Partially funded by the City of Tallinn, with support from partners like the Let's Do It Foundation, Eesti Pandipakend, and the Estonian Song and Dance Festival Foundation. Impact: Waste reduced from 40 tons (2019) to 22.1 tons (2023). Additionally, nearly 500,000 single-use items avoided, as resulted in a nationwide law mandating reusable dishware at all public events (from Jan 2024).


***Key lessons:***

- Early stakeholder engagement and training builds compliance.
- Green ambassadors enhanced public guidance and behavior.

53 ICLEI Europe and ICLEI World Secretariat, *Packaging Reuse at Events*, 2025. https://circulars.iclei.org/wp-content/uploads/2025/05/CCL-case-studies-portfolio-www-1-1.pdf

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